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

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Abstract

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 the assigned test date of socio-emotional skill assessment administered by trained psychologists during enlistment. The results show that non-school days foster the development of socio-emotional skills, more strongly among students with high socio-economic status (SES). Novel survey evidence suggests that these students tend to engage in more enriching activities when school is out.

JEL codes: H52, I24, J24, D91

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1 Introduction

Technological and organizational changes in the labor market have increased the importance of socio-emotional skills, reflecting their increasing returns on the labor market (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 – remain essential for open-ended tasks requiring flexibility, creativity, and judgment (Autor, 2015). 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 versus non-school days on socio-emotional skill development in high school. Identification exploits quasi-experimental variation in test dates relative to individuals' 18th birthdays arising from logistical and capacity constraints in the Swedish military enlistment process between 1980 and 1994. Enlistment dates were mechanically assigned as a function of date of birth and parish of residence in order to balance testing capacity, generating substantial individual-level variation – standard deviations of 51 and 59 days in school and non-school exposure, respectively. Conditional on flexible controls for these assignment variables, residual variation in exposure to school and non-school days is quasi-random across individuals and is balanced across predetermined characteristics.

Conscripts undergo a semi-structured psychological interview of approximately 20-30 minutes, conducted by trained psychologists. The evaluation focuses on observable behavioral responses rather than self-reported attitudes, aiming to capture stable, meaningful individual differences with long-term predictive value – for example, in later-life earnings (Lindqvist and Vestman, 2011; Edin et al., 2022). Although the military does not disclose the exact content of the interview, it has indicated the four dimensions of socio-emotional skills 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).

We find that time spent outside of school has a positive impact on the development of socio-emotional skills, whereas schooling has no effect on their development. Specifically, an increase of 100 *non-school* days impacts socio-emotional skills by 0.07 standard deviations (SD). This effect is primarily driven by gains in domains related to social maturity – such as cooperation, empathy, and adaptability – and by improvements in emotional stability, reflecting better self-regulation and resilience. A battery of robustness checks is consistent with the interpretation that these effects reflect changes in skill development rather than short-lived holiday-related

[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).

relaxation.

We then attempt to open the black box of non-school days and investigate the mechanisms. The heterogeneity analysis reveals that non-school days are more productive for high socio-economic status (SES) students, suggesting that time out of school may enhance inequality in socio-emotional skills. By contrast, in the same setting, Carlsson et al. (2015) find that there is no heterogeneity by SES in the impact of school days on cognitive skill development. We further present novel survey evidence for a representative sample of our target population, documenting that high-SES students engage in more enriching activities during non-school days, such as travels, music, reading and arts. These findings suggest that experiences and environments outside formal schooling may play an important complementary role in shaping socio-emotional skill development, possibly through exposure to diverse situations that foster emotional and interpersonal growth.

This study contributes to the literature on the determinants of socio-emotional skills in four ways (Almlund et al., 2011; Cipriano et al., 2023; Woessmann, 2024). First, we provide causal evidence that non-school days have a positive impact on socio-emotional skill development. 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). Importantly, we assess multiple dimensions of socio-emotional skills using external evaluations 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, offering a more comprehensive understanding of the development of socio-emotional skills. This complements prior studies that focus on specific exogenous shocks – such as school reforms (Šimunović, 2024; Cobb-Clark et al., 2024; Entorf and Dohmen, 2025; Cygan-Rehm, 2025), atypical disruptions, such as snowstorms (Jacob et al., 2007) or school strikes (Belot and Webbink, 2010; Jaume and Willén, 2019), and teacher value-added effects (Jackson et al., 2020).[2] These approaches offer valuable insights, but the policy counterfactual could be difficult to interpret, as the estimated effects may conflate the influence of schooling with broader life changes. For example, estimating the effects of school reforms yields a bundled estimate that reflects changes in both school and non-school days. In contrast, we leverage the school calendar to isolate the contribution of school and non-school days to the development of socio-emotional skills.

Third, this paper contributes to the literature on summer learning loss, which has primarily

[2]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. See also for example Meghir and Palme (2005) and Lundborg et al. (2014) for the literature on the effect of school reforms on cognitive skills and Thompson (2021) for the effect of the 4-day school week on children's test scores in Oregon.

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). Our contribution to this literature is two-fold: (i) we extend the focus to socio-emotional skills, and (ii) we show that the effect of non-school days on the development of socio-emotional skills is instead a broader phenomenon associated with regular time spent out of school, including weekends and school breaks.

Finally, this paper relates to the literature on how interventions influence socio-emotional skills (Alan and Ertac, 2018; Alan et al., 2019; Ashraf et al., 2020; Sorrenti et al., 2024; Dinarte-Diaz and Egana-delSol, 2024). While most existing interventions have focused on early childhood, we show that non-school days also 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 Data and methods

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. Given that military enlistment typically occurs around an individual's 18th birthday, our study focuses on young men enrolled in the 12th grade in the academic track to ensure meaningful variation in exposure to schooling days.

All males were required to report to an enlistment center around their 18th birthday, where they underwent a full-day process that included administrative paperwork, health screenings, and psychological assessments.[3] Importantly, while enlistment occurred close to age 18, the exact timing was not individually chosen. During our sample period, the Swedish military

[3]Exceptions include people with severe handicaps, in prison, institutionalized due to mental disorders, non-citizens, or living abroad (and can therefore postpone their enlistment date until they return to Sweden). This last group primarily comprises individuals who study abroad during secondary school and therefore enlist the year they return to Sweden at age 19.

enlistment system generated exogenous variation in test timing relative to an individual's 18th birthday due to logistical and capacity constraints faced by the military.

Enlistment dates were primarily determined by an individual's birthdate and parish of residence, with some enlistment offices also considering expected graduation dates to manage capacity constraints. The enlistment procedure was established by a law enacted in 1969. Under this legal statute, county tax authorities were responsible for collecting information on all Swedish males turning 17 each year and submitting it to the military enlistment office by August 1 (Statute 1991:726, paragraph 6). To fulfill this duty, tax authorities gathered the necessary data from local parishes, which maintained up-to-date population records. The parishes provided details such as name, birthdate, and address for all eligible individuals within their jurisdiction. Enlistment orders, specifying an assigned date, were then sent to each individual as a certified letter.

