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Pupil Well-being in Danish Primary and Lower Secondary Schools

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Abstract

Since 2014, the Danish Ministry of Education has conducted yearly national well-being surveys for children of all ages in public school. The ministry introduced the survey as a tool for schools to monitor well-being of their pupils, to make informed adjustments of their own related practices, and to inform education policy at the municipal level. This paper studies the characteristics of the social well-being segment of the survey. We document that low school social well-being correlates meaningfully with standard measures of disadvantage at the pupil and parental level, just as teacher characteristics and classroom composition are additional important predictors of well-being. We also show that school social well-being exhibits high degrees of persistence over time, regardless of whether or not we control for a wide range of background characteristics. We finally show that high school social well-being is positively associated with academic performance and negatively associated with absence from school, though estimates are not large in size.

Key words: social well-being; background characteristics; academic performance; absence

JEL codes: I3, I21

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1. Introduction

Children spend a large fraction of their time in school, with the primary purpose of accumulating academic skills. At the same time, pupil mental health and well-being more broadly have received considerable interest (e.g. Tsang, Wong and Lo, 2012, WHO, 2016) and one of the three national objectives of the Danish public school is, in fact, to increase pupil well-being. Since 2014, the Ministry of Education has conducted yearly national well-being surveys (Nationale trivselsmålinger) for children of all ages in public school. The survey was introduced as a tool for schools to monitor the subjective well-being of their pupils, to make informed adjustments of their own related practices, and to inform education policy at the municipal level. These data hold an untapped potential to expand our knowledge of pupil well-being in Danish classrooms, to the benefit of parents, teachers, and policy-makers. But well-being measures could also be used to inform and enrich analyses of school-related interventions and maybe even social policy. This paper explores three specific research questions: 1) who in the classroom experiences low and high levels of well-being and, implicit in this, what is the role of peers and schools? 2) Is there a tendency for the same children to experience low levels of well-being over time? And finally, 3) what is the relationship between pupil well-being, academic performance, and absence?

The starting point for our analyses is the school social well-being segment of the nationally administered well-being survey, which we combine with register-based, population-wide data available for the children in question as well as for their families and teachers. In the interest of simplicity, we will subsequently refer to school social well-being as "social well-being".

Our approach is pragmatic and positive in that we describe the existing well-being measure as is and study its relationship to other variables that decision-makers usually care for; our purpose is *not* to validate the measure formally. As such, our analysis complements a recent paper that speaks more directly to the content of the well-being scales: Niclasen et al. (2018) study the psychometric properties of the national well-being surveys for grades 4-9. They generally support the idea of a factor structure and their measure of "school connectedness" is closely related to the social well-being measure.[1] Our paper is also related to Andersen et al. (2020) who use the national well-being survey to study the relationship between personality and academic performance over time. Their measure of

[1] Social well-being, as studied in our paper, corresponds closely to what they label school connectedness.

emotional stability, in particular, is constructed from three questions that also enter the social well-being measure and is positively correlated with reading scores.

We first confirm previous findings that show that pupils on average report high social well-being (Knoop, et al., 2017). Three quarters of children across grades 1-9 report high levels of social well-being, while only slightly more than one pupil per class reports average social well-being below the midpoint of the scale. Though many have high levels of well-being, the share of children reporting low well-being is still non-negligible. We continue to document that lower social well-being correlates meaningfully with standard measures of disadvantage at the pupil and parental level. Although we stress that we are not making causal claims, we also note that teacher characteristics and classroom composition are additional important predictors of well-being. A particular concern is that well-being is a latent characteristic that is notoriously difficult to measure, and a pupil's answers to the test may well be sensitive to temporary conflicts on the day of the test (Tsang, Wong and Lo, 2011). Yet, we document high degrees of persistence in social well-being over time; the (conditional) correlation between current social well-being and social well-being one year prior is as high as .45, whereas the correlation between current social well-being and social well-being two years back in time is about .15. These results hold whether or not we control for a wide range of background characteristics. We finally show that social well-being is positively associated with academic performance and negatively associated with absence from school; both outcomes that are straightforward in their interpretation. An underlying assumption that permeates work on pupil well-being is, in fact, the inherent expectation of a positive link with academic performance (Adler, 2017; Conti and Heckman, 2014). Taken together and in the light of the previous results of Andersen et al. (2020) and Niclasen et al. (2018), these results suggest that the current measure could reasonably be used as a first, convenient indicator of well-being among Danish pupils.

The remainder of the paper is structured as follows: Section 2 provides a brief description of elementary and lower secondary school in Denmark, and Section 3 describes the data and our sampling strategies. Section 4 shows how social well-being correlates with pupil, parent, teacher, and classroom characteristics, and Section 5 documents the association between social well-being and other important outcomes. Finally, Section 6 concludes.

2. Measuring well-being in elementary and lower secondary school in Denmark

In December 2013, The Danish Ministry of Education established an expert group that were to guide the development of the national well-being survey. Their work was accompanied by a pilot study (Keilow et al., 2014) and the final version was implemented in Danish public school starting in the spring of 2015.

In Denmark, compulsory education comprises primary and lower secondary education (ISCED 1 and 2) and lasts 10 years, from grade 0 to grade 9, with the possibility of attending an optional 11th year (grade 10). Children are supposed to enter school in the year in which they turn six years old. Among children in primary and lower secondary education, 76 percent attend the municipal public school, Folkeskolen (as shown in Table 3). In public schools, children are divided into classes of maximum 28 pupils during grade 0. In practice, however, the average class size is much smaller amounting to 21.3 pupils on average (see Table A2). Typically, children stay together in these classes until they leave school. A class receives education in all subjects together, and is headed by a "class teacher", who follows the class for several years. This teacher, who is usually also the Danish or Math teacher of the class, coordinates the activities of the group of subject teachers associated with the class, and is the primary point person in cases of academic, behavioral or social problems. While a teacher is usually only class teacher for one class, subject teachers teach their subjects to several classes.

3. Data, key measures, and samples

We make use of a series of data sources with individual level information about children, their families, and their teachers. Key to our analyses are the nationally administered well-being surveys developed by the Danish Ministry of Education, but we also exploit nationally administered IT-based tests of Danish reading skills and Math (see Beuchert and Nandrup 2018), absence data from the Danish Ministry of Education, administrative data linking teachers to classes, and register-based data maintained by Statistics Denmark. In addition to socio-economic background information, the latter includes information about 9th grade GPA. We merge this variety of data sources by use of the central personal register number, a unique individual identifier available for all Danish residents.

Our primary variable of interest is a measure of attitudes towards school and emotional well-being in the classroom. We base the measure on the recently implemented national well-being indicators that are collected during the first quarter of each calendar year (Andersen et al., 2015). The well-being

survey varies across primary and lower secondary school, with children in primary school (grades 0-3) answering 20 questions and children in lower secondary school (grades 4-9) answering 40 questions. Among the full list of questions in the national well-being survey, we use only the ten questions that enter into the social well-being subscale for children in lower secondary school (The Danish Ministry of Education, 2016). [2] The Ministry only constructs a social well-being subscale for grade 4-9. Still, our overarching goal was to investigate well-being across lower secondary *as well as* primary school. Among the ten questions, therefore, we have found eight questions in the questionnaire for grade 0-3 that correspond well to those included in the grade 4-9 social well-being subscale.[3] We use these to construct a similar social well-being measure for primary school children. The answers to all questions for children in primary school are coded to range from one to three, with three being the most positive. For children in lower secondary school, the answers are coded to range from one to five, with five being the most positive.[4] We list the questions in Table 1. In line with the Danish Ministry of Education (2019), we subsequently calculate social well-being as the within-individual average of the answers provided.

Table 1

Questions that enter the social well-being indicator

Grades 0-3	Grades 4-9
Do you like your school?	Do you like your school?
Do you like the other children in your classroom?	Do you like the other children in your classroom?
Do you feel lonely at school?	Do you feel lonely?
Are you afraid that the other children at school will laugh at you?	Are you afraid of being ridiculed at school?
	How often do you feel safe at school?
Does anyone at school tease you and make you sad?	Since the start of the school year, did anyone bully you?
	I feel I belong at my school.
Do you like the breaks at school?	I like the breaks at school.
Are the children in your classroom good at helping each other?	Most of the pupils in my classroom are kind and helpful.
Do you think the other children in your classroom like you?	Other pupils accept me as I am.

[2] The subscales are constructed based on factor analyses that reveal high levels of reliability (Ministry of Education, 2016). The social well-being scale is closely related to the "school connectedness" scale of Niclasen et al. (2018). In fact, all of the seven questions entering into "school connectedness" are included in the social well-being subscale. The latter includes three additional questions: "Are you afraid of being ridiculed at school?", "Since the start of the school year, did anyone bully you?", and "I like the breaks at school".

[3] As will be clear below, we do exclude children in grade 0 because of concerns about their ability to independently fill out the survey.

[4] For positive questions like "Do you feel safe at school?" the value five (three) corresponds to "very often" ("yes, very"). For negative questions like "Do you feel lonely?" five (three) corresponds to "never" ("no"). In this sense, a higher number is always a better outcome.

