Days In and Out of High School and Young Adults' Socio-Emotional Skills

Magnus Carlsson Björn Öckert Dan-Olof Rooth Alessandro Toppeta*

March 26, 2026

Abstract

This paper examines the causal effect of school and non-school days on the development of socio-emotional skills among 18-year-old men. Skill assessment takes place at military enlistment, and identification leverages quasi-random variation in its timing. The results show that socio-emotional skills improve with age (at enlistment), but the gains depend on whether schools are in session. School breaks and weekends promote socio-emotional skill development, while school days have no effect. The positive effects of non-school days are stronger for students from more affluent backgrounds. Consistent with this, novel survey evidence shows that these students engage more frequently in enriching activities during their leisure time.

JEL codes: H52, I24, J24, D91

Keywords: School, Education, Skills, Inequality

*__Carlsson__: Linnaeus University (e-mail: magnus.carlsson@lnu.se); __Öckert__: Institute for Evaluation of Labour Market and Education Policy and Uppsala University (e-mail: bjorn.ockert@ifau.uu.se); __Rooth__: SOFI, Stockholm University (e-mail: dan-olof.rooth@sofi.su.se); __Toppeta__: SOFI, Stockholm University (e-mail: alessandro.toppeta@sofi.su.se). We would like to thank Samuel Berlinski, Martin Nybom, Paul Hufe, Sara Spaziani, Andreas Kotsadam and seminar participants at Inter-American Development Bank, DoPE Workshop (Olso), Linnaeus University, Swedish Economic Conference, Umea University, Stockholm School of Economics, 7th Stockholm/Uppsala Education Economics Workshop, Bristol Applied Economics Meeting, FEW (St. Helena), Diversity & Human Capital workshop, University of Exeter, DOCG 2025 Rocca Grimalda, FAU Nuremberg, University of Oslo, DIW.

1 Introduction

Technological and organizational changes in the labor market have increased the importance of socio-emotional skills (Lindqvist and Vestman, 2011; Deming, 2017; Jokela et al., 2017; Edin et al., 2022). Unlike routine, codifiable tasks that are easily automated, socio-emotional skills – such as persistence, motivation, and emotional stability – are important for open-ended tasks requiring flexibility, creativity, and judgment (Autor, 2015; Deming and Noray, 2020; Atalay et al., 2020; Autor et al., 2024). Moreover, a growing body of evidence suggests that these economically valuable skills are malleable and can be shaped through targeted interventions (e.g., Almlund et al., 2011), and that they may mediate the long-term effects of education programs on adult outcomes (e.g., Heckman et al., 2013). Understanding how socio-emotional skills develop is important for designing effective interventions.[1]

This paper estimates the causal effect of school and non-school days on socio-emotional skill development for young men in Sweden while attending high school. These skills were assessed close to their 18th birthday when enlisting for the military, which was mandatory in the 1980s and 1990s. A person's enlistment date was mechanically assigned by the military based on his date of birth, parish of residence, and expected graduation date. Once we flexibly control for these variables, the enlistment date, and hence, age at enlistment, are conditionally random. Since age at enlistment is the sum of the number of school and non-school days, these variables also vary randomly across individuals. The resulting variation is substantial: the standard deviation in school and non-school days at the time of enlistment is 51 and 59 days, respectively.

In the final stage of the enlistment process, the conscripts undergo a 20-30 minutes semi-structured interview conducted by a trained psychologist. The evaluation focuses on observable behavioral responses rather than self-reported attitudes and aims to assess skills, such as leadership ability and the capacity to work in teams. Although the military does not disclose the exact content of the interview, it has indicated the four dimensions of socio-emotional skills being measured: (i) social maturity (e.g., extroversion, responsibility, independence), (ii) psychological energy (e.g., perseverance, focus), (iii) intensity (e.g., intrinsic motivation, activity level) and (iv) emotional stability (e.g., stress tolerance, anxiety control) (see also Mood et al. 2012). These socio-emotional skills have been shown to capture general individual skills with long-term predictive value, for example for later-life earnings (Lindqvist and Vestman, 2011; Edin et al., 2022).

We find that socio-emotional skills improve with age, but that these gains depend on whether schools are in session. Time spent outside of school has a positive impact on the development of socio-emotional skills, whereas time spent in school has no effect. In our estimates, 100 additional non-school days raise socio-emotional skills by 0.07 standard deviations (SD). This effect

[1] Recognizing their importance, countries have started implementing teacher professional development to integrate socio-emotional skills into school curricula, with evidence showing that such programs can effectively foster these skills (Alan and Ertac, 2018; Alan et al., 2019; Ashraf et al., 2020; Algan et al., 2022; Sorrenti et al., 2024).

is primarily driven by improvements in social maturity – such as extraversion, responsibility, and independence – and in emotional stability, reflecting better self-regulation and resilience. A battery of robustness checks supports the interpretation that these effects reflect differences in non-school days rather than alternative explanations, such as seasonal variation in the reliability of assessments or a relaxation effect.

When we explore plausible mechanisms through which non-school days foster socio-emotional skills, we find that these days are more beneficial for students from more advantaged socio-economic backgrounds, suggesting that time out of school may widen inequalities in socio-emotional skills. In contrast, using the same institutional setting, Carlsson et al. (2015) find that school days improve cognitive skills for students across the distribution. We also present novel survey evidence for a representative sample of our target population, documenting that students from more advantaged socio-economic backgrounds engage more frequently in enriching activities – such as travels, music, reading and arts – in their leisure time. These findings suggest that experiences outside formal schooling may play an important role in shaping socio-emotional skills, possibly through interactions with peers of similar backgrounds in a variety of social settings.

This study makes three contributions to the literature on the determinants of socio-emotional skills (Almlund et al., 2011; Cipriano et al., 2023; Woessmann, 2024). First, we provide causal evidence that non-school days, but not school days, have a positive impact on socio-emotional skill development at age 18. This contributes to a still limited body of evidence on the causal effect of schooling on socio-emotional skills, which contrasts with the extensive literature documenting that schooling improves cognitive skills (see, for example, Cahan and Cohen, 1989; Leuven et al., 2010; Carlsson et al., 2015; Agüero and Beleche, 2013; Aucejo and Romano, 2016).[2] Importantly, we assess multiple dimensions of socio-emotional skills using external evaluations that have previously been shown to predict long-term outcomes (Lindqvist and Vestman, 2011; Edin et al., 2022).

Second, this paper examines the effect of school and non-school days under normal circumstances, without relying on major changes to the school system or temporary disruptions to instruction. This complements prior studies that focus on specific exogenous events – such as school reforms (Šimunović, 2024; Cobb-Clark et al., 2024; Entorf and Dohmen, 2025; Cygan-Rehm, 2025), or atypical teaching shocks, such as snowstorms (Jacob et al., 2007) or school strikes (Belot and Webbink, 2010; Jaume and Willén, 2019).[3] These studies provide valuable

[2]Relatedly, this paper contributes to the literature on summer learning loss, which has primarily focused on cognitive development and documented reductions in achievement of 0.1% to 1% of a standard deviation per lost school day (Hutton and Sepúlveda, 2020; Kuhfeld et al., 2020), by extending the analysis to socio-emotional skills and showing that the effect of non-school days reflects a broader phenomenon associated with time spent out of school, including weekends and school breaks.

[3]Examining compulsory education reforms, Šimunović (2024) finds that extended schooling in Turkey increased revealed patience in choice behavior without affecting self-reported patience, while Cobb-Clark et al. (2024) show that raising the minimum school-leaving age in Australia and Germany had no impact on self-reported self-control.

insights, but may also capture the effects of other contemporaneous changes to the school environment, such as teacher turnover, professional development programs, organizational changes, or new instructional practices. In contrast we exploit variation in school and non-school days generated by constraints in the enlistment system, which is unlikely to directly affect the day-to-day functioning of schools.

Third, this paper contributes to the literature on how school interventions and teachers influence socio-emotional skills (Alan and Ertac, 2018; Alan et al., 2019; Ashraf et al., 2020; Jackson et al., 2020; Sorrenti et al., 2024; Dinarte-Diaz and Egana-delSol, 2024). While most existing programs have focused on childhood and schools, we show that non-school days play a critical role in shaping socio-emotional skills during adolescence – a period when these skills continue to develop (Roberts et al., 2006; Burnett et al., 2011; Blakemore and Mills, 2014; Bleidorn et al., 2022). We show that days out of school contribute to adolescents' development, underscoring the importance of interventions that extend beyond the classroom and address the broader environments in which adolescents grow and learn.

The paper is organized as follows. Section 2 introduces the institutional setting, data and empirical strategy to study how school and non-school days affect socio-emotional skills. Section 3 presents the main result, the heterogeneity analysis and the survey evidence. Finally, Section 4 summarizes the results and concludes.

2 Institutional setting, data, and empirical strategy

2.1 Institutional setting

The Swedish education system comprises a compulsory primary education spanning ages 7 to 16, followed by an optional secondary school program from age 16 to 19. All students born within the same calendar year begin primary school together in August of the year they turn seven. Secondary education is divided into two distinct tracks: a two-year vocational program focused on practical training and a three- or four-year academic program designed to prepare students for university. Most of those in vocational programs had already completed their education prior to enlistment and are therefore excluded. Our study focuses on young men enrolled in academic programs to ensure meaningful variation in exposure to schooling. At time of enlistment these individuals are either pursuing the spring semester of 11th grade or the fall semester of 12th grade.