Importantly, enlistees had strong incentives to comply with their assigned dates, as failure to appear could result in fines or imprisonment. The military coordinated transportation where necessary, purchasing blocks of train tickets or arranging charter buses, 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.

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 completed years of schooling as of 2003, parental education levels as of 1999, and father's earnings in 1980. Furthermore, for a subset of cohorts, we incorporate data on exit exam grades in mathematics and Swedish from 9th grade. We use these variables to verify the randomness of enlistment assignment, and analyze potential heterogeneous effects.

Socio-emotional skills During the military enlistment process, conscripts undergo a semi-structured psychological interview lasting approximately 20-30 minutes. 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 traits such as 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 free-time 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 reflect 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 traits but represents a holistic clinical judgment incorporating various psychological factors. These assessments were used to determine military assignments, along with cognitive skill and health assessment (Carlsson et al., 2015; Hermo et al., 2022). We standardize them 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 the following specification (1) to study the effect of school and non-school days on the development of different dimensions of socio-emotional skills.

$$Y_{it} = \beta_0 + \beta_1 S_{it} + \beta_2 NS_{it} + \mathbf{X}'_{it}\delta + g(B_i) + \sum_p \theta_p(P_i = p) + \pi G_i + e_{it} \quad (1)$$

Where Y_{it} is the socio-emotional skill dimension for individual i in an academic program taking a socio-emotional assessment on date t, S_{it} is the number of school days relative to i's 18th birthday, NS_{it} is the number of non-school days relative to i's 18th birthday, $\mathbf{X}_{it}$ is a vector of other (potentially) time-varying factors, B_i is birthdate, P_i is parish of residence (a small geographic area), G_i is expected graduation (a dummy for whether a student plans on graduating the year he turns 18). Birthdate, parish, and expected graduation play an important role as conditioning variables, which is why we list them separately from other $\mathbf{X}_{it}$.

Our identification strategy leverages the random variation in the number of school and non-school days between an individual's 18th birthday and their enlistment date. Importantly, this variation is not driven by individual choice: enlistees did not self-select into test dates, and enlistment offices primarily relied on a standardized formula based on birthdate and parish to determine the timing of enlistment and testing (see also Section 2.1).

By conditioning on this assignment rule – that is, the deterministic components used by the military to allocate test dates – we treat any residual variation in the number of school days as conditionally random. In practice, this residual variation is generated by (i) office-level capacity/logistical constraints that shift test dates within cells and (ii) the calendar's weekends, public holidays, and region-specific school breaks, which mechanically change the composition of school versus non-school days between the 18th birthday and the test date.