Table 2 and Figure 1 together show aspects of the distribution of social well-being for children in primary school and lower secondary school. The first and very positive message is that the vast majority of children report high levels of social well-being. On the scale from 1 to 5 we consider values above (or equal to) 4 as high levels of social well-being in line with Knoop et al. (2017) and values below (or equal to) 3 as low levels of social well-being in line with Nielsen and Rangvid (2016). For children in grade 1-3 we use 2 (the midpoint on the scale) as the natural cut-off. More than 60% of children across grades 4-9 report average levels of social well-being above 4, and on the smaller scale for children in grades 1-3, 90% report above 2.[5] Still, non-negligible shares of children report lower levels of well-being. Roughly 6% of children in grades 4-9, for example, have average social well-being below 3 corresponding to a little more than one pupil per class; and as many as 30% of children in 4-9 have at least one report below 3. Persistency in low social well-being initially appears low – 0.6% of the children exposed to at least three survey rounds (grades 6-9) score on average 3 or lower across all of the three most recent years. Yet, in a relative sense, 0.6% is still non-negligible: it amounts to 10% of the children who have low levels of well-being in the most recent year.

Here, it is also important to note that 15% of the relevant children do not answer the well-being survey in a given year, and an even larger fraction misses at least one of the well-being surveys in the past three years (see Table 3). Our analyses suggest that these children are more likely to have low levels of well-being that go unreported, which indicates that we are likely to underestimate the prevalence and persistence of low levels of well-being. We return to the role of survey response below.

[5] For children in grade 4-9 the mean social well-being is 4.09 (standard deviation 0.63) and for children in grade 1-3 the mean is 2.56 (standard deviation 0.34).

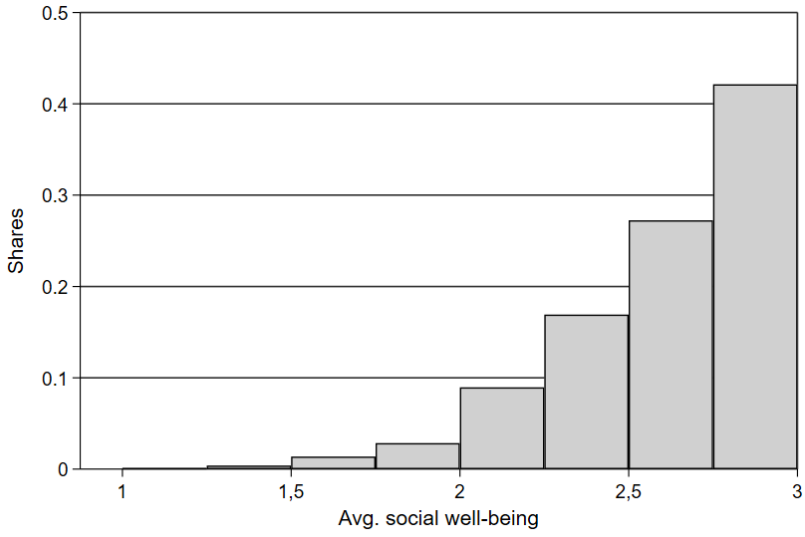
Table 2
Low and high social well-being

	Grades 1-9	Grades 1-3	Grades 4-9	Grades 6-9
Low well-being:				
Average well-being < 3 (2)	0.056	0.052	0.058	0.054
Average well-being ≤ 3 (2)	0.078	0.092	0.071	0.066
Any answers < 3 (2)	0.280	0.224	0.312	0.300
Any answers ≤ 3 (2)	0.744	0.870	0.674	0.667
Average well-being < 3 across last three years	N/A	N/A	N/A	0.005
Average well-being ≤ 3 across last three years	N/A	N/A	N/A	0.006
High well-being:				
Average well-being > 4 (2)	0.711	0.908	0.601	0.600
Average well-being ≥ 4 (2)	0.764	0.948	0.662	0.663
Any answers > 4 (2)	0.934	0.966	0.916	0.922
Any answers ≥ 4 (2)	0.993	0.999	0.989	0.991
Average well-being > 4 across last three years	N/A	N/A	N/A	0.350
Average well-being ≥ 4 across last three years	N/A	N/A	N/A	0.413
# Observations answered survey, last year	380,680	136,003	244,677	150,750
# Observations answered survey, last three years	N/A	N/A	N/A	127,090

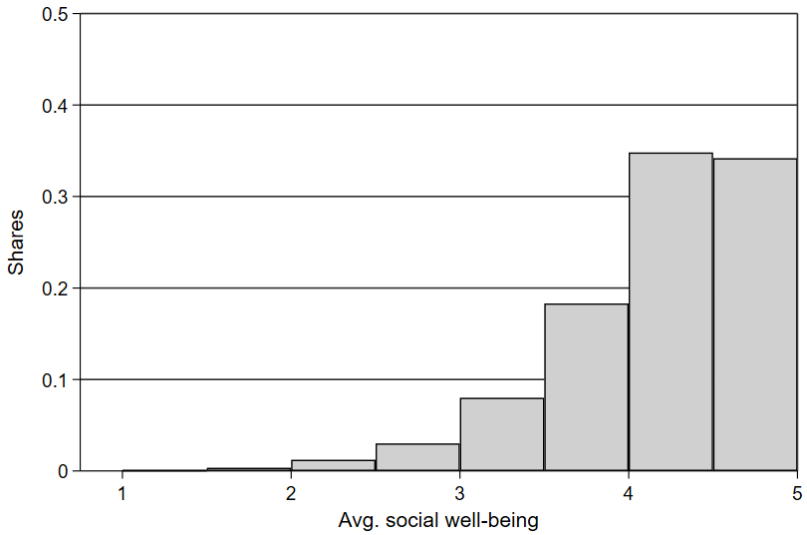
Notes: This table shows shares of pupils across various levels of social well-being. Social well-being is on a scale from 1 to 3 for 1st to 3rd grade pupils and on a scale from 1 to 5 for 4th to 9th grade pupils, hence threshold values depend on the grade: We first present thresholds for 4th to 9th grade pupils, while thresholds in parentheses are for 1st to 3rd grade.

Figure 1

Distribution of social well-being



(A) Grades 1-3



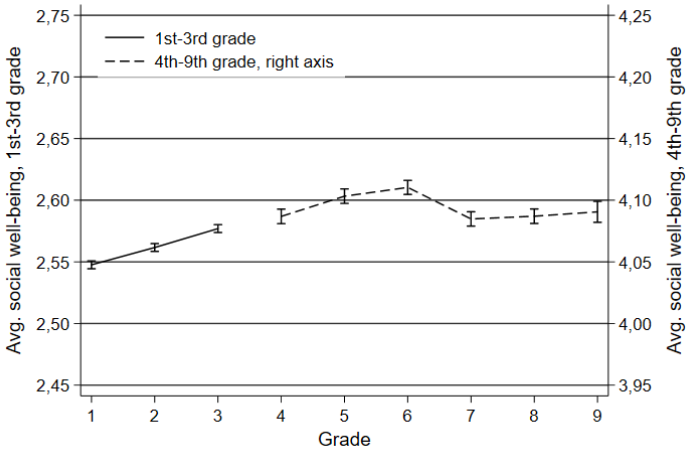
(B) Grades 4-9

Notes: This figure shows the distribution of average (within-individual) social well-being for the *cross-sectional* sample (see Table 2), by grades 1-3 (primary school) and grades 4-9 (lower secondary school).

Figure 2 shows the average social well-being by grade for both the primary school measure (left axis) and secondary school measure (right axis). Well-being increases during the primary school years. In secondary school, average social well-being increases until age 11-12 followed by a decrease until the end of lower secondary school. However, while this pattern is clear, the differences themselves are in fact very small. In practice, in order to study social well-being across grades using one common specification, we standardize the measure at each grade level to have a mean of zero and a variance of one.

Figure 2

Social well-being across grades



Notes: This figure shows average social well-being by grades for the *cross-sectional* sample (see Table 2).

Equipped with a measure of social well-being, we next select our analysis samples. Our starting point is the group of children enrolled in publicly provided primary and lower secondary school in the 2018/2019 school year. Among these, we select children enrolled in grades 1-9. Table 3 shows our sample selection criteria and their implications for our sample size. Critically, not all children complete the well-being surveys; our analyses will explore this selection in detail. In practice, we will consider a child to have completed the social well-being segment of the survey if he/she provides an answer to more than 50% of the questions related to social well-being. Most of our analyses will make use of the *cross-sectional* sample, consisting of the 380,680 children who all answered more than 50% of the questions related to social well-being. In addition to speak about persistency in social well-being, some analyses will exploit a *longitudinal* sample. This sample consists of children who not only completed the social well-being questions in the 2018/2019 school year, but who also answered the social well-being survey in the previous two years. Naturally, this sample is smaller by about 130,000 children. This is primarily because we, by construction, exclude children in grades 1-2.