All males were required to enlist in the year they turned 18 and undergo a two-day process that included administrative paperwork, health screenings, a battery of cognitive tests and psychological assessments.[4] The institutional setting creates random variation in enlistment timing and, consequently, in the timing of socio-emotional skill assessment. The military's assignment

[4]Exceptions include people with severe disabilities, those in prison, individuals institutionalized due to mental disorders, non-citizens, or those living abroad.

of enlistment dates relied on a legislation (Statute 1991:726, paragraph 6) whereby each parish was required to provide the name, birthdate, and address of all eligible men in their jurisdiction the year prior to enlistment. Some enlistment offices also considered expected graduation dates to manage capacity constraints. The goal of the military was to have people enlist close to their 18th birthday, but faced logistical constraints. For example, the military coordinated transportation where necessary, purchasing blocks of train tickets or arranging charter busses, and operated six regional enlistment centers, each responsible for a designated geographical area. Due to capacity limits and seasonal closures (e.g., over weekends, spring, fall, summer and Christmas breaks), there was unavoidable variation in the exact timing of enlistment relative to individuals' 18th birthdays.

Once an enlistment date had been decided, an enlistment order was sent to each individual as a certified letter. Importantly, enlistees had strong incentives to comply with their assigned date, as failure to appear could result in fines or imprisonment.

2.2 Data

We use administrative register data from the Swedish National Service Administration, covering all males who enlisted in the military between 1980 and 1994. We also integrate administrative records from Statistics Sweden, enabling us to obtain detailed demographic and background information on enlistees. These additional variables include parental education levels as of 1999, and father's earnings in 1980 when most parents were between the ages of 27 and 60. Furthermore, for a subset of cohorts, we use data on 9th-grade exit exam grades in mathematics and Swedish as pre-determined variables to verify the randomness of enlistment assignment.

Assessment of socio-emotional skills In the final stage of the enlistment process, conscripts underwent a semi-structured psychological interview lasting approximately 20-30 minutes, aimed at identifying the type of service for which they are best (and least) suited. These interviews are conducted by trained psychologists, with extensive experience in evaluating young recruits. The assessment focuses primarily on behavioral responses, emphasizing what the conscript does rather than their thoughts or self-perceptions. These measures have been validated and shown to predict outcomes later in life, such as earnings, providing evidence that they do not merely capture noise or transitory states; rather, they reflect stable and meaningful individual differences that have long-term predictive power (Lindqvist and Vestman, 2011; Edin et al., 2022).

This assessment aims to measure four key dimensions of socio-emotional skills:

1. *Social maturity* encompasses extroversion, the ability to form and maintain friendships, personal responsibility, and independence.

2. *Emotional stability* reflects the ability to manage nervousness, tolerate stress, and regulate anxiety.

3. *Psychological energy* captures perseverance, goal fulfillment, and the ability to maintain focus on tasks.

4. *Intensity* measures the individual's capacity to self-motivate without external pressure and the frequency and engagement in leisure activities.

Each of these dimensions is scored on a 1 to 5 scale, where a score of 3 represents the typical functioning level of an 18-year-old male in the respective domain (see also Mood et al., 2012). These measures can also related to conscientiousness (psychological energy), engagement with others (social maturity), and locus of control/low neuroticism (emotional stability) (see also Almlund et al. 2011 and Woessmann 2024).

Beyond these four dimensions, the psychologist also provides an overall assessment of socio-emotional skill score using a Stanine scale ranging from 1 to 9. This global assessment is not a direct function of the four individual skills but represents a holistic clinical judgment incorporating various psychological factors. These assessments were used to determine military assignments, along with cognitive skills and health assessment (Carlsson et al., 2015; Hermo et al., 2022). We standardize the different measures of socio-emotional skills to have mean 0 and standard deviation 1.

School and non-school days Using official school calendars from 1979 to 1994, we precisely calculate the number of school and non-school days each individual experienced between their 18th birthday and their enlistment date. In Sweden, the academic year consists of approximately 180 school days and 185 non-school days, a structure comparable to that of the United States and other European countries (Eurydice Network, 2024). The longest consecutive non-school periods in Sweden include a 10-week summer vacation and a 2.5-week Christmas break. Additionally, there are two week-long breaks during the spring semester: a winter break in February, which varies by region, and an Easter break, which varies both regionally and across years. Ordinary weekends and sporadic public holidays further contribute to non-school days. When computing the number of school and non-school days, we account for these geographical and chronological variations to ensure accurate measurement.

2.3 Empirical strategy

We estimate Equation (1) to study the effect of school and non-school days, measured in hundreds of days, on different dimensions of socio-emotional skills:

$$Y_{itp} = \beta_0 + \beta_1 S_{itp} + \beta_2 NS_{itp} + g(B_i) + \theta_p + \pi G_i + X'_{itp}\delta + \epsilon_{itp}. \tag{1}$$

Y_{itp} is the socio-emotional skill outcome for individual i, measured at enlistment date t, where p denotes the individual's parish of residence (a small geographic area). S_{itp} and NS_{itp} denote, respectively, the number of school days and non-school days relative to individual

i's 18th birthday, divided by 100, computed using the school calendar applicable to parish p, thereby capturing regional variation. B_i is individual i's date of birth, θ_p denotes parish fixed effects, G_i is an indicator for expected graduation in the year the student turns 18, X_{itp} is a vector of indicators for the full interaction of enlistment office, enlistment year, and school program, and ϵ_{itp} is the residual term. We model birth date flexibly through $g(B_i)$ by including birth-year fixed effects and indicators for each birthday week within the year.

3 Schooling and socio-emotional skills

3.1 Variation and the validity of quasi-random variation

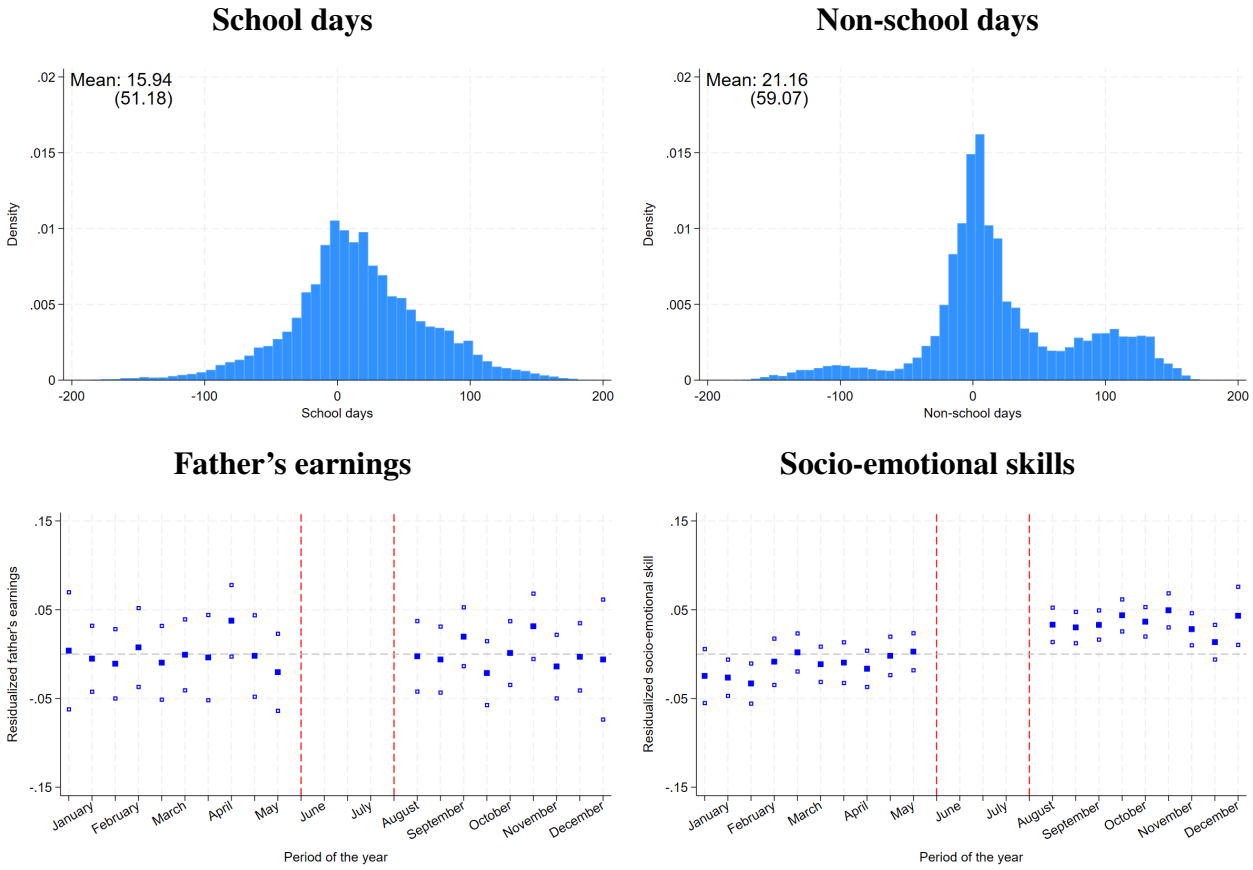
We begin by documenting the variation in the number of school and non-school days, shown in the top panel of Figure 1. Among individuals currently enrolled in academic programs, the standard deviation in the number of school days at the time of enlistment relative to their 18th birthday is 51 days, while the corresponding standard deviation for non-school days is 59 days. Controlling for the variables used by the military in scheduling the enlistment date: date of birth, parish, and expected graduation date, in a linear regression, the standard deviation of the residual number of school and non-school days is 39 and 46 days, respectively, see Appendix Figure A1. Hence, substantial variation remains even after flexibly controlling for the full set of fixed effects described in Section 2.3.

Conditional on the variables used by the military in scheduling the enlistment date the number of school and non-school days should be as good as random, and therefore unrelated to predetermined characteristics. This condition is important because any residual correlation with background factors that predict socio-emotional skills would threaten identification. We assess the validity of this quasi-random variation by examining three variables that are predictive of non-cognitive skills: 9th-grade math and Swedish grades, parental education, and parental earnings.