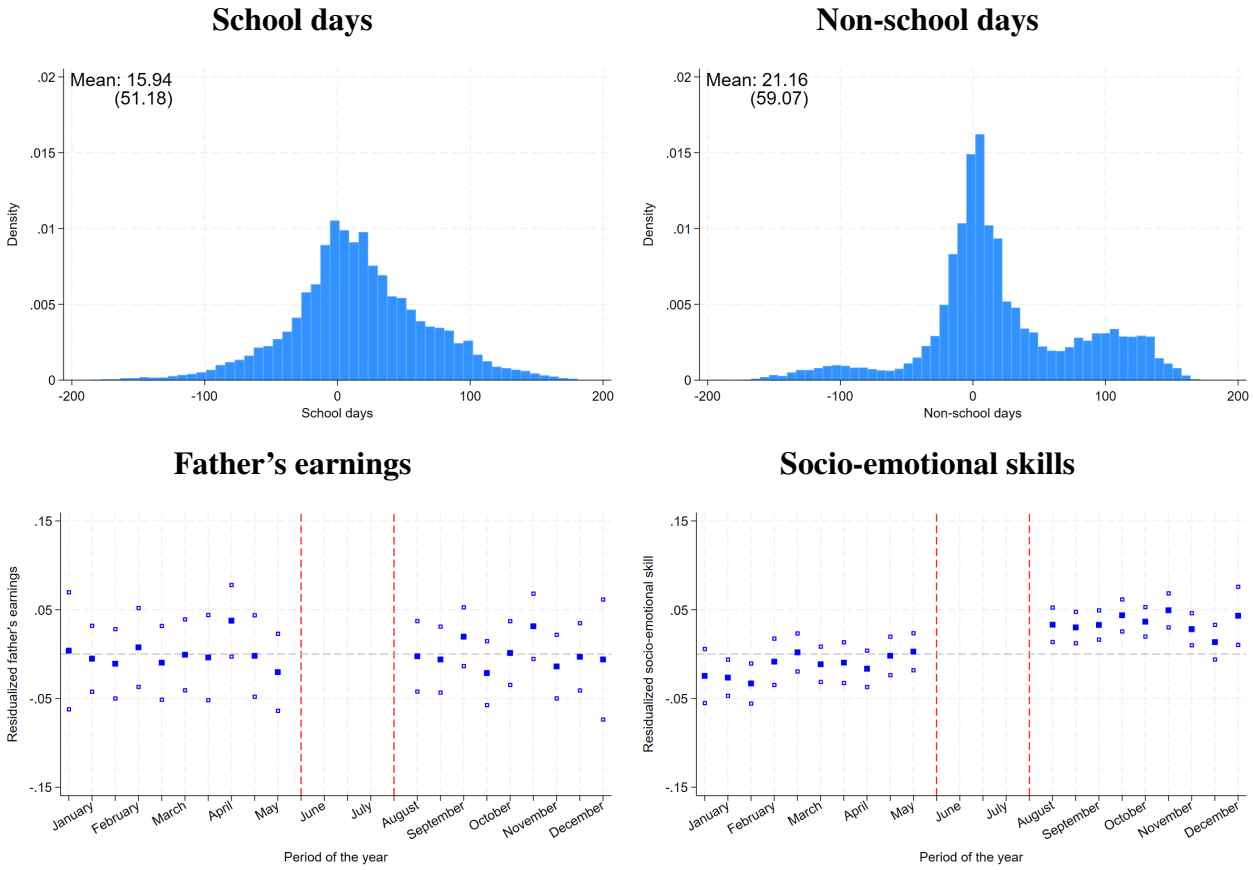
3 Schooling and socio-emotional skills

3.1 Variation and integrity of quasi-exogenous variation

We begin by showing that there is variation in the number of school and non-school days in the top panel of Figure 1. The standard deviation in school and non-school days as of the test date is 51 days and 59 days, respectively, for individuals currently enrolled in the twelfth grade. In Appendix Figure A1, we also show that the number of school and non-school days still presents substantial variation after residualizing them by the set of fixed effects discussed in Section 2.3.

Second, in the bottom panel of Figure 1, we present how father's earnings and socio-emotional skills vary over the year. To isolate the effects, we residualize the measures using the set of covariates and fixed effects described in Section 2.3 and average them over a 15-day window. We plot the averaged (residualized) variable over the calendar year, along with their 95% confidence intervals, where the summer period does not contain any observations, as no

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 for the set of covariates discussed in Section 2.3. Second, we average them over a 15-day window. Third, we then plot them over the year with the respective 95% confidence intervals. No observations are recorded in the summer months as enlistment was suspended.

tests occurred during the enlistment suspension. We document that father's earnings appear stable over the year. On the other hand, socio-emotional skills increase around school breaks, consistent with the interpretation that time spent outside of school can foster the development of socio-emotional skills. This can be observed by comparing the variation in non-school days in Appendix Figure A1 with the trends in Figure 1. Appendix Figures A2 and A3 report the corresponding patterns for other covariates and for the additional dimensions of socio-emotional skills.

Third, building on the evidence in Figure 1 for fathers' earnings, which do not seem to relate to school and non-school days over the year, we further assess the randomness of assignment of test dates by conditioning our estimates on the same set of variables used by the military (see Section 2.3). Conditional on these factors, assignment dates should be as good as random. Table 1 provides empirical support for this assumption: once controls are included, the relationship between assignment timing and predetermined individual or family characteristics disappears.

Table 1: Conditional randomness

	School days		Non-school days	
High math grades	-0.953**	-0.168	-0.418	0.032
	(0.450)	(0.376)	(0.515)	(0.445)
High Swedish grades	2.238***	-0.508	2.598***	-0.748*
	(0.447)	(0.364)	(0.512)	(0.431)
Highly educated mother	-0.633**	0.199	-0.831**	0.293
	(0.310)	(0.249)	(0.357)	(0.294)
Highly educated father	0.059	0.294	-0.331	0.186
	(0.341)	(0.273)	(0.393)	(0.322)
High father's earnings	2.877***	0.263	3.030***	0.320
	(0.312)	(0.251)	(0.360)	(0.295)
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 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).

3.2 Main result

This section shows how 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 that shows that socio-emotional skills are not fixed traits, 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 about 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).[4] This effect is economically meaningful. A back-of-the-envelope calculation, drawing on estimated returns to socio-emotional skills (Edin et al., 2022), suggests

[4]Panel A of Appendix Table A6 reports estimates using clustered standard errors, yielding similar significance levels.

Table 2: Schooling and socio-emotional skills

Panel A:	Socio-emotional	Social maturity	Emotional stability	Psychological energy	Intensity
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	Social maturity	Emotional stability	Psychological energy	Intensity
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 the estimates of the effect of age in days/100 on socio-emotional skills (Panel A) and the effect of school and non-school days on socio-emotional skills (Panel B). 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).

that an additional 100 non-school days would increase earnings by about 2 percent. Exploring the dimensions of socio-emotional skills, the effect is stronger for social maturity and emotional stability than for psychological energy and intensity. Specifically, 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 traits related to interpersonal behavior and emotional regulation than those related to internal drive or reactivity.

In Table 2, we cannot estimate a specification that includes age, school days, and non-school days simultaneously because the three are mechanically collinear by construction. We therefore estimate two equivalent re-parameterizations. Panel A of Appendix Table A5 reports the specification including school days and total age, which identifies the effect of replacing a non-school day with a school day while keeping age constant. Panel B of Appendix Table A5 reports the complementary specification using non-school days and age, capturing the effect of replacing a school day with a non-school day at the same age. Together, the two panels show that the composition of days (i.e., the number of non-school days) has a systematic and statistically meaningful effect on socio-emotional skills.

We also consider alternative ways of measuring exposure to school and non-school days.

In the main specification, we count non-school days with respect to the 18th birthday because this mirrors the variation induced by the military system and enables us to flexibly condition on birthday fixed effects. However, this specification is reduced-form rather than structural (e.g., Cunha et al. (2010)). As a robustness check, we estimate an alternative specification in which we count the absolute number of school and non-school days with respect to January 1st for each individual. The results, reported in Panel B of Appendix Table A6, are nearly identical to those in Table 2. The reason for this result lies in the extensive set of fixed effects included for birthday and parish.

We investigate whether the estimated effect reflects relaxation related to holidays rather than skill development. We provide four pieces of evidence in support of the latter. First, the psychologist assessments are intended to capture relatively stable traits and have been shown to predict later-life outcomes (e.g., earnings), which suggests the measure is not driven by short-lived mood or 'holiday relaxation' shocks (Lindqvist and Vestman, 2011; Edin et al., 2022). Second, we find no evidence that the weekday on which the test is taken affects socio-emotional scores (Appendix Table A7) and document that sibling correlations in residualized socio-emotional skills remain stable throughout the year, indicating that potential seasonality does not drive variation in assessment validity or measurement error (Appendix Figure A8). Third, Panel C of Appendix Table A6 conditions on day-of-the-week fixed effects to exploit variation within the same weekday and test the hypothesis that people may be more relaxed on Mondays than on Fridays, perhaps because of the proximity of the weekend. The resulting estimates in Panel C of Appendix Table A6 remain unchanged compared to those in Table 2. Fourth, we explore non-linearities in the effect of school and non-school days on socio-emotional skills in Appendix Table A9. We find the effect to be linear, suggesting that it does not fade out with additional non-school days or interactions with school days.