Table 3

Sample selection

Sample selection criteria	Sample size	% of original sample	Sample reduction
Pupils in primary and lower secondary school 2018/2019	696,543	100.00	-
... enrolled in public schools	530,497	76.16	-166,046
... in grades 1-9	472,250	67.80	-58,247
... in regular classrooms seperated by grade	462,671	66.42	-9,579
... didn't immigrate after 6th birthday	453,206	65.07	-9,465
... in classrooms of 5 to 40 students	449,971	64.60	-3,235
... who participated in the well-being survey	382,921	54.97	-67,050
... and who answered more than 50% of the questions related to social well-being	380,680	54.65	-2,241
... And who has answered the survey the last three consecutive years	247,987	35.60	-132,693

Notes: This table shows the sample selection criteria along with the consequences for sample size.

4. Correlates of social well-being

4.A Individual characteristics and family background

Through a straightforward multiple regression analysis based on the cross-sectional sample, we first consider the (conditional) correlations between social well-being and pupil as well as family background characteristics. We primarily focus on groups of variables that signify prior disadvantage or disruptions at the individual as well as at the family level. This is both because these variables are of interest to decision makers and because a wide range of studies suggest that this type of variables is associated with – and even has a causal effect on – future child human capital and well-being more broadly. See for example excellent surveys by Almond and Currie (2010), Almond and Currie (2011), and Almond, Currie and Duque (2018). Some examples include birth weight (Black et al., 2005) and childhood health more generally (Currie et al., 2010). Age at school start (Black et al., 2008, Landersø et al., 2017) and family income (Dahl and Lochner, 2012; Aizer et al., 2016) are other prominent, well-documented examples. To the extent that the social well-being scale is unassociated with this range of variables, there is reason to worry about the nature and information content of the measure.

In practice, for the pupils themselves, in addition to gender, we consider measures of disadvantage at early life (birth weight); school (age at school start, grade repetitions, school switches, and special needs); social disadvantage (municipal preventive measures and out-of-home placement); and health disadvantage (hospital use and psychiatric contacts).[6] At the family level, we consider measures of

[6] We also condition on migrant status but refrain from interpreting the coefficients because migrant status correlate highly with indicators for missing information on other variables such as birthweight and parental educational attainment.

parental income, education, receipt of unemployment insurance (UI) or cash benefits, health, and incidents of crime as well as a range of indicators of family stability (birth order, family size, separations, and single parenthood). Table A1 presents the full list of variables, their definitions, and sources.

We present our main results in Table 4. Column 1 is our baseline model that controls for observable characteristics at the pupil and family level.[7] Column 2 presents the full model adding teacher, school and classroom characteristics to the list of controls. Column 3 adds classroom random effects and Column 4 adds classroom fixed effects to account for unobservable factors that correlate with both observable characteristics and social well-being. Importantly, all our main conclusions are qualitatively robust to these variations in model specification. Table A2 complements the regression exercise by instead showing how means of the included observable characteristics vary across the distribution (quartiles) of social well-being. Overall, we find that social well-being is vastly higher among boys (about 25% of a standard deviation or 0.16 points on the scale from 1 to 5), which is in contrast to earlier studies linking gender and measures of subjective school well-being; see, for example, Bradshaw et al. (2011).[8] This result is particularly interesting given the public debate on how the organization of (Danish) schools tend to favor girls.[9] Contrary to expectations, social well-being also increases slightly with low birthweight.[10] We note that social well-being correlates negatively – and significantly – with a pupil's own prior experiences of disadvantage. These include late school start, school switches, contacts with psychiatric hospitals, and special needs more generally. Some estimates are particularly large: indicators of receiving preventive measures, having contact to a psychiatric hospital, and being a special needs child in an ordinary classroom all predict lower well-being and some estimates are as large as 25% of a standard deviation. Meanwhile, family background also correlates with well-being: lower parental income, low education levels, receipt of UI or cash benefits, psychiatric hospitalization and incidents of crime are all strong predictors of lower social well-being too. None of the parental variables appears as important as the pupil's own

[7] We do control for a series of variables describing immigrant status but because these variables correlate highly with our indicators for missing family level information, we refrain from showing and commenting on these results.
[8] Bradshaw et al. (2011) do find that boys have higher personal and family well-being than girls.
[9] See for example "We need to change the culture among boys in the classroom" ("Vi skal ændre drengekulturen i klasseværelset"), April 12 2018 (https://videnskab.dk/kultur-samfund/forsker-vi-skal-aendre-drengekulturen-i-klassevaerelset) and "Head of teacher' union: We need to accommodate boys' needs in schools" ("Lærerformand: Skolegang skal indrettes mere til drenge"), September 20, 2015 (https://www.berlingske.dk/samfund/laererformand-skolegang-skal-indrettes-mere-til-drenge).
[10] While many studies argue that birth weight correlates negatively with later academic performance, a recent Danish study (Maruyama and Heinesen, 2020) shows, in contrast, no strong evidence for non-health long-run outcomes, such as test scores.

profile, but the occurrence of family separations, measured as an indicator for whether parents have lived apart for two consecutive years, stand out with a negative coefficient of 9% of a standard deviation or 0.06 points on the scale from 1 to 5. If we run two separate regressions with child characteristic and parent/household characteristics separately, we find that child characteristics can explain almost twice as much of the variation in social well-being as parent/household characteristics.[11]

Given this, the social well-being scale seems to relate more closely to the pupil's own experiences at school as well as his or her level of human capital. Parental and family background does correlate with well-being but to a lesser extent. Of course, many other factors contribute to well-being; our baseline model explains just above 4% of the observed variation.

[11] Results available upon request.

Table 4

Correlates of social well-being

	Baseline model		Full model		Random effects model		Fixed effects model	
Child characteristics								
Male	0.24669	***	0.24551	***	0.24517	***	0.25433	***
	(0.00366)		(0.00369)		(0.00368)		(0.00363)	
Birthweight is below 2500 grams	0.02806	***	0.02767	***	0.02783	***	0.02037	***
	(0.00774)		(0.00765)		(0.00762)		(0.00755)	
Age relative to cohort (Ref.cat.: Adequate for grade)								
Young for grade	-0.02224		-0.01880		-0.01673		-0.01679	
	(0.01424)		(0.01403)		(0.01401)		(0.01385)	
Late school start	-0.04072	***	-0.04776	***	-0.04740	***	-0.05400	***
	(0.00654)		(0.00638)		(0.00638)		(0.00645)	
Repeated a grade	-0.05889	***	-0.06191	***	-0.06306	***	-0.06994	***
	(0.00932)		(0.00895)		(0.00895)		(0.00916)	
Switched address, since school start	0.00806		0.00023		-0.00164		-0.00316	
	(0.00458)		(0.00438)		(0.00436)		(0.00444)	
Switched school, since school start	-0.08179	***	-0.08826	***	-0.08748	***	-0.08180	***
	(0.01011)		(0.01004)		(0.01002)		(0.01001)	
Switched school but not address , since school start	-0.01260		-0.02222	*	-0.02374	*	-0.03274	***
	(0.01079)		(0.01072)		(0.01071)		(0.01074)	
Placed outside home, from 2010	0.09120	***	0.08329	***	0.08674	***	0.07572	***
	(0.02077)		(0.02054)		(0.02040)		(0.02068)	
Received social preventive measures by municipality, since birth	-0.18007	***	-0.17872	***	-0.18159	***	-0.18161	***
	(0.00827)		(0.00813)		(0.00811)		(0.00814)	
Avg. no. of contacts per year to hospital, last 5 years	-0.02971	***	-0.02796	***	-0.02716	***	-0.02696	***
	(0.00305)		(0.00298)		(0.00297)		(0.00299)	
Been in contact with psychiatric hospital, since birth	-0.23508	***	-0.24065	***	-0.24292	***	-0.24799	***
	(0.00933)		(0.00912)		(0.00909)		(0.00931)	
Special needs student in ordinary classroom	-0.19383	***	-0.18112	***	-0.18062	***	-0.16995	***
	(0.03673)		(0.03630)		(0.03609)		(0.03716)	
Special needs student in special needs classroom	-0.03055		0.00217		0.00709		0.02267	
	(0.01752)		(0.03185)		(0.03194)		(0.01511)	

Notes: Dependent variable is social well-being. Column 1 shows results including child, parental, and household characteristics. Column 2 adds teacher, school, and classroom characteristics. Column 3 adds classroom random effects, while column 4 adds classroom fixed effects. Indicators for missing values are included in all regressions. Standard errors clustered at the classroom level and shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 380,680; no. classrooms 21,135. R^2-adjusted of 0.039 (column 1), 0.044 (column 2), 0.045 (column 3), and 0.037 (column 4). Fraction of variance due to variation between classrooms (rho) 0.104 (column 3, random effects), 0.167 (column 4, fixed effects).