As a first check, the bottom panel of Figure 1 plots father's earnings by time of enlistment over the year. We residualize earnings in the same way as for school days, i.e., by controlling for the full set of controls as described above in a linear regression, and then average the residuals within 15-day windows. The figure shows no systematic variation over the year, with the summer gap reflecting the suspension of enlistment testing, and Appendix Figure A2 documents analogous patterns for the remaining covariates. More formally, Table 1 shows that, when we condition on the variables used by the military, school days and non-school days are unrelated to predetermined individual and family characteristics.

Whereas predetermined characteristics remain flat over the assessment year, socio-emotional skills vary systematically over the school year. To illustrate this pattern, we apply the same procedure as above. We residualize socio-emotional skills using the full set of controls and fixed effects described in Section 2.3 and then average the residuals within 15-day windows. The

Figure 1: Variation in school and non-school days



Note. The top figures present histograms for the variation in school and non-school days with respect to the 18th birthday between 1980 and 1994 (the note of the figures reports the mean and standard deviation). The bottom figures are obtained as follows. First, we residualize the variable by flexibly controlling for the full set of fixed effects described in Section 2.3. Second, we average the resulting residuals over 15-day windows and plot them over the year together with the corresponding 95% confidence intervals. No observations are recorded in the summer months as enlistment was suspended.

resulting pattern is shown in the bottom-right panel of Figure 1. Socio-emotional skills rise around school breaks, and this increase closely mirrors the pattern in non-school days shown in Appendix Figure A1, consistent with the interpretation that time spent outside school fosters their development. This pattern is also evident across the sub-dimensions of socio-emotional skills, with the exception of intensity (Appendix Figure A3).

Table 1: Conditional randomness

	School days		Non-school days	
	(1)	(2)	(3)	(4)
High math grades	-0.010**	-0.002	-0.004	0.000
	(0.004)	(0.004)	(0.005)	(0.004)
High Swedish grades	0.022***	-0.005	0.026***	-0.007*
	(0.004)	(0.004)	(0.005)	(0.004)
Highly educated mother	-0.006**	0.002	-0.008**	0.003
	(0.003)	(0.002)	(0.004)	(0.003)
Highly educated father	0.001	0.003	-0.003	0.002
	(0.003)	(0.003)	(0.004)	(0.003)
High father's earnings	0.029***	0.003	0.030***	0.003
	(0.003)	(0.003)	(0.004)	(0.003)
Observations	128617	128617	128617	128617
R^2	0.002	0.419	0.002	0.395
F-test	28.224	1.116	28.005	1.154
P-value	0.000	0.347	0.000	0.320
Controls	No	Yes	No	Yes

Note. The table presents a test for the conditional randomness. Odd columns do not include controls, while even columns do. Controls include the parish dummies, birth year dummies, dummies for each birthday week within a year, and the complete interaction of enlistment office, enlistment year, and school program. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

3.2 Main result

This section shows how age, and then age decomposed into school and non-school days, affect the development of socio-emotional skills in young adulthood. Table 2 reports the estimates for age in Panel A and for school and non-school days in Panel B for the composite measure (Column 1) and for four sub-dimensions (Columns 2-5). We begin with Panel A, which shows that socio-emotional skills increase with age. This result provides causal evidence of a maturation effect, complementing the prior correlational evidence from psychology which shows that socio-emotional skills are not fixed, but continue to evolve throughout adolescence (Roberts et al., 2006; Bleidorn et al., 2022). For comparison, age-related maturation has also been shown to increase cognitive skills by 0.047 standard deviations per year (Carlsson et al., 2015), suggesting that the developmental effect we document for socio-emotional skills is of a similar order of magnitude.

To better understand the channels behind this effect, Panel B of Table 2 decomposes the age effect into school and non-school days. Two main findings emerge. Non-school days foster the development of socio-emotional skills, with varying effects across skill domains. On the other hand, school days have a null effect on socio-emotional skill development. This contrasts with the literature on cognitive skills, where schooling has been shown to be productive (Carlsson et al., 2015; Aucejo and Romano, 2016).

For example, Column 1 shows that 100 non-school days increase socio-emotional skill by 0.07 standard deviation (SD).[5] This effect is economically meaningful. A back-of-the-envelope

[5]In Table 2, age, school days, and non-school days cannot be included simultaneously because they are mechanically collinear. Appendix Table A4 therefore reports two equivalent re-parameterizations: Panel A includes age and school days, while Panel B includes age and non-school days. Together, the two specifications show that day composition, and in particular exposure to non-school days, has a systematic and statistically significant effect on socio-emotional skills.

Table 2: Schooling and socio-emotional skills

Panel A:	Socio-emotional skills	Sub-dimensions			
		Social maturity	Emotional stability	Psychological energy	Intensity
	(1)	(2)	(3)	(4)	(5)
Age in days/100	0.036***	0.047***	0.035***	0.038***	0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
Controls	Yes	Yes	Yes	Yes	Yes

Panel B:	Socio-emotional skills	Sub-dimensions			
		Social maturity	Emotional stability	Psychological energy	Intensity
	(1)	(2)	(3)	(4)	(5)
School days/100	-0.005	0.013	-0.027	0.025	0.019
	(0.018)	(0.019)	(0.019)	(0.019)	(0.020)
Non-school days/100	0.071***	0.075***	0.086***	0.048***	0.001
	(0.015)	(0.016)	(0.016)	(0.016)	(0.017)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
Controls	Yes	Yes	Yes	Yes	Yes

Note. The table presents estimates of the effect of age in days, divided by 100, on socio-emotional skills (Column 1) and its sub-dimensions (Columns 2-5) in Panel A, and estimates of the effect of school and non-school days, divided by 100, on socio-emotional skills (Column 1) and its sub-dimensions (Columns 2-5) in Panel B. All specifications are based on equation (1) and include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

calculation, drawing on estimated returns to socio-emotional skills (Edin et al., 2022), suggests that an additional 100 non-school days would increase earnings by about 2 percent. Exploring the sub-dimensions of socio-emotional skills, the effect is stronger for social maturity and emotional stability than for psychological energy and intensity. For example, 100 non-school days increase social maturity by 0.07 SD and emotional stability by 0.09 SD. In contrast, the estimated impact on psychological energy is more modest at 0.05 SD, while no effect on intensity is found. These results highlight that the non-school environment plays a more prominent role in shaping skills related to interpersonal behavior and emotional regulation than those related to internal drive or reactivity.

As shown in the bottom-right panel of Figure 1, socio-emotional skills increase over the summer break. We can attempt to disentangle whether the estimated effect of non-school days is driven by this period by distinguishing between summer-break days and other non-school days. Although the data does not allow us to estimate the effect of each individual holiday with precision, we can decompose non-school days into summer vacation days and other non-school days. The estimates are presented in Appendix Table A5, showing that the effect is not driven solely by the summer, in fact, the coefficients are much larger for non-summer days.[6]

Appendix Table A7 presents several robustness checks of the estimates in Table 2. The estimates are robust to clustered standard errors at enlistment office × enlistment day × munic-

[6] Appendix Table A6 shows that summer days are also balanced across pre-determined characteristics.

ipality (Panel A) and to measuring school and non-school days as absolute counts since January 1 for each individual, instead of relative to his 18th birthday (Panel B). They are also not driven by outliers or unusually low scores, which may partly reflect low motivation to join the military: median regression yields similar estimates (Panel C), and the results remain qualitatively unchanged when restricting the sample to individuals with socio-emotional scores between 3 and 9 (Panel D).

We also test whether the estimated effect reflects temporary holiday relaxation rather than skill development. The evidence suggests it does not. The assessment is designed to capture relatively stable skills and predict later-life outcomes (Lindqvist and Vestman, 2011; Edin et al., 2022); scores do not vary systematically by weekday for the assessment (Appendix Table A8); sibling correlations in residualized scores remain stable over the year (Appendix Figure A9); estimates are unchanged when including weekday fixed effects (Panel E of Appendix Table A7); and Appendix Table A10 shows no evidence of non-linearities. Finally, Appendix Figure A11 reports a placebo test in which school and non-school days are randomly reassigned across individuals. Re-estimating the main specification in 100 simulated datasets yields coefficients centered around zero and statistically indistinguishable from a null effect, suggesting that the main estimate is unlikely to reflect chance or spurious correlations.

3.3 Mechanisms

Having established that our main findings are robust across a range of alternative specifications and validity checks, we next turn to exploring why non-school days affect socio-emotional skills. Understanding the mechanisms behind these effects is important, as the time students spend outside of school encompasses a wide range of environments that can influence their development in heterogeneous ways. To explore some plausible mechanisms, we examine whether the effect of non-school days on socio-emotional skills varies systematically by parental background, type of academic program, and season.

Table 3 presents heterogeneity estimates for the effects of school and non-school days on socio-emotional skills by parental socio-economic status (SES). Socio-economic status is measured using both parental education and parental income. While parental education is more likely to capture intergenerational transmission of skills, parental income proxies for material resource constraints. Reassuringly, the results are qualitatively similar across these alternative SES definitions.