Taken together, these exercises strengthen the interpretation that the estimated effect reflects a development of socio-emotional skills rather than short-term relaxation. Building on this, we also run two additional specifications to address concerns that the socio-emotional test score may partly capture motivation to join the military, which could generate extreme values or unusual patterns in the lower tail of the score distribution. First, we estimate a median regression in Panel D of Appendix Table A6. Unlike OLS, which is sensitive to extreme values in the dependent variable, median regression minimizes the sum of absolute deviations and is therefore more robust to outliers. We find that the estimates are not driven by outliers, as the results remain consistent when focusing on the conditional median of the outcome distribution. Second, we re-estimate the main equation by restricting the sample to individuals with socio-emotional scores between 3 and 9 (Panel E of Appendix Table A6). We apply this restriction because very low scores may reflect mental health disorders rather than socio-emotional skills. The results remain qualitatively similar when these individuals are excluded.

Finally, Appendix Figure A4 presents a placebo test in which the assignment of school and non-school days is randomly permuted across individuals. To implement this test, we generate

100 simulated datasets where the school and non-school days are randomly generated. For each simulated dataset, we re-estimate our main specification using these placebo days. Across all 100 iterations, the estimated coefficients fluctuate around zero and remain statistically indistinguishable from a null effect. This consistent pattern shows that the main estimate is unlikely to be driven by chance or spurious correlations arising from the structure of the data.

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 matter. 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 shed light on these underlying channels, we examine whether the effect of non-school days on socio-emotional skills varies systematically by parental background, school curriculum, season, and type of school breaks.

Table 3 presents the heterogeneity estimates of the effect of age and school exposure on socio-emotional skills by parental socio-economic status (SES).[5] Socio-economic status is measured using both parental education and parental income. While parental education is more likely to capture intergenerational transmission of skills and preferences, parental income proxies for material resource constraints. Reassuringly, the results are qualitatively similar across these alternative SES definitions.

Panel A of Table 3 focuses on age effects, capturing the association between age in days at enlistment and socio-emotional skills. Across all SES measures, age has a positive and precisely estimated effect, indicating that socio-emotional skills increase with age. However, the magnitude of this age gradient differs systematically by SES. For low-SES students, an additional 100 days of age is associated with an increase in socio-emotional skills of about 0.028-0.036 SD, depending on the SES proxy. In contrast, for high-SES students, the corresponding estimates range between 0.037 and 0.043 SD.

Panel B of Table 3 decomposes the age effect into school days and non-school days by SES. The effect of school days is generally small, imprecisely estimated, and does not differ systematically by SES. In contrast, non-school days have a positive and economically meaningful effect on socio-emotional skills for both groups, but the magnitude is larger for high-SES students. For example, an additional 100 non-school days increases socio-emotional skills by about 0.025-0.044 SD for low-SES students, compared to roughly 0.085-0.104 SD for high-SES students. The difference between these coefficients is statistically significant across most SES definitions.

We also examine heterogeneity by school curriculum, distinguishing between STEM and non-STEM programs, seasons, and birth cohorts. We find no significant differences between STEM and non-STEM programs, as shown in Panel A of Appendix Table A12, which is consistent with the results presented in Table 2 indicating that the number of school days has no measurable effect on socio-emotional skill development. As a robustness check against sea-

[5] Appendix Tables A10 and A11 report estimates separately for each socio-emotional dimension.

Table 3: Heterogeneity: schooling and socio-emotional skills

Panel A:

Heterogeneity	Socio-emotional skills					
	Earnings			Education		
	Family	Mother	Father	Family	Mother	Father
Low × Age in days/100	0.028***	0.031***	0.029***	0.035***	0.036***	0.035***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
High × Age in days/100	0.043***	0.041***	0.042***	0.037***	0.035***	0.037***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Observations	107841	107841	107841	107841	107841	107841
R^2	0.077	0.077	0.077	0.077	0.077	0.077
P-val age L=H	0.001	0.034	0.005	0.704	0.811	0.742
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Panel B:

Heterogeneity	Socio-emotional skills					
	Earnings			Education		
	Family	Mother	Father	Family	Mother	Father
Low × School days/100	0.027	0.015	0.033	0.033	0.033	0.027
	(0.022)	(0.023)	(0.024)	(0.024)	(0.022)	(0.022)
High × School days/100	-0.038	-0.011	-0.027	-0.025	-0.045*	-0.038
	(0.026)	(0.023)	(0.023)	(0.023)	(0.026)	(0.026)
Low × Non-school days/100	0.042**	0.044**	0.025	0.036*	0.039**	0.042**
	(0.019)	(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***
	(0.022)	(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-val school L=H	0.019	0.328	0.024	0.027	0.004	0.019
P-val non-school L=H	0.014	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 on socio-emotional skills by socio-economic status. 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. 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. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

sonal confounds (e.g., daylight/weather or season-specific assessment conditions), Panel B of Appendix Table A12 splits the sample into Oct-March vs Apr-Sept. However, we find consistently similar effects of non-school days across seasons. We also assess whether the effect differs by cohort, comparing earlier and later enlistment groups, and again find no meaningful differences (Panel C of Appendix Table A12). Finally, we attempt to disentangle the effect of non-school days more precisely and further explore the underlying mechanism by decomposing non-school days into different school breaks.[6] Although the data do not allow us to estimate the effect of each individual holiday with precision, we separate non-school days into summer vacation and non-summer breaks. The estimates are presented in Appendix Table A14, showing that the effect is not driven only by the summer.

[6] Appendix Table A13 shows that summer days are also balanced across pre-determined characteristics.