Table 4 continued

Correlates of social well-being

	Baseline model		Full model		Random effects model		Fixed effects model	
Maternal characteristics in 2018								
Age at child birth	0.00317	***	0.00253	***	0.00242	***	0.00231	***
	(0.00046)		(0.00046)		(0.00045)		(0.00045)	
Education (Ref.cat.: Vocational)								
Unskilled	-0.01877	**	-0.01113		-0.00825		-0.00788	
	(0.00627)		(0.00625)		(0.00605)		(0.00612)	
Highschool	0.00295		0.00091		0.00105		-0.00022	
	(0.00799)		(0.00798)		(0.00776)		(0.00786)	
Short further	0.00846		0.00393		0.00087		-0.00189	
	(0.00733)		(0.00731)		(0.00707)		(0.00715)	
Medium further	0.05408	***	0.04937	***	0.04632	***	0.03890	***
	(0.00445)		(0.00439)		(0.00429)		(0.00432)	
Long further or PhD	0.04805	***	0.03929	***	0.04148	***	0.03700	***
	(0.00618)		(0.00610)		(0.00593)		(0.00600)	
Taxable income in 2nd quartile, last year	0.01165	*	0.01121	*	0.01294	*	0.01294	**
	(0.00518)		(0.00514)		(0.00511)		(0.00507)	
Taxable income in 3rd quartile, last year	0.01784	**	0.01641	**	0.01922	***	0.02302	***
	(0.00555)		(0.00548)		(0.00543)		(0.00539)	
Taxable income in 4th quartile, last year	0.03008	***	0.02487	***	0.02616	***	0.03051	***
	(0.00586)		(0.00575)		(0.00570)		(0.00567)	
Received unemployment assistance, last year	-0.01372	**	-0.01285	**	-0.01242	**	-0.01102	**
	(0.00448)		(0.00445)		(0.00435)		(0.00436)	
Received unemployment insurance, last year	-0.04471	***	-0.04222	***	-0.03863	***	-0.03583	***
	(0.00667)		(0.00665)		(0.00649)		(0.00655)	
Avg. no. of contacts per year to hospital, last 5 years	-0.00435	*	-0.00376	*	-0.00548	**	-0.00631	***
	(0.00184)		(0.00183)		(0.00177)		(0.00179)	
Been in contact with psychiatric hospital, since birth of pupil	-0.02676	***	-0.02677	***	-0.02766	***	-0.02818	***
	(0.00633)		(0.00628)		(0.00620)		(0.00622)	
Committed criminal offense, since birth of pupil	-0.00983		-0.00599		-0.00527		-0.00162	
	(0.01134)		(0.01134)		(0.01113)		(0.01130)	

Notes: Dependent variable is social well-being. Column 1 shows results including child, parental, and household characteristics. Column 2 adds teacher, school, and classroom characteristics. Column 3 adds classroom random effects, while column 4 adds classroom fixed effects. Indicators for missing values are included in all regressions. Standard errors clustered at the classroom level and shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 380,680; no. classrooms 21,135. R^2-adjusted of 0.039 (column 1), 0.044 (column 2), 0.045 (column 3), and 0.037 (column 4). Fraction of variance due to variation between classrooms (rho) 0.104 (column 3, random effects), 0.167 (column 4, fixed effects).

Table 4 continued

Correlates of social well-being

	Baseline model		Full model		Random effects model		Fixed effects model	
Paternal characteristics in 2018								
Age at child birth	-0.00170	***	-0.00180	***	-0.00169	***	-0.00167	***
	(0.00035)		(0.00035)		(0.00034)		(0.00034)	
Education (Ref.cat.: Vocational)								
Unskilled	-0.03359	***	-0.02766	***	-0.02300	***	-0.01969	***
	(0.00543)		(0.00541)		(0.00524)		(0.00530)	
Highschool	0.00022		-0.00129		0.00349		0.00609	
	(0.00769)		(0.00766)		(0.00742)		(0.00751)	
Short further	0.01232	*	0.00862		0.00902		0.00944	
	(0.00627)		(0.00626)		(0.00605)		(0.00611)	
Medium further	0.02006	***	0.01615	**	0.01638	**	0.01366	***
	(0.00520)		(0.00516)		(0.00500)		(0.00506)	
Long further or PhD	0.02892	***	0.01966	***	0.02465	***	0.02441	***
	(0.00581)		(0.00577)		(0.00556)		(0.00564)	
Taxable income in 2nd quartile, last year	-0.01190	*	-0.01056	*	-0.00957		-0.01007	**
	(0.00515)		(0.00511)		(0.00508)		(0.00504)	
Taxable income in 3rd quartile, last year	0.01407	**	0.01234	*	0.01337	*	0.01419	***
	(0.00532)		(0.00526)		(0.00523)		(0.00521)	
Taxable income in 4th quartile, last year	0.03622	***	0.02735	***	0.02802	***	0.02435	***
	(0.00558)		(0.00546)		(0.00542)		(0.00541)	
Received unemployment assistance, last year	-0.01341	**	-0.01127	*	-0.01252	*	-0.01135	**
	(0.00516)		(0.00514)		(0.00501)		(0.00505)	
Received unemployment insurance, last year	-0.03694	***	-0.03346	***	-0.02992	***	-0.02635	***
	(0.00773)		(0.00772)		(0.00753)		(0.00761)	
Avg. no. of contacts per year to hospital, last 5 years	-0.00540	*	-0.00520	*	-0.00659	**	-0.00732	***
	(0.00221)		(0.00220)		(0.00215)		(0.00218)	
Been in contact with psychiatric hospital, since birth of pupil	-0.01829	*	-0.01782	*	-0.01745	*	-0.01602	**
	(0.00733)		(0.00731)		(0.00719)		(0.00723)	
Committed criminal offense, since birth of pupil	-0.03019	***	-0.02608	***	-0.02841	***	-0.02343	***
	(0.00718)		(0.00716)		(0.00700)		(0.00705)	

Notes: Dependent variable is social well-being. Column 1 shows results including child, parental, and household characteristics. Column 2 adds teacher, school, and classroom characteristics. Column 3 adds classroom random effects, while column 4 adds classroom fixed effects. Indicators for missing values are included in all regressions. Standard errors clustered at the classroom level and shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 380,680; no. classrooms 21,135. R^2-adjusted of 0.039 (column 1), 0.044 (column 2), 0.045 (column 3), and 0.037 (column 4). Fraction of variance due to variation between classrooms (rho) 0.104 (column 3, random effects), 0.167 (column 4, fixed effects).

Table 4 continued

Correlates of social well-being

	Baseline model		Full model		Random effects model		Fixed effects model	
Household characteristics in 2018								
Number of siblings	0.00493	*	0.00471	*	0.00371	*	0.00331	*
	(0.00196)		(0.00195)		(0.00189)		(0.00191)	
Birth order on mother's side	-0.02210	***	-0.02045	***	-0.02076	***	-0.02105	***
	(0.00244)		(0.00243)		(0.00235)		(0.00237)	
Parents have lived apart for two consecutive years	-0.09424	***	-0.09103	***	-0.08827	***	-0.08656	***
	(0.00583)		(0.00582)		(0.00567)		(0.00574)	
Single provider household	-0.02704	***	-0.02338	***	-0.01920	***	-0.01644	***
	(0.00593)		(0.00592)		(0.00576)		(0.00583)	
Teacher characteristics								
Male, Danish			-0.02558	***	-0.02677	***		
			(0.00743)		(0.00751)			
Age, Danish			0.00017		0.00013			
			(0.00036)		(0.00036)			
Educated in teaching Danish or comparable			0.01969		0.02460			
			(0.01693)		(0.01697)			
Years since degree, 0-10 years, Danish			0.00047		0.00057			
			(0.00212)		(0.00214)			
10 years or above since degree, Danish			0.01633		0.01689			
			(0.01472)		(0.01487)			
Tenure of teacher, Danish(Ref.cat.: 0-1 year)								
Tenure is 2 to 3 years, Danish			0.04307	***	0.04233	***		
			(0.00936)		(0.00942)			
Tenure is 4 to 5 years, Danish			0.07464	***	0.07503	***		
			(0.00935)		(0.00942)			
Tenure is 6 years or above, Danish			0.08751	***	0.08662	***		
			(0.00929)		(0.00934)			
Share of days absent, Danish			-0.09571	**	-0.10360	**		
			(0.03358)		(0.03397)			

Notes: Dependent variable is social well-being. Column 1 shows results including child, parental, and household characteristics. Column 2 adds teacher, school, and classroom characteristics. Column 3 adds classroom random effects, while column 4 adds classroom fixed effects. Indicators for missing values are included in all regressions. Standard errors clustered at the classroom level and shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 380,680; no. classrooms 21,135. R^2-adjusted of 0.039 (column 1), 0.044 (column 2), 0.045 (column 3), and 0.037 (column 4). Fraction of variance due to variation between classrooms (rho) 0.104 (column 3, random effects), 0.167 (column 4, fixed effects).