For example, an additional 100 non-school days increases socio-emotional skills by about 0.024-0.036 SD for low-SES students defined by parental earnings, compared to roughly 0.101-0.090 SD for high-SES students; these differences are statistically significant (p-value $= 0.001$ and p-value $= 0.019$, respectively). Similar patterns of heterogeneity also emerge with respect to fathers' and mothers' income and education, as well as across sub-dimensions of socio-emotional skills (Appendix Tables A12 and A13). Overall, the results point to meaningful

Table 3: Heterogeneity by socio-economic status: schooling and socio-emotional skills

	Socio-emotional skills	
Family	Earnings	Education
	(1)	(2)
Low × School days/100	0.032	0.033
	(0.024)	(0.024)
Low × Non-school days/100	0.024	0.036*
	(0.020)	(0.020)
High × School days/100	-0.026	-0.025
	(0.023)	(0.023)
High × Non-school days/100	0.101***	0.090***
	(0.020)	(0.019)
Observations	107841	107841
R^2	0.077	0.077
P-value non-school L=H	0.001	0.019
Controls	Yes	Yes

Note. The table presents the heterogeneity estimates of the effect of school and non-school days, divided by 100, on socio-emotional skills by socio-economic status. Family's earnings come from the father and mother's earnings in the year 1980, when most parents were between the ages of 27 and 60. Parents' education defined as max education of both parents. Low and high are defined by the median for earnings. High education defined as at least 12 years of schooling. All specifications are based on equation (1), allowing the effects of the main regressors to vary with the indicator for socio-economic status, and include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

heterogeneity by socio-economic background, concentrated in the returns to non-school time rather than school exposure. In contrast, the effect of school days is generally small and imprecisely estimated. For comparison, Carlsson et al. (2015) find no SES-based heterogeneity in the effect of school days on cognitive skills, suggesting that socio-economic differences may be more salient for socio-emotional skill development outside school than for cognitive skill development within school.

This pattern stands in contrast to the other heterogeneity analyses, where we find little evidence of differential effects. We examine heterogeneity by type of academic program, distinguishing between STEM and non-STEM programs, by season of assessment, and by birth cohort. Panel A of Appendix Table A14 shows no significant differences between STEM and non-STEM programs, consistent with the main results in Table 2, which show that school days have no measurable effect on socio-emotional skills. Panel B of Appendix Table A14 splits the sample into October-March and April-September assess whether the results are driven by seasonal confounds, such as daylight, weather, or season-specific assessment conditions. We find very similar effects of non-school days across seasons, suggesting that the main results are unlikely to be explained by seasonal factors. Finally, Panel C shows no meaningful differences across earlier and later birth cohorts. Taken together, these findings suggest that SES is an important dimension along which the effect of non-school time varies, whereas the results are otherwise remarkably stable across programs, seasons, and cohorts.

Taken together, these results suggest that high-SES individuals are more likely to engage in enriching activities outside school – potentially through family environments and extracurricular activities. We therefore turn to additional data to explore how low- and high-SES students spend their time outside of school. Data were drawn from two nationally representative Swedish

surveys: the Level of Living Surveys (LNU) conducted in 1981 and 1991, and the Survey of Living Conditions (ULF) from 1990. The LNU, administered by the Swedish Institute for Social Research (SOFI), is a long-running panel and cross-sectional study that collects detailed information on individuals' living standards. The ULF, conducted by Statistics Sweden, provides complementary cross-sectional data on similar dimensions of living standards.

Table 4: Non-school activities by socio-economic status, LNU and ULF Surveys (1981-1991)

	LNU 1981/1991			ULF 1990		
	Low (1)	High (2)	Diff (3)	Low (4)	High (5)	Diff (6)
Holiday travels 1	0.62	0.76	0.14***	0.66	0.86	0.20***
Holiday travels 2	0.25	0.40	0.15***	–	–	
Friends visit	0.64	0.65	0.01	0.79	0.82	0.03
Go to cinema	0.28	0.29	0.01	0.56	0.74	0.18***
Go to theater	0.45	0.58	0.13***	0.26	0.38	0.12*
Go out dancing	0.29	0.31	0.02	0.76	0.75	-0.01
Read books	0.64	0.76	0.12***	0.22	0.35	0.13**
Play instrument	0.22	0.32	0.10***	0.25	0.35	0.10
Do sports 1	0.69	0.76	0.07*	0.63	0.77	0.14**
Do sports 2	0.48	0.56	0.08*	–	–	
Share high SES	0.52	0.48		0.50	0.50	
Observations		540			190	

Note. The table presents survey evidence on non-school activities by socio-economic status (using parental education defined as at least 12 years of schooling) from the Level of Living Surveys (LNU) conducted in 1981 and 1991, and the Survey of Living Conditions (ULF) in 1990. For the Level of Living Survey (LNU) we combine the years 1981 (N=308) and 1991 (N=232). "Holiday Travels 1" and "Holiday Travels 2" are indicators for having taken a holiday trip, and a holiday trip outside Scandinavia in 1990, respectively. The remaining variables are indicators for leisure activities: "Have friends visit," "Go to cinema," and "Go out dancing" equal 1 if the respondent answered "yes, often"; "Go to theater," "Read books," and "Play instrument" equal 1 if the respondent answered "yes." "Do sports 1" and "Do sports 2" equal 1 if the respondent reported exercising at least once a week or several times a week, respectively. All variables equal 0 otherwise. (*** $p<0.01$, ** $p<0.05$, * $p<0.1$).

To measure non-school leisure activities, we use a set of comparable survey items, each coded as a binary indicator. These include, for example, participation in holiday travel ("Did you go for a holiday trip in 1990?") and holiday travel outside Scandinavia; social and cultural activities, such as having friends visit, going to the cinema, going to the theater, concerts, museums, or exhibitions, and going out dancing; and individual activities, including reading books, playing a musical instrument, and doing sports (at least once a week or several times a week). Together, these variables provide a multifaceted picture of leisure participation and cultural engagement across social groups.

Table 4 documents a consistent pattern across data sets: high-SES youth are more likely to engage in enriching leisure activities, including music, theater, reading, travel, and sports, which may contribute to the development of socio-emotional skills (e.g., Coleman, 1968). These differences point to SES gradients in access to enriching out-of-school activities, suggesting that out-of-school learning environments can play an important role in skill development.[7]

[7] Hanushek et al. (2025) show using PIAAC data that out-of-school learning can also affect cognitive skill development.

4 Conclusion

This paper examines the causal effect of school and non-school days on the development of socio-emotional skills in 18-year-old men in Sweden, using quasi-random variation in a psychologist-administered socio-emotional assessment. We find that non-school days have a positive effect on the development of socio-emotional skills, while schooling has a null effect on their development. The heterogeneity analysis reveals that non-school days are more productive for high-SES students, suggesting that time out of school may enhance inequality in socio-emotional skills. High-SES students can benefit more from non-school days consistent with greater access to a stimulating family environment as documented through novel survey evidence. In contrast, students from disadvantaged backgrounds often rely on schools for structure, learning resources, and adult guidance. Stretches without school can leave them idle or in less educationally conducive settings.

These findings have implications for education policy, including debates about the design of school calendars and out-of-school environments. The evidence suggests that marginal variation in non-school days around age 18 affects socio-emotional skills, with potential implications for the joint design of school calendars and out-of-school environments, especially if cognitive and socio-emotional skills respond differently (Carlsson et al., 2015). This requires finding a balance between giving breaks that foster socio-emotional development, versus protecting instructional time that is important for learning – especially for those who depend on school as the great equalizer.

References

Agüero, J. M. and T. Beleche (2013). Test-Mex: Estimating the effects of school year length on student performance in Mexico. *Journal of Development Economics 103*, 353–361.

Alan, S., T. Boneva, and S. Ertac (2019). Ever failed, try again, succeed better: Results from a randomized educational intervention on grit. *The Quarterly Journal of Economics 134*(3), 1121–1162.

Alan, S. and S. Ertac (2018). Fostering patience in the classroom: Results from randomized educational intervention. *Journal of Political Economy 126*(5), 1865–1911.

Algan, Y., E. Beasley, S. Côté, J. Park, R. E. Tremblay, and F. Vitaro (2022). The impact of childhood social skills and self-control training on economic and noneconomic outcomes: Evidence from a randomized experiment using administrative data. *American Economic Review 112*(8), 2553–2579.

Almlund, M., A. L. Duckworth, J. Heckman, and T. Kautz (2011). Personality psychology and economics. In *Handbook of the Economics of Education*, Volume 4, pp. 1–181. Elsevier.

Ashraf, N., N. Bau, C. Low, and K. McGinn (2020). Negotiating a better future: How interpersonal skills facilitate intergenerational investment. *The Quarterly Journal of Economics 135*(2), 1095–1151.

Atalay, E., P. Phongthiengtham, S. Sotelo, and D. Tannenbaum (2020). The evolution of work in the United States. *American Economic Journal: Applied Economics 12*(2), 1–34.

Aucejo, E. M. and T. F. Romano (2016). Assessing the effect of school days and absences on test score performance. *Economics of Education Review 55*, 70–87.

Autor, D., C. Chin, A. Salomons, and B. Seegmiller (2024). New frontiers: The origins and content of new work, 1940–2018. *The Quarterly Journal of Economics 139*(3), 1399–1465.

Autor, D. H. (2015). Why are there still so many jobs? The history and future of workplace automation. *Journal of Economic Perspectives 29*(3), 3–30.

Belot, M. and D. Webbink (2010). Do teacher strikes harm educational attainment of students? *Labour 24*(4), 391–406.

Blakemore, S.-J. and K. L. Mills (2014). Is adolescence a sensitive period for sociocultural processing? *Annual Review of Psychology 65*(1), 187–207.

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

Burnett, S., C. Sebastian, K. C. Kadosh, and S.-J. Blakemore (2011). The social brain in adolescence: evidence from functional magnetic resonance imaging and behavioural studies. *Neuroscience & Biobehavioral Reviews 35*(8), 1654–1664.

Cahan, S. and N. Cohen (1989). Age versus schooling effects on intelligence development. *Child Development*, 1239–1249.

Carlsson, M., G. B. Dahl, B. Öckert, and D.-O. Rooth (2015). The effect of schooling on cognitive skills. *Review of Economics and Statistics 97*(3), 533–547.