Taken together, these results indicate that the stronger age gradient observed among high-SES students in Panel A is largely explained by differential returns to non-school time. While socio-emotional skills accumulate with age for all students, high-SES individuals appear better able to leverage time outside school – potentially through family environments and extracurricular activities – to foster socio-emotional development, whereas time spent in school appears largely unaffected by institutional or temporal factors. For comparison, Carlsson et al. (2015) find no SES-based heterogeneity in the effect of school days on cognitive skills, highlighting an important distinction between cognitive and socio-emotional skill formation.

We therefore turn to some survey evidence to explore how low and high-SES students spend their time. 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 collecting 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 socioeconomic status, LNU and ULF Surveys (1981-1991)

	LNU 1981/1991			ULF 1990		
	Low	High	Diff	Low	High	Diff
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). "Travels 1" = 1 if responded "yes" to "Did you go for a holiday trip?", 0 otherwise. "Travels 2" = 1 if responded "yes" to "Did you go for a holiday trip outside Scandinavia in 1990?", 0 otherwise. The following questions begin with "Do you usually do any of the following as a leisure activity...". "Have friends visit" = 1 if "yes, often" to "Having friends and acquaintances visit?", 0 otherwise. "Go to cinema" = 1 if "yes, often", 0 otherwise. "Go to theater" = 1 if "yes" to "Go to the theater, concerts, museums, exhibitions?", 0 otherwise. "Go out dancing" = 1 if "yes, often" to "Go dancing?", 0 otherwise. "Read books" = 1 if "yes", 0 otherwise. "Play instrument" = 1 if "yes", 0 otherwise. "Do sports 1" = 1 if "yes, at least once a week" to "Do you do any exercise, outdoor or sporting activities, e.g. long walks?", 0 otherwise. "Do sports 2" = 1 if "yes, several times a week" to the same question, 0 otherwise. (*** $p<0.01$, ** $p<0.05$, * $p<0.1$).

To capture non-school leisure activities, we use a set of comparable items across surveys, all measured as binary indicators. These include participation in holiday travels ("Did you go for a holiday trip in 1990?") and holiday travels 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 shows that, regardless of the data set used, the pattern is consistent: high-SES youth invest more time in leisure activities that are typically associated with the development of socio-emotional skills, such as music, theater, reading books, traveling, sports (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 play an important role in skill formation.[7]

4 Conclusion

This paper examines the causal effect of schooling 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 school for structure, learning resources, and adult guidance. Stretches without school can leave them idle or in less educationally conducive settings.

These findings have direct implications for education policy, especially debates over the length of the school year and holiday scheduling. Adjusting the school calendar to include more holidays can foster socio-emotional skills but also exacerbate inequalities, highlighting a trade-off between efficiency and equity. 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.

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

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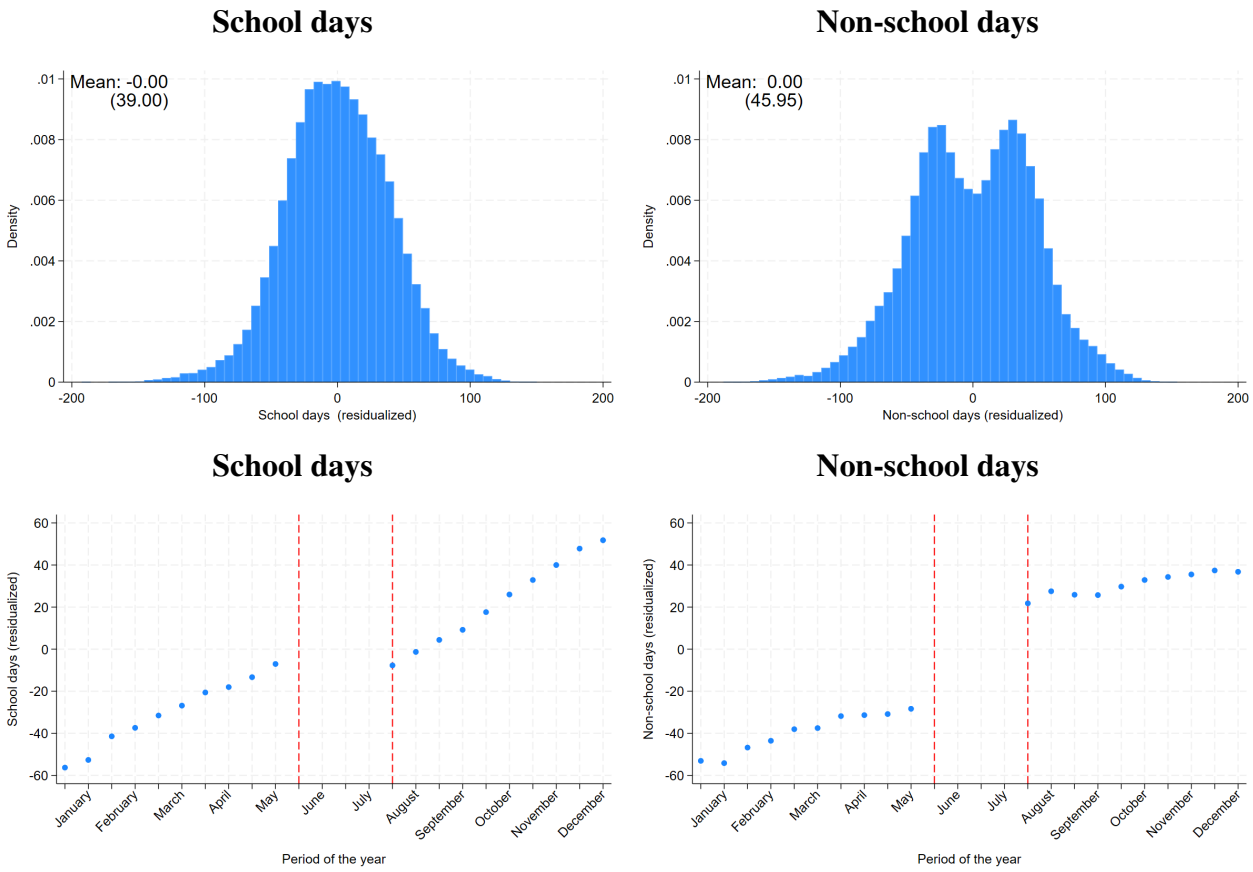
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Appendices to "Days In and Out of High School and Young Adults' Socio-emotional Skills"