Table 4 continued

Correlates of social well-being

	Baseline model	Full model		Random effects model		Fixed effects model
Age, Math		-0.00028		-0.00023		
		(0.00035)		(0.00036)		
Male, Math		-0.00132		-0.00070		
		(0.00573)		(0.00575)		
Educated in teaching math or comparable		0.02103		0.02319		
		(0.01194)		(0.01204)		
Years since degree, 0-10 years, Math		0.00020		-0.00029		
		(0.00214)		(0.00217)		
10 years or above since degree, Math		0.01159		0.01092		
		(0.01433)		(0.01443)		
Tenure of teacher, Math(Ref.cat.: 0-1 year)						
Tenure is 2 to 3 years, Math		0.02250	*	0.02394	**	
		(0.00906)		(0.00915)		
Tenure is 4 to 5 years, Math		0.03028	**	0.03239	***	
		(0.00924)		(0.00928)		
Tenure is 6 years or above, Math		0.04094	***	0.03950	***	
		(0.00916)		(0.00923)		
Share of days absent, Math		-0.03356		-0.02680		
		(0.03284)		(0.03276)		
School characteristics						
Turnover rate of Danish and math teachers		-0.00035		-0.00039		
		(0.00059)		(0.00060)		
Turnover rate of all teachers		-0.00013		-0.00008		
		(0.00060)		(0.00060)		
Size		-0.00003	*	-0.00004	**	
		(0.00001)		(0.00001)		

Notes: Dependent variable is social well-being. Column 1 shows results including child, parental, and household characteristics. Column 2 adds teacher, school, and classroom characteristics. Column 3 adds classroom random effects, while column 4 adds classroom fixed effects. Indicators for missing values are included in all regressions. Standard errors clustered at the classroom level and shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 380,680; no. classrooms 21,135. R^2-adjusted of 0.039 (column 1), 0.044 (column 2), 0.045 (column 3), and 0.037 (column 4). Fraction of variance due to variation between classrooms (rho) 0.104 (column 3, random effects), 0.167 (column 4, fixed effects).

Table 4 continued

Correlates of social well-being

	Baseline model	Full model		Random effects model		Fixed effects model
Classroom characteristics						
Size		0.00104		0.00072		
		(0.00077)		(0.00077)		
Share of males		-0.17980	***	-0.17843	***	
		(0.02412)		(0.02445)		
Share with birthweight below 2500 grams		0.11592	*	0.12143	**	
		(0.04575)		(0.04630)		
Share of who are young for grade		-0.04935		0.00225		
		(0.09009)		(0.09222)		
Share of late starters		0.09067	**	0.10756	**	
		(0.03241)		(0.03319)		
Share who repeated a grade		0.09999	**	0.08552	*	
		(0.03795)		(0.03903)		
Share who switched address, since school start		0.02527		0.01234		
		(0.02088)		(0.02103)		
Share who switched school, since school start		-0.09736		-0.09593		
		(0.05868)		(0.05969)		
Share who switched school but not address, since school start		0.17048	**	0.15825	*	
		(0.06053)		(0.06156)		
Share who have been placed outside home, from 2010		0.21594	*	0.21928	*	
		(0.09155)		(0.09202)		
Share who received social preventive measures by municipality, since birth		-0.02262		-0.03029		
		(0.03922)		(0.04014)		
Avg. no. of contacts per year to hospital, last 5 years		-0.01619		-0.00630		
		(0.01542)		(0.01555)		
Share who has been in contact with psychiatric hospital, since birth		0.07794	*	0.06127		
		(0.03884)		(0.03937)		
Share with special needs in ordinary classrooms		-0.14418		-0.14170		
		(0.14598)		(0.13906)		

Notes: Dependent variable is social well-being. Column 1 shows results including child, parental, and household characteristics. Column 2 adds teacher, school, and classroom characteristics. Column 3 adds classroom random effects, while column 4 adds classroom fixed effects. Indicators for missing values are included in all regressions. Standard errors clustered at the classroom level and shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 380,680; no. classrooms 21,135. R^2-adjusted of 0.039 (column 1), 0.044 (column 2), 0.045 (column 3), and 0.037 (column 4). Fraction of variance due to variation between classrooms (rho) 0.104 (column 3, random effects), 0.167 (column 4, fixed effects).

Table 4 continued

Correlates of social well-being

	Baseline model	Full model		Random effects model		Fixed effects model
Share with a criminal parent		-0.21287	***	-0.16151	***	
		(0.02881)		(0.02853)		
Share with parents have med./long education		0.13709	***	0.14098	***	
		(0.02057)		(0.02059)		
Share with parents who received unemployment assistance/insurance, last year		-0.06251	*	-0.04194		
		(0.02521)		(0.02519)		
Share with a parent who has been in contact with psychiatric hospital		0.01609		-0.00382		
		(0.03159)		(0.03182)		
Share with mother's income in 2nd quartile, last year		0.00918		0.01914		
		(0.03108)		(0.03140)		
Share with mother's income in 3rd quartile, last year		-0.05718		-0.04666		
		(0.03223)		(0.03244)		
Share with mother's income in 4th quartile, last year		-0.08829	**	-0.07615	*	
		(0.03372)		(0.03388)		
Share with father's income in 2nd quartile, last year		0.02033		0.02834		
		(0.03011)		(0.03042)		
Share with father's income in 3rd quartile, last year		-0.00871		0.00218		
		(0.03062)		(0.03095)		
Share with father's income in 4th quartile, last year		0.07386	*	0.08515	**	
		(0.03110)		(0.03136)		

Notes: Dependent variable is social well-being. Column 1 shows results including child, parental, and household characteristics. Column 2 adds teacher, school, and classroom characteristics. Column 3 adds classroom random effects, while column 4 adds classroom fixed effects. Indicators for missing values are included in all regressions. Standard errors clustered at the classroom level and shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 380,680; no. classrooms 21,135. R^2-adjusted of 0.039 (column 1), 0.044 (column 2), 0.045 (column 3), and 0.037 (column 4). Fraction of variance due to variation between classrooms (rho) 0.104 (column 3, random effects), 0.167 (column 4, fixed effects).

4.B The role of teacher and school characteristics

Our next set of explanatory variables concern teacher and school characteristics. Whether teachers and schools affect child human capital is a question that has attracted overwhelming interest from scholars. See e.g. Rivkin et al. (2005) and Chetty et al. (2011) for studies on teacher quality. Among teacher characteristics, gender has received particular attention (e.g. Nixon and Robinson, 1999; Bettinger and Long, 2005; Dee, 2007; Antecol et al., 2015).

Included variables describe Danish and math teachers in terms of their gender, age, training, experience, and tenure, as well as their absence from work. School characteristics include measures of teacher turnover and size. Results are shown in panel C of Table 4. For obvious reasons, we cannot study teacher characteristics in models that include classroom fixed effects. Interestingly, we find that social well-being is higher in classrooms with a female Danish teacher, just as higher tenure correlate positively with well-being. Teacher absence, in contrast, is negatively associated with well-being. Teacher turnover at the school level and school size are not strongly related to well-being. Presumably, and in line with existing literature, teachers are instrumental in establishing a well-functioning classroom culture, but many confounding factors could contribute to this too and causality may run in both directions. Teachers in problematic classrooms may experience burnout, for example, and substitute teacher may often be younger and less experienced. Accordingly, as above, we explicitly refrain from making causal interpretations and leave it to other researchers to study any effects of teacher profile on pupil well-being.

4.C The role of classroom composition

Our final set of variables describe classroom composition. Here, we include variables measured at the pupil and family level but now calculated as means among the other pupils in the classroom, while explicitly excluding the pupil him or herself. Previous studies suggest that classroom composition explain pupil achievement; see for example Carrell and Hoekstra (2010) on criminal background, Cho (2012) and Diette et al. (2014) on English language learners and immigrants, and Figlio (2007) and Kristoffersen et al. (2015) on disruptive students.

Our estimates indicate that a higher share of males and a higher share of classmates with parents with a criminal record correlate negatively with social well-being. The share of late starters and children who repeat a grade, on the other hand, correlate positively with social well-being. This is presumably

because these factors imply that the children are more mature. School switchers, children placed outside of the home, and to a lesser extent the share of children with contacts to psychiatric hospitals are similarly associated with higher levels of well-being. The latter two cases could, however, be because of additional resources allocated to the classroom. The share of parents with higher levels of education correlate positively with higher well-being but the association with income levels is less clear and results vary across mothers and fathers; to the extent that there is assortative matching, these results are slightly more difficult to interpret.[12]

Overall, we find compelling evidence that the social well-being measure is associated with individual, family, and teacher variables indicative of disadvantage. Hence, given the results from our analysis, there is no reason to think that the social well-being scale is not an informative proxy for actual well-being. Of course, the explanatory power of our models is low and the R^2 lies in the neighborhood of 0.04 depending on the exact model; indicating that much of the variation in children's social well-being remains unexplained. This is not uncommon, even for well-validated measures; see also Gutman and Feinstein (2008) and Bradshaw et al. (2011). It is noteworthy, however, that our conditioning set is considerably richer than that of prior studies. Moreover, much of the explained variation seems to be driven by individual level factors: estimated intraclass correlations lie between 10 and 15% indicating that between 85 and 90% of the explained variation in social well-being is due to individual level factors, i.e. factors beyond the grouping structure (the classroom); see also Verkuyten and Thijs (2002) who find that similar results.