Cipriano, C., M. J. Strambler, L. H. Naples, C. Ha, M. Kirk, M. Wood, K. Sehgal, A. K. Zieher, A. Eveleigh, M. McCarthy, et al. (2023). The state of evidence for social and emotional learning: A contemporary meta-analysis of universal school-based SEL interventions. *Child Development 94*(5), 1181–1204.

Cobb-Clark, D. A., S. C. Dahmann, D. A. Kamhöfer, and H. Schildberg-Hörisch (2024). Schooling and self-control. *Working Paper*.

Coleman, J. S. (1968). Equality of educational opportunity. *Integrated Education 6*(5), 19–28.

Cygan-Rehm, K. (2025). Lifetime consequences of lost instructional time in the classroom: Evidence from shortened school years. *Journal of Labor Economics*.

Deming, D. J. (2017). The growing importance of social skills in the labor market. *Quarterly Journal of Economics 132*(4), 1593–1640.

Deming, D. J. and K. Noray (2020). Earnings dynamics, changing job skills, and STEM careers. *The Quarterly Journal of Economics 135*(4), 1965–2005.

Dinarte-Diaz, L. and P. Egana-delSol (2024). Preventing violence in the most violent contexts: Behavioral and neurophysiological evidence from El Salvador. *Journal of the European Economic Association 22*(3), 1367–1406.

Edin, P.-A., P. Fredriksson, M. Nybom, and B. Öckert (2022). The rising return to noncognitive skill. *American Economic Journal: Applied Economics 14*(2), 78–100.

Entorf, A. K. and T. J. Dohmen (2025). The effect of compulsory education on non-cognitive skills: Evidence from low-and middle-income countries. *Economics of Education Review 107*, 102654.

Eurydice Network (2024). Organisation of the single structure education in Sweden. Accessed July 14, 2025.

Hanushek, E. A., L. Kinne, F. Witthöft, and L. Woessmann (2025). Age and cognitive skills: Use it or lose it. *Science Advances 11*(10), eads1560.

Heckman, J., R. Pinto, and P. Savelyev (2013). Understanding the mechanisms through which an influential early childhood program boosted adult outcomes. *American Economic Review 103*(6), 2052–2086.

Hermo, S., M. Päällysaho, D. Seim, and J. M. Shapiro (2022). Labor market returns and the evolution of cognitive skills: Theory and evidence. *The Quarterly Journal of Economics 137*(4), 2309–2361.

Hutton, R. and M.-J. Sepúlveda (2020). Shaping summertime experiences: Opportunities to promote healthy development and well-being for children and youth. *National Academies Press*.

Jackson, C. K., S. C. Porter, J. Q. Easton, A. Blanchard, and S. Kiguel (2020). School effects on socioemotional development, school-based arrests, and educational attainment. *American Economic Review: Insights 2*(4), 491–508.

Jacob, B., L. Lefgren, and E. Moretti (2007). The dynamics of criminal behavior: Evidence from weather shocks. *Journal of Human Resources 42*(3), 489–527.

Jaume, D. and A. Willén (2019). The long-run effects of teacher strikes: evidence from Argentina. *Journal of Labor Economics 37*(4), 1097–1139.

Jokela, M., T. Pekkarinen, M. Sarvimäki, M. Terviö, and R. Uusitalo (2017). Secular rise in economically valuable personality traits. *Proceedings of the National Academy of Sciences 114*(25), 6527–6532.

Kuhfeld, M., J. Soland, B. Tarasawa, A. Johnson, E. Ruzek, and J. Liu (2020). Projecting the potential impact of COVID-19 school closures on academic achievement. *Educational Researcher 49*(8), 549–565.

Leuven, E., M. Lindahl, H. Oosterbeek, and D. Webbink (2010). Expanding schooling opportunities for 4-year-olds. *Economics of Education Review 29*(3), 319–328.

Lindqvist, E. and R. Vestman (2011). The labor market returns to cognitive and noncognitive ability: Evidence from the Swedish enlistment. *American Economic Journal: Applied Economics 3*(1), 101–128.

Mood, C., J. O. Jonsson, and E. Bihagen (2012). Socioeconomic persistence across generations: cognitive and noncognitive processes. *Russell Sage Foundation*.

Roberts, B. W., K. E. Walton, and W. Viechtbauer (2006). Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. *Psychological Bulletin 132*(1), 1.

Šimunović, P. K. (2024). Education increases patience: Evidence from a change in a compulsory schooling law. *Economics & Human Biology 53*, 101375.

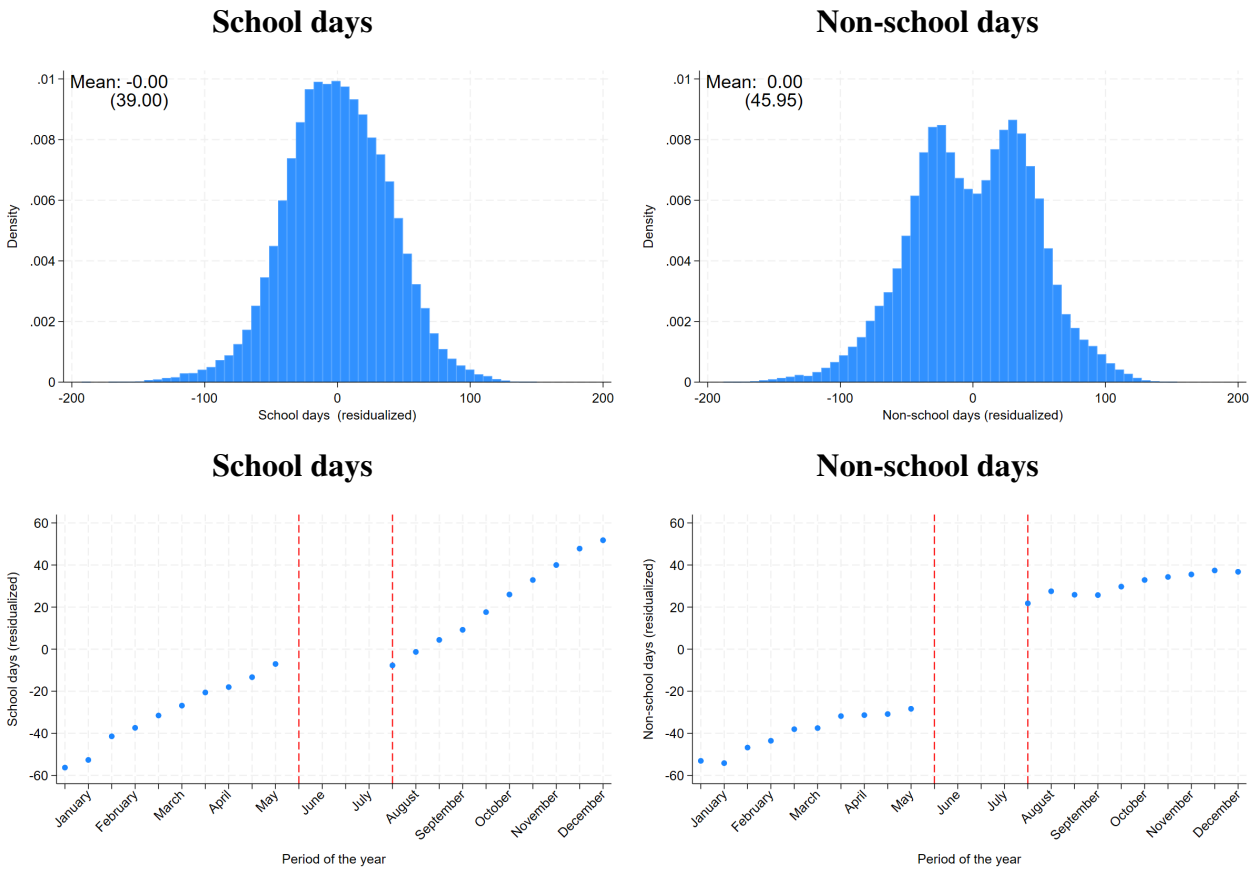
Sorrenti, G., U. Zölitz, D. Ribeaud, and M. Eisner (2024). The causal impact of socio-emotional skills training on educational success. *Review of Economic Studies*, rdae018.

Woessmann, L. (2024). Skills and earnings: A multidimensional perspective on human capital. *Annual Review of Economics 17*.