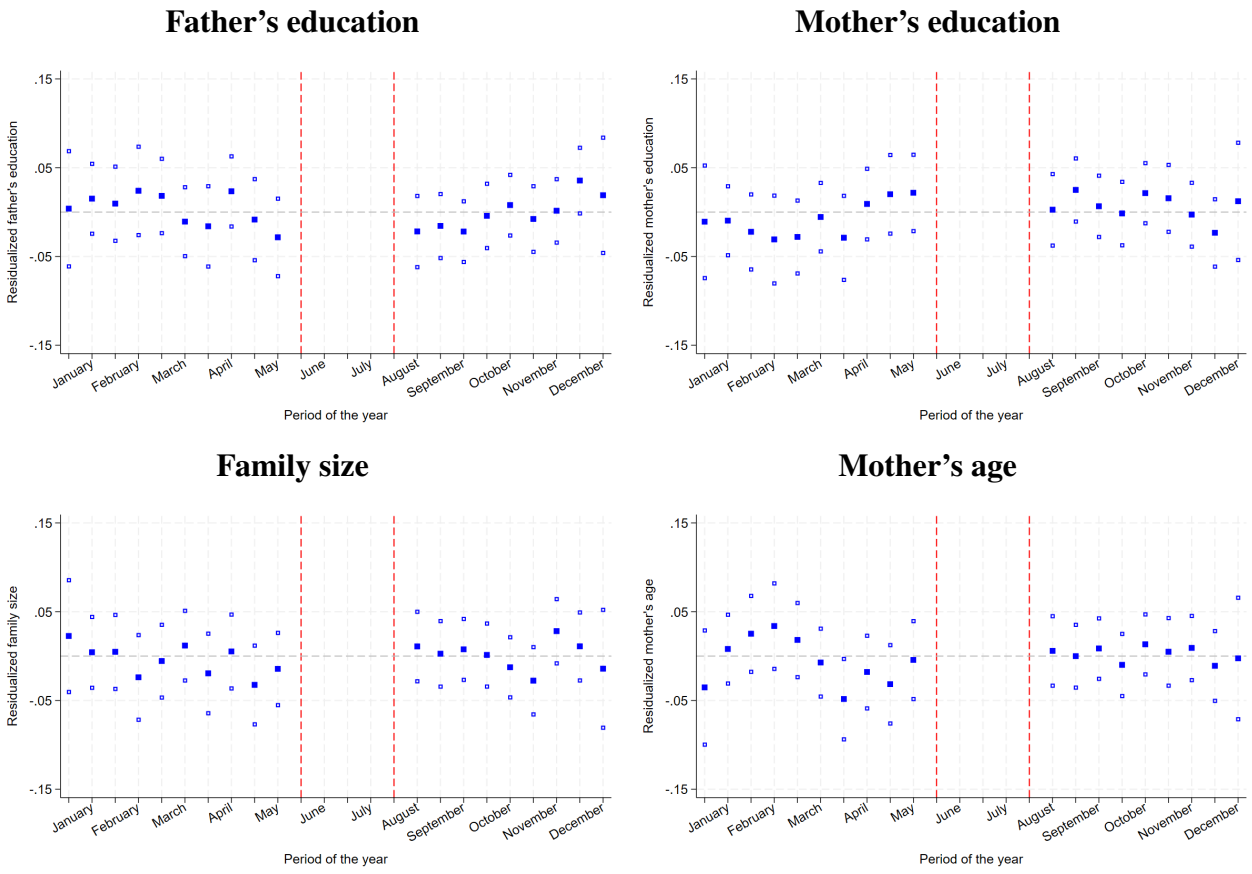
A Appendix figures and tables

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



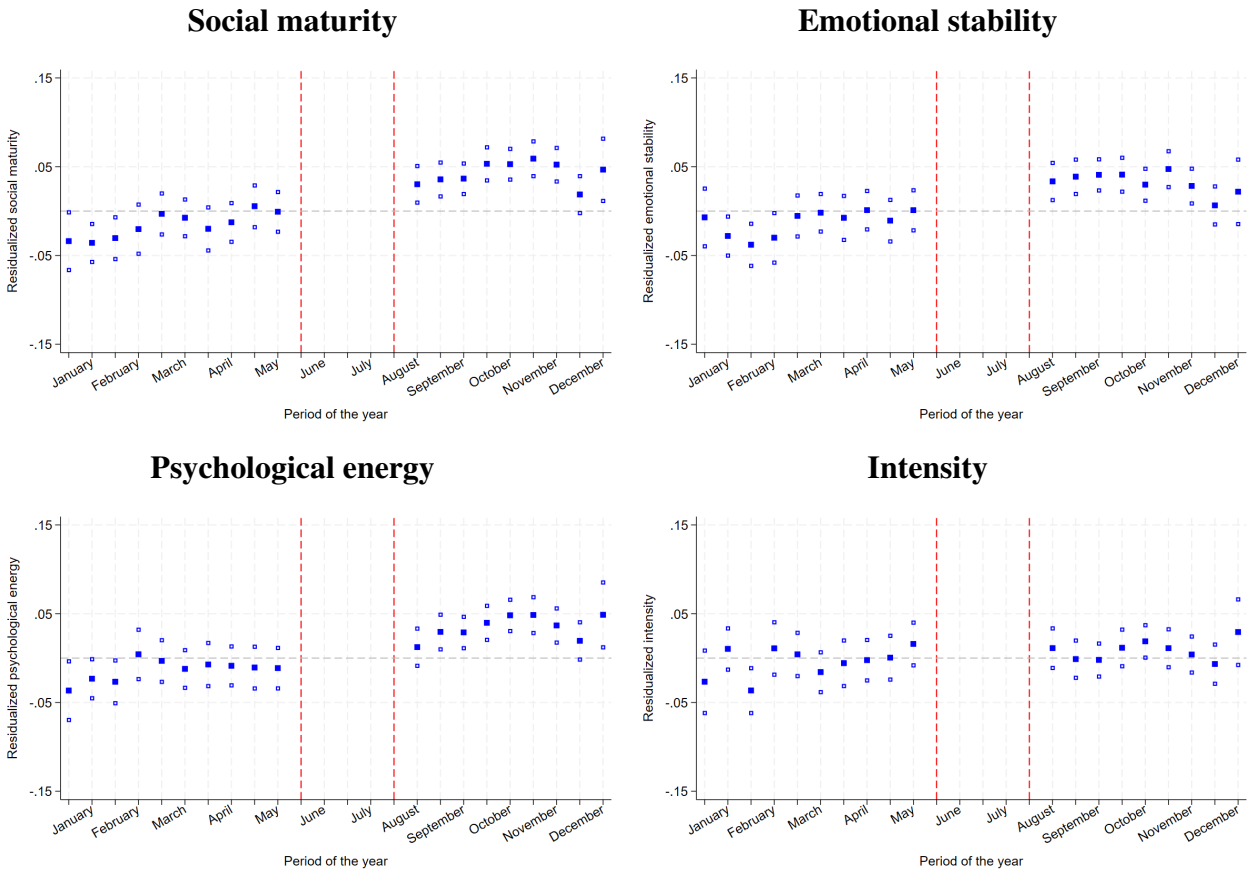
Note. The top figures present histograms for the residualized variation in school and non-school days with respect to the 18th birthday between 1980 and 1994. The note of the figures reports the mean and standard deviation. The bottom figures present the residualized variation in school and non-school 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



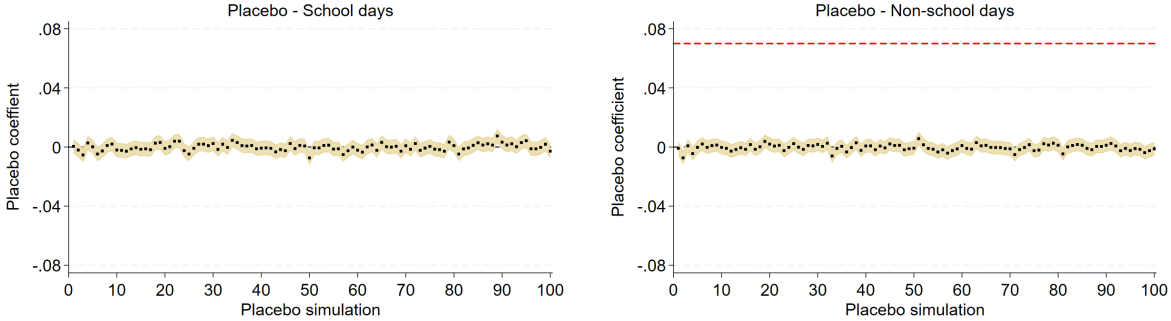
Note. The figures present the balance checks. They are obtained as follows. First, we residualize the variable for the set of covariates discussed in Section 2.3. Second, we average them over a 15-day window. Third, we then plot them over the year with the respective 95% confidence intervals. No observations 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 skills for the set of covariates discussed in Section 2.3. Second, average them over a 15-day window. Third, we then plot them over the year with the respective 95% confidence intervals. No observations are recorded in the summer months as enlistment was suspended.

Figure A4: Placebo simulations: schooling and socio-emotional skills



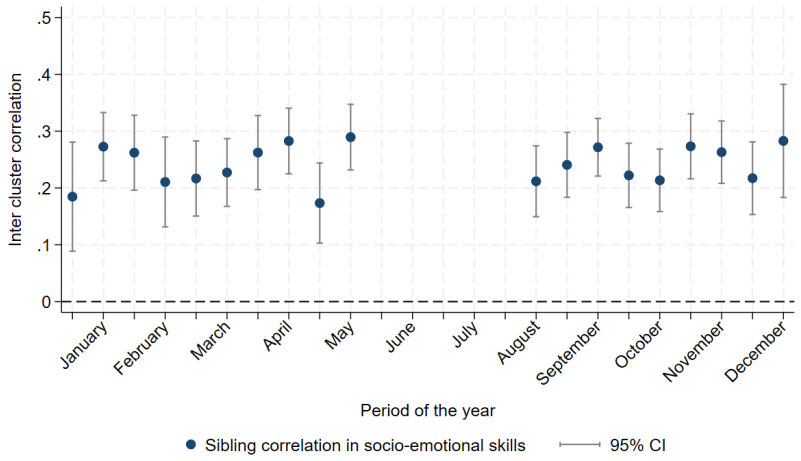
Note. These figures present the placebo tests for socio-emotional, where a random number of school days is assigned to every individual. This placebo simulation is repeated 100 times. The red dashed line presents the estimated coefficient from the true number of school and non-school days.

Table A5: Schooling and socio-emotional skills: controlling for age

Panel A	Socio-emotional	Social maturity	Emotional stability	Psychological energy	Intensity
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	Social maturity	Emotional stability	Psychological energy	Intensity
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 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 on socio-emotional skills, estimating the effect of replacing a school day with a non-school day while holding total age constant. 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 A8: 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 A6: Robustness checks to main estimates

Panel A: clustering standard errors	Socio-emotional	Social maturity	Emotional stability	Psychological energy	Intensity
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**	**Social maturity**	**Emotional stability**	**Psychological energy**	**Intensity**
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: controlling for weekday FEs	**Socio-emotional**	**Social maturity**	**Emotional stability**	**Psychological energy**	**Intensity**
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
Panel D: Median regression	**Socio-emotional**	**Social maturity**	**Emotional stability**	**Psychological energy**	**Intensity**
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 E: individuals with a socio-emotional score above 3	**Socio-emotional**	**Social maturity**	**Emotional stability**	**Psychological energy**	**Intensity**
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

Note. The table presents the robustness checks to the main estimates of the effect of school and non-school days on socio-emotional skills. 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. 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 main estimates controlling also for the day of the week fixed effect. Panel D presents the median regression of the effect of school and non-school days on socio-emotional skills. Panel E 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. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A7: Effect of the weekday on which the test is taken

	Socio-emotional		
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. 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).