4.D Persistence over time

One concern is that well-being is particularly sensitive to day-to-day variation, potentially prohibiting a meaningful interpretation. We saw indications in Table 2, however, that well-being was fairly persistent over time. To address the issue further, we investigate the extent to which this conclusion holds once we control for background characteristics as well. Keep in mind that the outcome is standardized relative to the cohort, which means that we implicitly explore persistency in the relative position in the distribution, rather than the absolute value, over time. In practice, we extend the full model from Table 4 to include the first and second lag of social well-being and base our analysis on the longitudinal sample. Results are shown in Table 5. Of course, as in the descriptive analyses, this

[12] Of course, these results could link to survey response tendencies as well, which we explore in Section 4.E.

limits the sample to consist of pupils for whom we have at least three measures of well-being and de facto excludes the youngest pupils in the sample. Results are very clear: there is a high association between current and lagged measures of social well-being, regardless of the empirical specification. The correlation is higher (>.47) between the current and the first lag of social well-being but is still substantial (about .15) two years back in time. Moreover, lagged social well-being is key in explaining current social well-being; adding control variables in column 2 only increases the explained variation slightly. We similarly investigate persistence in the likelihood of lying in the lowest quartile of social well-being. These results are presented in Table A3. All of these findings imply to us that the measure of social well-being carries relevant information.[13]

Table 5

Persistence in social well-being measure

	Lagged well-being measures only		Add background variables	
Social well-being, 1 year lag	0.45852	***	0.44306	***
	(0.00239)		(0.00240)	
Social well-being, 2 year lag	0.17718	***	0.16699	***
	(0.00226)		(0.00225)	

Notes: Table shows regressions of social well-being on lags of social well-being. First column only includes lags of social well-being; second column also include child, parental, teacher and school, and classroom characteristics in addition to indicators for missing values as in Table 4, column 2. Robust standard errors shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 247,987. R^2-adjusted of .318 (column 1), 0.327 (column 2).

4.E Survey response

Although obligatory at Danish public schools, some children do not complete the national well-being survey, with absence from school being the most likely explanation. Out of the relevant 449,971 children, 380,680 pupils, or 85%, participated in the survey (see Table 3). If disadvantaged children with low well-being are less likely to respond to the survey, the real link between well-being and background characteristics could be even stronger than what we observe in the data. We saw above, for example, that special needs children in ordinary classrooms report lower levels of well-being. If it is the case that that special needs children with low levels of well-being are more likely to be absent

[13] Many of the same background variables that correlate with social well-being in levels also correlate with consistently being in the 1st quartile in terms of social well-being. Results are available upon request.

on the day of survey, we will tend to *underestimate* the relationship between social well-being and this particular variable. To investigate this, we regress an indicator for survey response on the same set of characteristics as above.

Table A4 shows clearly that individual and family level proxies for prior disadvantage correlate with survey response in the way we expect. This is comforting because it ensures that the signs of the estimated relationships from above are, in fact, reliable. Teacher characteristics are to some extent predictive: exposure to an older and more experienced teacher or a male teacher generally lowers response rates. Classroom composition, on the other hand, seems predictive of survey response but the direction is not always in line with what one would expect. For example, we detect higher response rates in classrooms where the share of children with special needs is high, but lower response rates if the share of high-income mothers is high. This calls for caution when interpreting the results.

5. Associations with other relevant outcomes

Table 6 finally explores the degree to which other relevant outcomes such as absence rates during the school year, standardized national test scores, and 9th grade GPA correlate with previous measures of social well-being. This is important, because the social well-being measures could then reasonably be used as early indicators for later academic outcomes that may have consequences for children's entire life path. It also speaks to the information content of the social well-being measure. The conditional correlations between absence rates and prior measures of social well-being are negative but small. Test scores and 9th grade GPA, on the other hand, correlate positively with social well-being, both one and two years prior to the measurement of the outcome. An increase in social well-being in 2018 of one standard deviation is associated with a 0.07 standard deviations higher national test score in reading and a 0.07 higher level of 9th grade GPA, for example. These positive correlations are in line with international studies; see Bücker et al. (2018) for an overview.

Table 6

Associations between social well-being, school absence, and academic outcomes

	Share Absent		Danish (reading), national test		Math, national test		9th grade GPA	
Social well-being, 1 year lag	-0.00145	***	0.06838	***	0.06176	***	0.07569	***
	(0.00010)		(0.00253)		(0.00300)		(0.01892)	
Social well-being, 2 year lag	-0.00057	***	0.04625	***	0.04636	***	0.12044	***
	(0.00011)		(0.00284)		(0.00297)		(0.01853)	
# Observations	373,203		176,668		129,732		20,538	

Notes: Table shows regressions of outcomes on lags of social well-being. Share absent measures the share of the school year a child was absent; national test scores are standardized to have mean 0 and variance of 1; 9th grade GPA measures average exam grades in obligatory courses. Regressions also include child, parental, teacher and school, and classroom characteristics in addition to indicators for missing values as in Table 4. Robust standard errors shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. R^2-adjusted of 0.102 (column 1), 0.180 (column 2), 0.186 (column 3), and 0.278 (column 4).

6. Conclusion

This paper studies the characteristics of the social well-being segment of the Danish national well-being survey, distributed to children of all ages in public school. We document that low social well-being correlates meaningfully with standard measures of disadvantage at the pupil and parental level, just as teacher characteristics and classroom composition are additional important predictors of well-being. We also show that social well-being exhibits high degrees of persistence over time, regardless of whether or not we control for a wide range of background characteristics. We finally show that lower social well-being is positively associated with academic performance and negatively but only slightly associated with absence from school. All of these findings are important for a range of decision-makers. Seen in combination with the findings of Andersen et al. (2020) and Niclasen et al. (2018), we also propose that the school social well-being indicator from the national well-being survey could reasonably be used as a first, convenient indicator of well-being among Danish pupils.

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Appendix A. Tables and Figures

Table A1

Variable definitions

Background Variables	Definition	Source
Child characteristics		
Male	Indicator if male	BEF
Birthweight is below 2500 grams	Indicator if birthweight is below 2500 grams	MFR
Young for grade	Indicator if pupils age is young for grade ("ahead of schedule")	UDSP, BEF
Late school start	Indicator if pupil started in the school later than year the child turned 6	KOTRE, BEF
Repeated a grade	Indicator if the pupil ever has repeated a grade	KOTRE, BEF
Switched address, since school start	Indicator if the pupil has switched address since school start	KOTRE, BEF
Switched school, since school start	Indicator if the pupil has switched schools since school start	KOTRE
Switched school but not address , since school start	Indicator if the pupil has switched school but not address since school start	KOTRE, BEF
Placed outside home, 2010 to 2018	Indicator if placed outside home	BUAS
Received social preventive measures by municipality, since birth	Indicator if received social preventive measures	BUFO
Avg. no. of contacts per year to hospital, 2014 to 2018	Avg. no. of daily contacts per year to hospital (Max 1 contact per day)	LPR_ADM
Been in contact with psychiatric hospital, since birth	Indicator if pupil has been in contact with psychiatric hospital	LPSYADM
Special needs student in ordinary classroom	Indicator if student received special education	UDSP
Special needs student in special needs classroom	Indicator if student received special education	UDSP
Maternal characteristics in 2016		
Age at child birth	Age at birth of child in years (birth date of parent - birth date of child)/365.25	BEF
Unskilled	Indicator if parent's highest obtained education is unskilled	UDDA
Highschool	Indicator if parent's highest obtained education is highschool	UDDA
Short further	Indicator if parent's highest obtained education is short further	UDDA
Medium further	Indicator if parent's highest obtained education is medium further	UDDA
Long further or PhD.	Indicator if parent's highest obtained education is long further or ph.d.	UDDA
Taxable income in 2nd quartile, last year	Indicator if parent's disposable income is in 2nd quartile	IND
Taxable income in 3rd quartile, last year	Indicator if parent's disposable income is in 3rd quartile	IND
Taxable income in 4th quartile, last year	Indicator if parent's disposable income is in 4th quartile	IND
Received unemployment assistance, last year	Indicator if received unemployment assistance	DREAM
Received unemployment insurance, last year	Indicator if received unemployment insurance	DREAM
Avg. no. of contacts per year to hospital, 2014 to 2018	Avg. no. of daily contacts per year to hospital (Max 1 contact per day)	LPR_ADM
Been in contact with psychiatric hospital, since birth of pupil	Indicator if parent has been in contact with psychiatric hospital, since birth of pupil	LPSYADM
Committed criminal offense, since birth of pupil	Indicator if ever committed a criminal offense (Note: Not traffic related)	KRAF