Appendices to "Days In and Out of High School and Young Adults' Socio-emotional Skills"

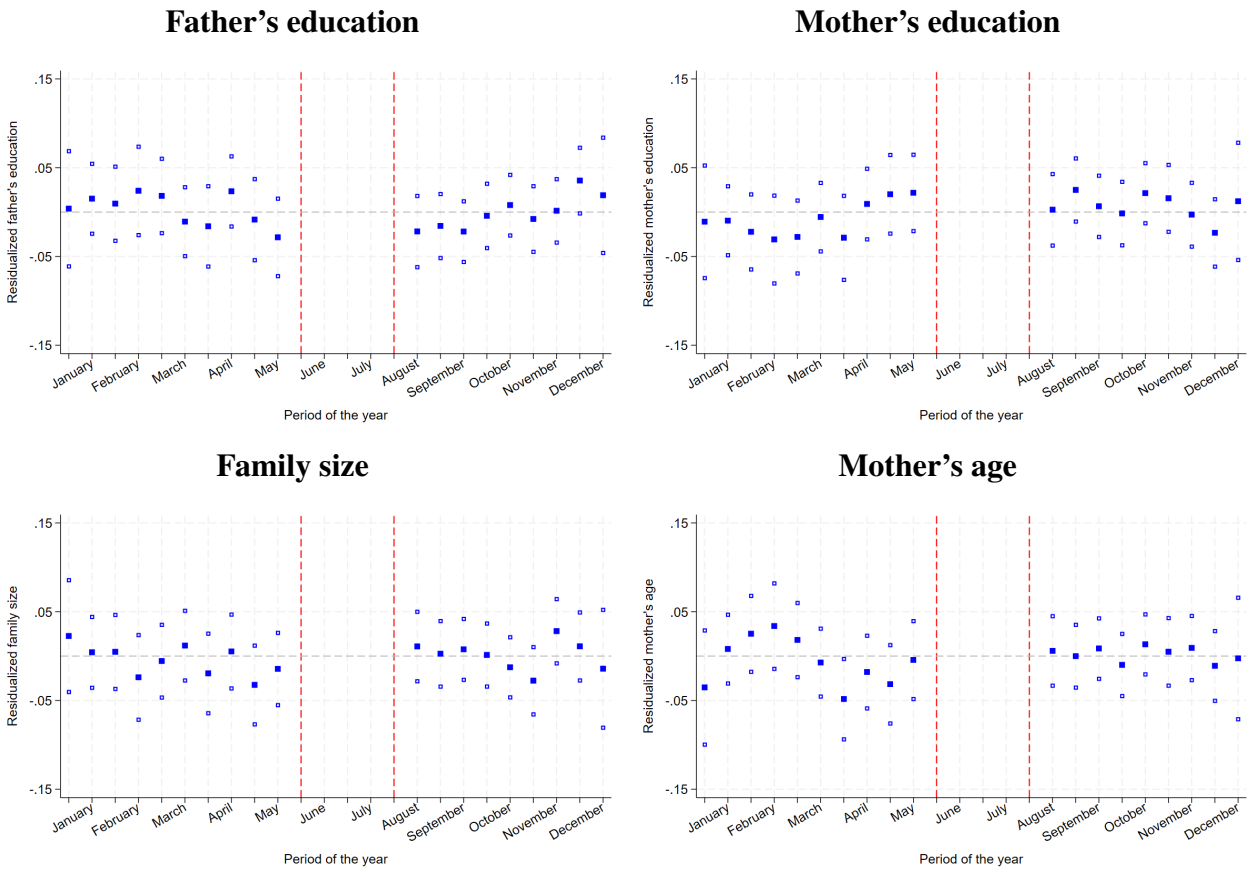
A Appendix figures and tables

Figure A1: Variation in school and non-school days (residualized)



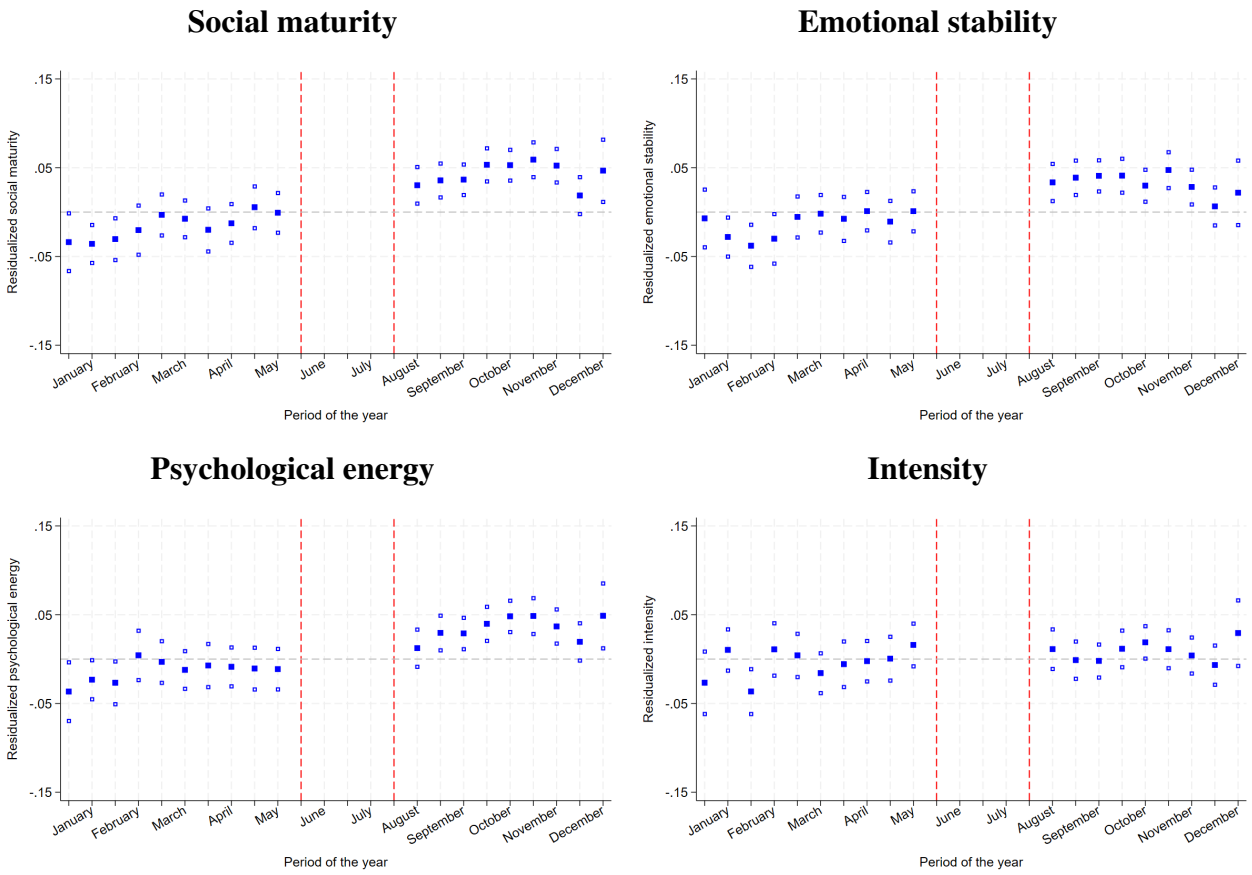
Note. The top figures present histograms for the residualized variation in school and non-school days with respect to the 18th birthday between 1980 and 1994. The note of the figures reports the mean and standard deviation. The bottom figures present the residualized variation in school and non-school days with respect to the 18th birthday over the year between 1980 and 1994. School and non-school days are residualized by the parish dummies, birth year dummies, dummies for each birthday week within a year, and the complete interaction of enlistment office, enlistment year, and school program.

Figure A2: Balance: pre-determined characteristics



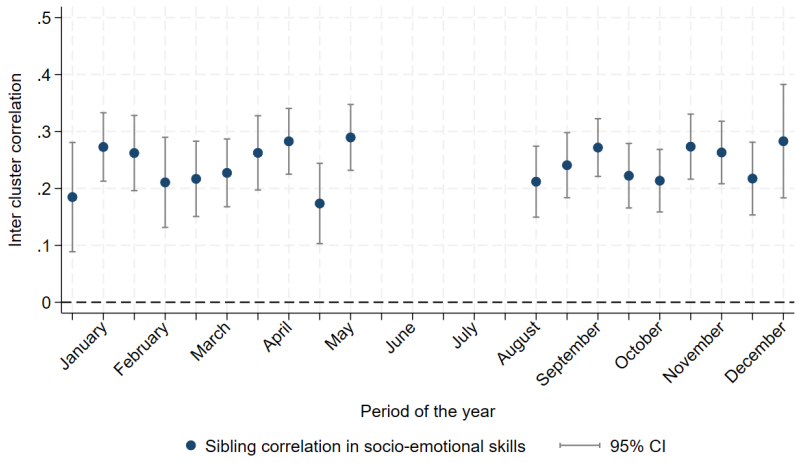
Note. The figures present some balance checks. They are obtained as follows. First, we residualize the variable by flexibly controlling for the full set of fixed effects described in Section 2.3. Second, we average the resulting residuals over 15-day windows and plot them over the year together with the corresponding 95% confidence intervals. No observations are recorded in the summer months as enlistment was suspended.

Figure A3: Residualized socio-emotional skills (biweekly averages)



Note. The figures present the non-parametric estimates of school and non-school days on the four dimensions of socio-emotional skills. The figure for each socio-emotional skills is obtained as follows. First, we residualize the variable by flexibly controlling for the full set of fixed effects described in Section 2.3. Second, we average the resulting residuals over 15-day windows and plot them over the year together with the corresponding 95% confidence intervals. No observations are recorded in the summer months as enlistment was suspended.

Figure A9: Sibling correlation in socio-emotional skills by bi-weeks



Note. The figure presents the sibling correlation (intercluster correlation) in (residualized) skills by bi-week over the year. Skills are residualized by the parish dummies, birth year dummies, dummies for each birthday week within a year, and the complete interaction of enlistment office, enlistment year, and school program.