Table A9: Schooling and socio-emotional skills: nonlinearities

	Socio-emotional	Social maturity	Emotional stability	Psychological energy	Intensity
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 on socio-emotional skills, allowing for nonlinearities. 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).

Table A10: Heterogeneity: age and socio-emotional skills

Panel A:						
			Social maturity			
Heterogeneity		Earnings			Education	
	Family	Mother	Father	Family	Mother	Father
Low × Age in days/100	0.038***	0.042***	0.039***	0.045***	0.047***	0.045***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
High × Age in days/100	0.051***	0.048***	0.050***	0.045***	0.042***	0.044***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Observations	100514	100514	100514	100514	100514	100514
R^2	0.077	0.077	0.077	0.077	0.077	0.077
P-val age L=H	0.012	0.191	0.033	0.945	0.382	0.873
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Panel B:						
			Emotional stability			
Heterogeneity		Earnings			Education	
	Family	Mother	Father	Family	Mother	Father
Low × Age in days/100	0.025***	0.030***	0.025***	0.030***	0.033***	0.031***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
High × Age in days/100	0.040***	0.037***	0.041***	0.036***	0.034***	0.036***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Observations	100719	100719	100719	100719	100719	100719
R^2	0.071	0.071	0.071	0.071	0.071	0.071
P-val age L=H	0.004	0.159	0.004	0.305	0.801	0.378
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Panel C:						
			Psychological energy			
Heterogeneity		Earnings			Education	
	Family	Mother	Father	Family	Mother	Father
Low × Age in days/100	0.027***	0.032***	0.032***	0.035***	0.037***	0.035***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
High × Age in days/100	0.048***	0.044***	0.044***	0.041***	0.040***	0.043***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Observations	100713	100713	100713	100713	100713	100713
R^2	0.062	0.062	0.062	0.062	0.062	0.062
P-val age L=H	0.000	0.018	0.017	0.306	0.597	0.139
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Panel D:						
			Intensity			
Heterogeneity		Earnings			Education	
	Family	Mother	Father	Family	Mother	Father
Low × Age in days/100	0.002	0.001	0.005	0.011**	0.011***	0.009**
	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)
High × Age in days/100	0.013***	0.014***	0.010**	0.004	0.002	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Observations	100707	100707	100707	100707	100707	100707
R^2	0.068	0.068	0.068	0.068	0.068	0.068
P-val age L=H	0.038	0.012	0.391	0.207	0.110	0.500
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Note. The table presents the heterogeneity estimates of the effect of age in days on socio-emotional skills by socio-economic status. 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. 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. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A11: Heterogeneity: schooling and socio-emotional skills

Panel A:			**Social maturity**			
Heterogeneity		Earnings			Education	
	Family	Mother	Father	Family	Mother	Father
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-val school L=H	0.004	0.367	0.032	0.353	0.126	0.048
P-val 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**			
Heterogeneity		Earnings			Education	
	Family	Mother	Father	Family	Mother	Father
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-val school L=H	0.004	0.080	0.021	0.018	0.006	0.034
P-val 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**			
Heterogeneity		Earnings			Education	
	Family	Mother	Father	Family	Mother	Father
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 school L=H	0.730	0.649	0.316	0.311	0.236	0.081
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**			
Heterogeneity		Earnings			Education	
	Family	Mother	Father	Family	Mother	Father
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-val school L=H	0.182	0.843	0.232	0.216	0.062	0.567
P-val 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 on socio-emotional skills by socio-economic status. 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. 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. Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table A12: Schooling and socio-emotional skills: heterogeneity

Panel A: heterogeneity by STEM academic track	Socio-emotional	Social maturity	Emotional stability	Psychological energy	Intensity
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-val school S=N	0.846	0.938	0.485	0.976	0.821
P-val non-school S=N	0.176	0.408	0.842	0.493	0.242

Panel B: heterogeneity by winter	Socio-emotional	Social maturity	Emotional stability	Psychological energy	Intensity
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-val school B=A	0.327	0.457	0.818	0.083	0.279
P-val non-school B=A	0.295	0.559	0.872	0.112	0.288

Panel C: heterogeneity by birth cohort	Socio-emotional	Social maturity	Emotional stability	Psychological energy	Intensity
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-val 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 on socio-emotional skills by STEM (vs Business, humanities, and social sciences) track. 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).

Table A13: Conditional randomness: summer days and non-school days (without summer)

	Non-school days (without summer)		Summer days	
High math grades	-0.002	-0.001	0.001	0.002
	(0.004)	(0.002)	(0.004)	(0.003)
High Swedish grades	0.016**	-0.002	0.016**	-0.005*
	(0.007)	(0.002)	(0.007)	(0.003)
Highly educated mother	0.004	0.002	0.009***	0.001
	(0.002)	(0.001)	(0.002)	(0.002)
Highly educated father	-0.000	0.001	0.001	0.001
	(0.002)	(0.001)	(0.002)	(0.002)
High father's earnings	-0.002	0.001	-0.001	0.002
	(0.002)	(0.001)	(0.002)	(0.002)
Observations	97868	128617	97868	128617
R^2	0.016	0.427	0.034	0.415
F-test	174.853	1.373	382.472	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).

Table A14: Schooling and socio-emotional skills (school days, non-school days without summer, and summer days)

	Socio-emotional	Social maturity	Emotional stability	Psychological energy	Intensity
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 days (excluding the summer) on socio-emotional skills. 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).