Paternal characteristics in 2016		
Age at child birth	Age at birth of child in years (birth date of parent - birth date of child)/365.25	BEF
Unskilled	Indicator if parent's highest obtained education is unskilled	UDDA
Highschool	Indicator if parent's highest obtained education is highschool	UDDA
Short further	Indicator if parent's highest obtained education is short further	UDDA
Medium further	Indicator if parent's highest obtained education is medium further	UDDA
Long further or PhD.	Indicator if parent's highest obtained education is long further or ph.d.	UDDA
Taxable income in 2nd quartile, last year	Indicator if parent's disposable income is in 2nd quartile	IND
Taxable income in 3rd quartile, last year	Indicator if parent's disposable income is in 3rd quartile	IND
Taxable income in 4th quartile, last year	Indicator if parent's disposable income is in 4th quartile	IND
Received unemployment assistance, last year	Indicator if received unemployment assistance	DREAM
Received unemployment insurance, last year	Indicator if received unemployment insurance	DREAM
Avg. no. of contacts per year to hospital, 2014 to 2018	Avg. no. of daily contacts per year to hospital (Max 1 contact per day)	LPR_ADM
Been in contact with psychiatric hospital, since birth of pupil	Indicator if parent has been in contact with psychiatric hospital, since birth of pupil	LPSYADM
Committed criminal offense, since birth of pupil	Indicator if ever committed a criminal offense (Note: Not traffic related)	KRAF
Household characteristics in 2016		
Number of siblings	Number of siblings (both half and full)	BEF
Birth order on mother's side	Birth order on mother's side	BEF
Parents have lived apart for two consecutive years	Indicator if parents had different adress last two years consecutively	BEF
Single provider household	Indicator if pupil is living in a single provider household	BEF
Teacher characteristics	**Note for teachers variables: They are calculated as weighted averages across the 4 teachers, which spent most time with students last year, weighted by their time spent with the pupil**	
Male, Danish	Indicator if teacher is male	BEF
Age, Danish	Age of teacher	BEF
Educated in teaching Danish or comparable	Indicator if teacher had Danish specialization or have skills comparable to it	Teacher Competencies
Years since degree, 0-10 years, Danish	Spline for years since degree from 0 to 10 years	UDDA
10 years or above since degree, Danish	Indicator if years since degree is 10 or over	UDDA
Tenure is 2 to 3 years, Danish	Indicator if teachers tenure is 2 to 3 years at current school	Teacher Competencies
Tenure is 4 to 5 years, Danish	Indicator if teachers tenure is 4 to 5 years at current school	Teacher Competencies
Tenure is 6 years or above, Danish	Indicator if teachers tenure is 6 years or above at current school	Teacher Competencies
Share of days absent, Danish	Share of days absent	FRPE
Age, Math	Indicator if teacher is male	BEF
Male, Math	Age of teacher	BEF
Educated in teaching math or comparable	Indicator if teacher had math specialization or have skills comparable to it	Teacher Competencies
Years since degree, 0-10 years, Math	Spline for years since degree from 0 to 10 years	UDDA
10 years or above since degree, Math	Indicator if years since degree is 10 or over	UDDA

Tenure is 2 to 3 years, Math	Indicator if teachers tenure is 2 to 3 years at current school	Teacher Competencies
Tenure is 4 to 5 years, Math	Indicator if teachers tenure is 4 to 5 years at current school	Teacher Competencies
Tenure is 6 years or above, Math	Indicator if teachers tenure is 6 years or above at current school	Teacher Competencies
Share of days absent, Math	Share of days absent	FRPE
Classroom characteristics		
Size	Size of classroom	UDSP
Share of males	Share of males in classroom	BEF
Share with birthweight below 2500 grams	Share of pupils with a birthweight below 2500 grams	MFR
Share of who are young for grade	Share of pupils who are young for grade ("Ahead of schedule")	UDSP, BEF
Share of late starters	Share that started school after the year they turned 6	KOTRE
Share of who repeated a grade	Share of pupils who have ever repeated a grade	KOTRE, BEF
Share of who switched address, since school start	Share of pupils who have switched address since school start	KOTRE, BEF
Share of who switched school, since school start	Share of pupils who have switched schools since school start	KOTRE, BEF
Share of who switched school but not address, since school start	Share of pupils who have switched school but not address since school start	KOTRE, BEF
Share of who have been placed outside home, from 2010	Share of pupils who have been placed outside home	BUAS
Share of who received social preventive measures by municipality, since birth	Share of pupils who have received social preventive measures	BUFO
Avg. no. of contacts per year to hospital, last 5 years	Avg. no. Of daily contacts per year to hospital (Max 1 contact per day)	LPR_ADM
Share of who has been in contact with psychiatric hospital, since birth	Share of who has been in contact with psychiatric hospital, since birth	LPSYADM
Share with special needs in ordinary classrooms	Share with special education needs in regular classrooms	UDSP
Share with a criminal parent	Share with a criminal parent	KRAF
Share with parents have med./long education	Share with parents that have medium or long further education	UDDA
Share with parents who received unemployment assistance/insurance, last year	Share of parents which received unemployment assistance or insurance, last year	DREAM
Share with a parent who has been in contact with psychiatric hospital, since bir	Share with a parent who has been in contact with psychiatric hospital, since bir	LPSYADM
Share with mother's income in 2nd quartile, last year	Share of mothers which belonged to 2nd income quartile	IND
Share with mother's income in 3rd quartile, last year	Share of mothers which belonged to 3rd income quartile	IND
Share with mother's income in 4th quartile, last year	Share of mothers which belonged to 4th income quartile	IND
Share with father's income in 2nd quartile, last year	Share of fathers which belonged to 2nd income quartile	IND
Share with father's income in 3rd quartile, last year	Share of fathers which belonged to 3rd income quartile	IND
Share with father's income in 4th quartile, last year	Share of fathers which belonged to 4th income quartile	IND
School characteristics		
Turnover rate of Danish and math teachers	Turnover rate of Danish and math teachers at school	Teachers Competencies
Turnover rate of all teachers	Turnover rate of all teachers at school	Teachers Competencies
Size	Size of school	UDSP
HIDDEN CONTROLS		
Immigrant	Indicator if immigrant	BEF
Immigrant, nonwestern	Indicator if immigrant, nonwestern	BEF
Descendant	Indicator if descendant	BEF
Descendant, nonwestern	Indicator if descendant, nonwestern	BEF
Class share: Immigrant, nonwestern	Share in class that is nonwestern immigrant	BEF
Class share: Immigrant	Share in class that is immigrant	BEF
Class share: Descendant, nonwestern	Share in class that is nonwestern descendant	BEF
Class share: Descendant	Share in class that is descendant	BEF
More than 4 teachers, Danish	Indicator if pupil has more than 4 danish teachers connected	Teachers Competencies
More than 4 teachers, Math	Indicator if pupil has more than 4 math teachers connected	Teachers Competencies

MISSING CONTROLS	
M: Danish teacher	Indciator if no Danish teacher is traceable
M: Share of days absent, Danish	Indicator if Danish teachers absence data is missing
M: Danish teacher characteristics	Indicator if one or multiple Danish teacher characteristics is missing
M: Math teacher	Indicator if no math teacher is traceable
M: Share of days absent, Math	Indicator if math teachers absence data is missing
M: Math teacher characteristics	Indicator if one or multiple math teacher characteristics is missing
M: Late school start	Indicator if started school late is missing (This can be missing if they e.g. go directly into 1st grade and perhaps had kindergarten in another country). Can be changed.
M: Turnover rate of teachers at school	Indicator if turnover rate of teachers is missing (Likely due to schools not reporting)
M: Birth information	Indicator if birth information is missing (This is not perfectly correlated with being immigrant)
M: Birth order on mothers side	Indicator if birth order is missing (If e.g. Mor_id is missing)
M: Fathers taxable income	indicator if fathers income is missing
M: Mothers taxable income	indicator if mothers income is missing
M: father receives unemployment assistance	Indicator if missing if father received any unemployment assistance
M: mother receives unemployment assistance	Indicator if missing if mother received any unemployment assistance
M: Father educ.	Indicator if missing fathers education
M: Mother educ.	Indicator if missing mothers education.

Table A2

Background characteristics by social well-being quartiles

Background Variables	Full Sample	1st quartile	2nd quartile		3rd quartile		4th quartile	
Child characteristics								
Male	0.51373	0.42523	0.49193	***	0.54272	***	0.57973	***
	(0.49981)	(0.49438)	(0.49994)		(0.49817)		(0.49361)	
Birthweight is below 2500 grams	0.05160	0.05278	0.05103	*	0.04951	*	0.05172	*
	(0.22121)	(0.22360)	(0.22006)		(0.21693)		(0.22146)	
Age relative to cohort (Ref.cat.: Adequate for grade)								
Age adequate for grade	0.86819	0.86101	0.87496	***	0.88325	***	0.88814	***
	(0.33828)	(0.34594)	(0.33077)		(0.32112)		(0.31520)	
Young for grade	0.01365	0.01489	0.01357	**	0.01325	**	0.01196	**
	(0.11605)	(0.12113)	(0.11570)		(0.11434)		(0.10869)	
Late school start	0.08324	0.08438	0.07872	***	0.07452	***	0.07312	***
	(0.27624)	(0.27796)	(0.26931)		(0.26261)		(0.26033)	
Repeated a grade	0.04548	0.05096	0.04235	***	0.03754	***	0.03406	***
	(0.20835)	(0.21991)	(0.20138)		(0.19008)		(0.18140)	
Switched address, since school start	0.25322	0.26316	0.24990	***	0.22642	***	0.21161	***
	(0.43486)	(0.44035)	(0.43296)		(0.41851)		(0.40845)	
Switched school, since school start	0.19327	0.20004	0.18322	***	0.15667	***	0.13974	***
	(0.39486)	(0.40003)	(0.38685)		(0.36349)		(0.34672)	
Switched school but not address, since school start	0.15620	0.15757	0.14765	***	0.12574	***	0.11151	***
	(0.36304)	(0.36434)	(0.35475)		(0.33156)		(0.31477)	
Placed outside home, from 2010	0.01097	0.01447	0.00921	***	0.00790	***	0.00723	***
	(0.10418)	(0.11942)	(0.09554)		(0.08851)		(0.08474)	
Received social preventive measures by municipality, since birth	0.07994	0.10339	0.07006	***	0.05541	***	0.04824	***
	(0.27120)	(0.30447)	(0.25525)		(0.22877)		(0.21428)	
Avg. no. of contacts per year to hospital, last 5 years	0.38499	0.39204	0.36691	***	0.36176	***	0.35629	***
	(0.60267)	(0.58994)	(0.55954)		(0.56106)		(0.54720)	
Been in contact with psychiatric hospital, since birth	0.06198	0.07320	0.05094	***	0.04269	***	0.03651	***
	(0.24111)	(0.26047)	(0.21988)		(0.20215)		(0.18756)	
Special needs student in ordinary classroom	0.00337	0.00449	0.00256	***	0.00244	***	0.00200	***
	(0.05798)	(0.06687)	(0.05054)		(0.04932)		(0.04466)	
Special needs student in special needs classroom	0.02907	0.03245	0.02324	***	0.01906	***	0.01810	***
	(0.16800)	(0.17719)	(0.15067)		(0.13674)		(0.13332)	