Table A4: Schooling and socio-emotional skills: controlling for age

Panel A:					
	Socio-emotional skills	Sub-dimensions			
		Social maturity	Emotional stability	Psychological energy	Intensity
	(1)	(2)	(3)	(4)	(5)
School days/100	-0.076**	-0.062*	-0.113***	-0.023	0.019
	(0.032)	(0.034)	(0.034)	(0.035)	(0.037)
Age in days/100	0.071***	0.075***	0.086***	0.048***	0.001
	(0.015)	(0.016)	(0.016)	(0.016)	(0.017)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
Controls	Yes	Yes	Yes	Yes	Yes
Panel B:					
	Socio-emotional skills	Sub-dimensions			
		Social maturity	Emotional stability	Psychological energy	Intensity
	(1)	(2)	(3)	(4)	(5)
Non-school days/100	0.076**	0.062*	0.113***	0.023	-0.019
	(0.032)	(0.034)	(0.034)	(0.035)	(0.037)
Age in days/100	-0.005	0.013	-0.027	0.025	0.019
	(0.018)	(0.019)	(0.019)	(0.019)	(0.020)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
Controls	Yes	Yes	Yes	Yes	Yes

Note. Panel A presents the estimates from the effect of school and age days, divided by 100, on socio-emotional skills, estimating the effect of replacing a non-school day with a school day while holding total age constant. Panel B presents the estimates from the effect of non-school and age days, divided by 100, on socio-emotional skills, estimating the effect of replacing a school day with a non-school day while holding total age constant. All specifications are based on equation (1) include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A5: Schooling and socio-emotional skills (school days, non-school days without summer, and summer days)

	Socio-emotional skills	Sub-dimensions			
		Social maturity	Emotional stability	Psychological energy	Intensity
	(1)	(2)	(3)	(4)	(5)
School days/100	-0.060*	-0.037	-0.115***	0.025	-0.031
	(0.033)	(0.035)	(0.036)	(0.036)	(0.038)
Non-school days (no summer)/100	0.183***	0.179***	0.266***	0.050	0.104
	(0.059)	(0.063)	(0.064)	(0.064)	(0.068)
Summer days /100	0.067***	0.071***	0.079***	0.048***	-0.004
	(0.015)	(0.016)	(0.016)	(0.016)	(0.017)
Observations	127292	119130	119352	119345	119338
Controls	Yes	Yes	Yes	Yes	Yes

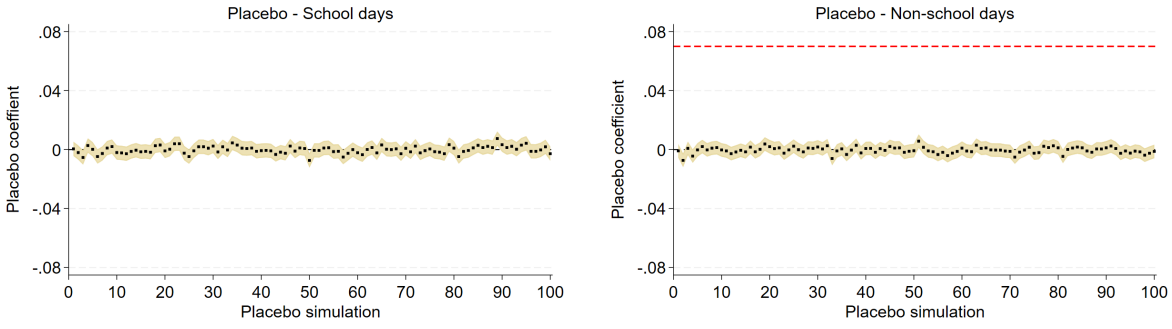
Note. The table presents the estimates of the effect of school, summer days and non-school (excluding the summer) days, divided by 100, on socio-emotional skills. All specifications are based on equation (1), allowing for separate effects of summer days and non-school days, divided by 100, outside the summer period, and include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A6: Conditional randomness: summer and non-school (without summer) days

	Non-school days (without summer)		Summer days	
	(1)	(2)	(3)	(4)
High math grades	-0.005**	-0.001	0.001	0.002
	(0.003)	(0.002)	(0.004)	(0.003)
High Swedish grades	0.013***	-0.002	0.013***	-0.005*
	(0.003)	(0.002)	(0.004)	(0.003)
Highly educated mother	-0.002	0.002	-0.006***	0.001
	(0.002)	(0.001)	(0.002)	(0.002)
Highly educated father	-0.001	0.001	-0.003	0.001
	(0.002)	(0.001)	(0.002)	(0.002)
High father's earnings	0.014***	0.001	0.016***	0.002
	(0.002)	(0.001)	(0.002)	(0.002)
Observations	128617	128617	128617	128617
R^2	0.002	0.427	0.002	0.415
F-test	24.772	1.373	24.614	1.265
P-value	0.000	0.194	0.000	0.250
Controls	No	Yes	No	Yes

Note. The table presents the conditional randomness test. Odd columns do not include controls, while even columns do. Controls include the parish dummies, birth year dummies, dummies for each birthday week within a year, and the complete interaction of enlistment office, enlistment year, and school program. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Figure A11: Placebo simulations: schooling and socio-emotional skills



Note. These figures present the placebo tests for socio-emotional, where a random number of school days is assigned to every individual. This placebo simulation is repeated 100 times. The red dashed line presents the estimated coefficient from the true number of school and non-school days.

Table A7: Robustness checks to main estimates

Panel A: clustering standard errors	Socio-emotional skills	Sub-dimensions			
	(1)	Social maturity (2)	Emotional stability (3)	Psychological energy (4)	Intensity (5)
School days/100	-0.005	0.013	-0.027	0.025	0.019
	(0.018)	(0.019)	(0.019)	(0.019)	(0.020)
Non-school days/100	0.071***	0.075***	0.086***	0.048***	0.001
	(0.015)	(0.016)	(0.016)	(0.016)	(0.017)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
Panel B: counting days from January 1 (absolute)	**Socio-emotional skills**	**Sub-dimensions**			
	(1)	Social maturity (2)	Emotional stability (3)	Psychological energy (4)	Intensity (5)
School days (Jan 1)/100	-0.004	0.017	-0.021	0.026	0.021
	(0.018)	(0.019)	(0.019)	(0.019)	(0.020)
Non-school days (Jan 1)/100	0.070***	0.072***	0.082***	0.047***	-0.001
	(0.015)	(0.016)	(0.016)	(0.016)	(0.017)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
Panel C: Median regression	**Socio-emotional skills**	**Sub-dimensions**			
	(1)	Social maturity (2)	Emotional stability (3)	Psychological energy (4)	Intensity (5)
School days/100	-0.002	-0.004	-0.023***	-0.016	0.001
	(0.013)	(0.026)	(0.008)	(0.016)	(0.012)
Non-school days/100	0.075***	0.116***	0.067***	0.083***	0.020*
	(0.011)	(0.024)	(0.007)	(0.014)	(0.010)
Observations	127292	119130	119352	119345	119338
Panel D: individuals with a socio-emotional score above 3	**Socio-emotional skills**	**Sub-dimensions**			
	(1)	Social maturity (2)	Emotional stability (3)	Psychological energy (4)	Intensity (5)
School days/100	0.007	0.022	-0.013	0.024	0.022
	(0.016)	(0.018)	(0.018)	(0.019)	(0.019)
Non-school days/100	0.061***	0.069***	0.081***	0.051***	-0.002
	(0.013)	(0.015)	(0.015)	(0.016)	(0.016)
Observations	120471	112787	112999	112992	112986
R^2	0.074	0.079	0.069	0.058	0.060
Panel E: controlling for weekday FEs	**Socio-emotional skills**	**Sub-dimensions**			
	(1)	Social maturity (2)	Emotional stability (3)	Psychological energy (4)	Intensity (5)
School days/100	-0.004	0.015	-0.026	0.026	0.020
	(0.018)	(0.019)	(0.019)	(0.019)	(0.020)
Non-school days/100	0.071***	0.074***	0.086***	0.048***	0.000
	(0.015)	(0.016)	(0.016)	(0.016)	(0.017)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066

Note. The table presents the robustness checks to the main estimates of the effect of school and non-school days on socio-emotional skills. All specifications include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Panel A presents the cluster standard errors at enlistment office x enlistment day x municipality in parentheses. Panel B presents the estimates of the effect of school and non-school days on socio-emotional skills, counting days from January 1st. Panel C presents the median regression of the effect of school and non-school days on socio-emotional skills. Panel D presents the estimates of the effect of school and non-school days on socio-emotional skills, excluding individuals with a socio-emotional score below 3. Panel E presents the main estimates controlling also for the day of the week fixed effect. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A8: Effect of the weekday on which the test is taken

	Socio-emotional skills		
	(1)	(2)	(3)
Monday	-0.000		
	(0.006)		
Wednesday		0.002	
		(0.006)	
Friday			-0.005
			(0.009)
Observations	127292	127292	127292
R^2	0.073	0.073	0.073
Controls	Yes	Yes	Yes

Note. The table reports estimates of the effect of the weekday of test-taking on socio-emotional skills. All specifications include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A10: Schooling and socio-emotional skills: nonlinearities

	Socio-emotional skills	Sub-dimensions			
	(1)	Social maturity (2)	Emotional stability (3)	Psychological energy (4)	Intensity (5)
School days/100	-0.005	0.020	-0.021	0.013	0.019
	(0.019)	(0.020)	(0.021)	(0.021)	(0.022)
Non-school days/100	0.064***	0.063***	0.076***	0.054***	-0.005
	(0.017)	(0.018)	(0.018)	(0.018)	(0.019)
School days/100 * Non-school days/100	-0.079	-0.034	-0.155*	0.091	-0.066
	(0.080)	(0.085)	(0.087)	(0.087)	(0.092)
School days/100 (squared)	0.058	0.012	0.098*	-0.038	0.048
	(0.049)	(0.051)	(0.053)	(0.053)	(0.056)
Non-school days/100 (squared)	0.042	0.034	0.072*	-0.037	0.035
	(0.036)	(0.038)	(0.039)	(0.039)	(0.041)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066

Note. The table presents the estimates of the effect of school and non-school days, divided by 100, on socio-emotional skills, allowing for nonlinearities. All specifications are based on equation (1), allowing for nonlinearities, and include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A12: Heterogeneity by SES: schooling and socio-emotional skills

	Socio-emotional skills					
	Earnings			Education		
	Family (1)	Mother (2)	Father (3)	Family (4)	Mother (5)	Father (6)
Low × School days/100	0.032	0.015	0.033	0.033	0.033	0.027
	(0.024)	(0.023)	(0.024)	(0.024)	(0.022)	(0.022)
High × School days/100	-0.026	-0.011	-0.027	-0.025	-0.045*	-0.038
	(0.023)	(0.023)	(0.023)	(0.023)	(0.026)	(0.026)
Low × Non-school days/100	0.024	0.044**	0.025	0.036*	0.039**	0.042**
	(0.020)	(0.020)	(0.020)	(0.020)	(0.019)	(0.019)
High × Non-school days/100	0.101***	0.085***	0.101***	0.090***	0.104***	0.101***
	(0.020)	(0.020)	(0.020)	(0.019)	(0.022)	(0.022)
Observations	107841	107841	107841	107841	107841	107841
R^2	0.077	0.077	0.077	0.077	0.077	0.077
P-value non-school L=H	0.001	0.075	0.001	0.019	0.006	0.014
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Note. The table presents the heterogeneity estimates of the effect of school and non-school days, divided by 100, on socio-emotional skills by socio-economic status. Family's earnings come from the father and mother's earnings in the year 1980, when most parents were between the ages of 27 and 60. Parents' education defined as max education of both parents. Low and high are defined by the median for earnings. High education defined as at least 12 years of schooling. All specifications are based on equation (1), allowing the effects of the main regressors to vary with the indicator for socio-economic status, and include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A13: Heterogeneity by SES: schooling and socio-emotional skills

Panel A:	**Social maturity**					
	Earnings			Education		
	Family	Mother	Father	Family	Mother	Father
	(1)	(2)	(3)	(4)	(5)	(6)
Low × School days/100	0.050**	0.021	0.039	0.022	0.025	0.030
	(0.025)	(0.025)	(0.025)	(0.025)	(0.023)	(0.023)
High × School days/100	-0.030	-0.004	-0.021	-0.004	-0.019	-0.027
	(0.025)	(0.025)	(0.025)	(0.025)	(0.027)	(0.028)
Low × Non-school days/100	0.027	0.059***	0.038*	0.064***	0.065***	0.057***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.020)	(0.020)
High × Non-school days/100	0.119***	0.092***	0.110***	0.087***	0.094***	0.105***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.023)	(0.024)
Observations	100514	100514	100514	100514	100514	100514
R^2	0.077	0.077	0.077	0.077	0.077	0.077
P-value non-school L=H	0.000	0.165	0.003	0.346	0.246	0.058
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Panel B:	**Emotional stability**					
	Earnings			Education		
	Family	Mother	Father	Family	Mother	Father
	(1)	(2)	(3)	(4)	(5)	(6)
Low × School days/100	0.024	0.006	0.015	0.017	0.013	0.005
	(0.025)	(0.025)	(0.025)	(0.025)	(0.023)	(0.023)
High × School days/100	-0.059**	-0.044*	-0.051**	-0.051**	-0.069**	-0.058**
	(0.025)	(0.026)	(0.025)	(0.025)	(0.028)	(0.029)
Low × Non-school days/100	0.025	0.049**	0.033	0.041*	0.049**	0.053***
	(0.022)	(0.021)	(0.022)	(0.022)	(0.020)	(0.020)
High × Non-school days/100	0.125***	0.105***	0.118***	0.109***	0.122***	0.117***
	(0.021)	(0.022)	(0.021)	(0.022)	(0.024)	(0.024)
Observations	100719	100719	100719	100719	100719	100719
R^2	0.071	0.071	0.071	0.071	0.071	0.071
P-value non-school L=H	0.000	0.023	0.001	0.006	0.005	0.014
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Panel C:	**Psychological energy**					
	Earnings			Education		
	Family	Mother	Father	Family	Mother	Father
	(1)	(2)	(3)	(4)	(5)	(6)
Low × School days/100	0.032	0.021	0.042	0.043*	0.041*	0.047**
	(0.026)	(0.025)	(0.026)	(0.026)	(0.024)	(0.024)
High × School days/100	0.023	0.034	0.013	0.014	0.006	-0.004
	(0.025)	(0.025)	(0.025)	(0.025)	(0.028)	(0.028)
Low × Non-school days/100	0.022	0.042*	0.023	0.029	0.033	0.024
	(0.022)	(0.022)	(0.022)	(0.022)	(0.020)	(0.020)
High × Non-school days/100	0.070***	0.053**	0.070***	0.064***	0.069***	0.084***
	(0.021)	(0.022)	(0.021)	(0.021)	(0.024)	(0.024)
Observations	100713	100713	100713	100713	100713	100713
R^2	0.062	0.062	0.062	0.062	0.062	0.062
P-val non-school L=H	0.052	0.648	0.053	0.158	0.166	0.020
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Panel D:	**Intensity**					
	Earnings			Education		
	Family	Mother	Father	Family	Mother	Father
	(1)	(2)	(3)	(4)	(5)	(6)
Low × School days/100	0.049*	0.031	0.046*	0.047*	0.050**	0.034
	(0.027)	(0.027)	(0.027)	(0.027)	(0.025)	(0.025)
High × School days/100	0.008	0.025	0.010	0.010	-0.008	0.016
	(0.026)	(0.027)	(0.026)	(0.026)	(0.029)	(0.029)
Low × Non-school days/100	-0.039*	-0.025	-0.030	-0.019	-0.022	-0.012
	(0.023)	(0.023)	(0.023)	(0.023)	(0.022)	(0.021)
High × Non-school days/100	0.017	0.005	0.010	0.000	0.011	-0.004
	(0.022)	(0.023)	(0.022)	(0.022)	(0.025)	(0.025)
Observations	100707	100707	100707	100707	100707	100707
R^2	0.068	0.068	0.068	0.068	0.068	0.068
P-value non-school L=H	0.033	0.249	0.128	0.462	0.220	0.761
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Note. The table presents the heterogeneity estimates of the effect of school and non-school days, divided by 100, on socio-emotional skills by socio-economic status. Family's earnings come from the father and mother's earnings in the year 1980, when most parents were between the ages of 27 and 60. Parents' education defined as max education of both parents. Low and high are defined by the median for earnings. High education defined as at least 12 years of schooling. All specifications are based on equation (1), allowing the effects of the main regressors to vary with the indicator for socio-economic status, and include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A14: Schooling and socio-emotional skills: heterogeneity by STEM, winter and birth cohort

Panel A: heterogeneity by STEM	Socio-emotional skills	Sub-dimensions			
		Social maturity	Emotional stability	Psychological energy	Intensity
	(1)	(2)	(3)	(4)	(5)
Non-STEM track × School days/100	-0.002	0.014	-0.039	0.025	0.023
	(0.023)	(0.025)	(0.025)	(0.025)	(0.027)
STEM track × School days/100	-0.007	0.012	-0.020	0.025	0.016
	(0.020)	(0.021)	(0.022)	(0.022)	(0.023)
Non-STEM track × Non-school days/100	0.053***	0.064***	0.084***	0.038*	-0.017
	(0.020)	(0.021)	(0.022)	(0.022)	(0.023)
STEM track × Non-school days/100	0.083***	0.083***	0.089***	0.055***	0.012
	(0.017)	(0.018)	(0.018)	(0.019)	(0.019)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
P-value non-school S=N	0.176	0.408	0.842	0.493	0.242

Panel B: heterogeneity by winter	Socio-emotional skills	Sub-dimensions			
		Social maturity	Emotional stability	Psychological energy	Intensity
	(1)	(2)	(3)	(4)	(5)
Enlisted in Oct-March × School days/100	0.004	0.026	-0.031	0.049*	0.033
	(0.024)	(0.025)	(0.026)	(0.026)	(0.027)
Enlisted in Apr-Sept × School days/100	-0.024	0.003	-0.024	-0.005	-0.002
	(0.026)	(0.027)	(0.028)	(0.028)	(0.029)
Enlisted in Oct-March × Non-school days/100	0.065***	0.070***	0.088***	0.035*	-0.008
	(0.017)	(0.018)	(0.018)	(0.018)	(0.019)
Enlisted in Apr-Sept × Non-school days/100	0.090***	0.084***	0.084***	0.076***	0.021
	(0.024)	(0.025)	(0.025)	(0.025)	(0.027)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
P-value non-school B=A	0.295	0.559	0.872	0.112	0.288

Panel C: heterogeneity by birth cohort	Socio-emotional skills	Sub-dimensions			
		Social maturity	Emotional stability	Psychological energy	Intensity
	(1)	(2)	(3)	(4)	(5)
Born 1962-1969 × School days/100	-0.005	0.019	-0.022	0.022	0.016
	(0.021)	(0.022)	(0.023)	(0.023)	(0.024)
Born 1970-1976 × School days/100	-0.005	0.003	-0.035	0.028	0.023
	(0.022)	(0.024)	(0.024)	(0.024)	(0.026)
Born 1962-1969 × Non-school days/100	0.074***	0.077***	0.088***	0.055***	0.003
	(0.018)	(0.019)	(0.019)	(0.019)	(0.020)
Born 1970-1976 × Non-school days/100	0.068***	0.073***	0.084***	0.039*	-0.003
	(0.019)	(0.020)	(0.021)	(0.021)	(0.022)
Observations	127292	119130	119352	119345	119338
R^2	0.075	0.073	0.067	0.057	0.066
P-val school B=A	0.991	0.543	0.637	0.841	0.810
P-value non-school B=A	0.757	0.882	0.881	0.508	0.816

Note. The table presents the estimates of the effect of school and non-school days, divided by 100, on socio-emotional skills by STEM (vs Business, humanities, and social sciences) program in Panel A, winder (October-March) in Panel B and birth cohort (1962-1969) in Panel C.. All specifications are based on equation (1), allowing the effects of the main regressors to vary with the indicator for STEM, winter, and cohort, and include parish fixed effects, birth-year fixed effects, indicators for each birthday week within year, and the full interaction of enlistment office, enlistment year, and school program; see Section 2.3. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).