Maternal characteristics in 2018								
Age at child birth	30.37012	30.11042	30.42961	***	30.53152	***	30.61715	***
	(5.49963)	(5.71404)	(5.47734)		(5.33170)		(5.24650)	
Education (Ref.cat.: Vocational)								
Unskilled	0.12831	0.15144	0.12232	***	0.11092	***	0.10107	***
	(0.33443)	(0.35848)	(0.32766)		(0.31403)		(0.30143)	
Highschool	0.04971	0.05248	0.04928	***	0.04846	***	0.04669	***
	(0.21735)	(0.22299)	(0.21644)		(0.21473)		(0.21098)	
Vocational	0.31979	0.33735	0.32269	***	0.31219	***	0.30004	***
	(0.46640)	(0.47281)	(0.46751)		(0.46339)		(0.45828)	
Short further	0.05585	0.05492	0.05803	***	0.05758	***	0.05783	***
	(0.22963)	(0.22783)	(0.23380)		(0.23294)		(0.23342)	
Medium further	0.28583	0.26260	0.28666	***	0.29919	***	0.31530	***
	(0.45181)	(0.44005)	(0.45220)		(0.45790)		(0.46464)	
Long further or PhD.	0.14623	0.12480	0.14683	***	0.15884	***	0.16763	***
	(0.35334)	(0.33049)	(0.35394)		(0.36553)		(0.37354)	
Taxable income quartile (Ref.cat.: 1st)								
Taxable income in 1st quartile, last year	0.24868	0.28177	0.23873	***	0.22467	***	0.21188	***
	(0.43225)	(0.44986)	(0.42631)		(0.41737)		(0.40864)	
Taxable income in 2nd quartile, last year	0.24868	0.25778	0.25351	**	0.24839	**	0.24597	**
	(0.43225)	(0.43741)	(0.43502)		(0.43208)		(0.43067)	
Taxable income in 3rd quartile, last year	0.24868	0.23748	0.25181	***	0.25684	***	0.26296	***
	(0.43225)	(0.42554)	(0.43405)		(0.43689)		(0.44025)	
Taxable income in 4th quartile, last year	0.24867	0.21717	0.25064	***	0.26542	***	0.27485	***
	(0.43224)	(0.41232)	(0.43338)		(0.44156)		(0.44644)	
Received unemployment assistance, last year	0.26424	0.29291	0.25451	***	0.23922	***	0.22754	***
	(0.44093)	(0.45510)	(0.43559)		(0.42661)		(0.41925)	
Received unemployment insurance, last year	0.06721	0.07480	0.06779	***	0.06535	***	0.06096	***
	(0.25038)	(0.26307)	(0.25139)		(0.24714)		(0.23925)	
Avg. no. of contacts per year to hospital, last 5 years	0.82333	0.87431	0.80522	***	0.78971	***	0.77310	***
	(1.00021)	(1.04085)	(0.96931)		(0.96916)		(0.94475)	
Been in contact with psychiatric hospital, since birth of pupil	0.10139	0.11817	0.09726	***	0.08714	***	0.08001	***
	(0.30185)	(0.32282)	(0.29632)		(0.28204)		(0.27131)	
Committed criminal offense, since birth of pupil	0.03043	0.03687	0.02768	***	0.02425	***	0.02197	***
	(0.17177)	(0.18844)	(0.16406)		(0.15382)		(0.14658)	

Paternal characteristics in 2018								
Age at child birth	32.13440	31.93417	32.22563	***	32.31674	***	32.40648	***
	(8.07182)	(8.45100)	(8.01749)		(7.73720)		(7.44471)	
Education (Ref.cat.: Vocational)								
Unskilled	0.15529	0.17906	0.15046	***	0.13966	***	0.13000	***
	(0.36218)	(0.38340)	(0.35752)		(0.34663)		(0.33630)	
Highschool	0.05063	0.04949	0.05147	**	0.05047	**	0.04994	**
	(0.21923)	(0.21688)	(0.22097)		(0.21891)		(0.21783)	
Vocational	0.38799	0.39901	0.39022	***	0.38801	***	0.38172	***
	(0.48729)	(0.48970)	(0.48780)		(0.48730)		(0.48581)	
Short further	0.07782	0.07395	0.07931	***	0.08018	***	0.08351	***
	(0.26789)	(0.26168)	(0.27022)		(0.27158)		(0.27665)	
Medium further	0.14485	0.13063	0.14673	***	0.15229	***	0.15905	***
	(0.35195)	(0.33699)	(0.35384)		(0.35930)		(0.36572)	
Long further or ph.d.	0.14061	0.11934	0.14041	***	0.15203	***	0.16261	***
	(0.34762)	(0.32420)	(0.34741)		(0.35905)		(0.36901)	
Taxable income quartile (Ref.cat.: 1st)								
Taxable income in 1st quartile, last year	0.24378	0.26851	0.23597	***	0.22518	***	0.21522	***
	(0.42936)	(0.44319)	(0.42461)		(0.41770)		(0.41098)	
Taxable income in 2nd quartile, last year	0.24378	0.25744	0.24642	***	0.24240	***	0.23475	***
	(0.42936)	(0.43723)	(0.43093)		(0.42854)		(0.42385)	
Taxable income in 3rd quartile, last year	0.24378	0.23332	0.24804	***	0.25098	***	0.25636	***
	(0.42936)	(0.42294)	(0.43188)		(0.43358)		(0.43663)	
Taxable income in 4th quartile, last year	0.24378	0.21258	0.24496	***	0.25973	***	0.27454	***
	(0.42936)	(0.40914)	(0.43007)		(0.43849)		(0.44628)	
Recieved unemployment assistance, last year	0.18568	0.20923	0.18116	***	0.16682	***	0.15739	***
	(0.38885)	(0.40676)	(0.38515)		(0.37282)		(0.36417)	
Recieved unemployment insurance, last year	0.05145	0.05813	0.05135	***	0.04856	***	0.04612	***
	(0.22091)	(0.23400)	(0.22071)		(0.21496)		(0.20975)	
Avg. no. of contacts per year to hospital, last 5 years	0.55012	0.57830	0.53996	***	0.52926	***	0.51517	***
	(0.83680)	(0.84939)	(0.78801)		(0.86299)		(0.79049)	
Been in contact with psychiatric hospital, since birth of pupil	0.07350	0.08507	0.07004	***	0.06339	***	0.05833	***
	(0.26096)	(0.27899)	(0.25521)		(0.24366)		(0.23437)	
Committed criminal offense, since birth of pupil	0.08188	0.09651	0.07691	***	0.06793	***	0.06128	***
	(0.27419)	(0.29529)	(0.26646)		(0.25163)		(0.23984)	
Household characteristics in 2018								
Number of siblings	1.68814	1.71789	1.67402	***	1.65270	***	1.62227	***
	(1.13885)	(1.18139)	(1.12369)		(1.08790)		(1.06387)	
Birth order on mother's side	1.82359	1.84877	1.82316	***	1.80999	***	1.78759	***
	(0.93618)	(0.94742)	(0.92841)		(0.92045)		(0.91309)	
Parents have lived apart for two consecutive years	0.26767	0.30690	0.26272	***	0.23871	***	0.21766	***
	(0.44275)	(0.46121)	(0.44011)		(0.42629)		(0.41266)	
Single provider household	0.22184	0.25071	0.21757	***	0.19842	***	0.18141	***
	(0.41548)	(0.43342)	(0.41259)		(0.39881)		(0.38536)	

Teacher characteristics								
Male, Danish	0.17513	0.16918	0.17511	***	0.16768	***	0.15688	***
	(0.37017)	(0.36398)	(0.37016)		(0.36418)		(0.35489)	
Age, Danish	43.98348	43.80572	43.87648		44.00977		44.27215	
	(9.87307)	(9.90664)	(9.89354)		(9.86853)		(9.78593)	
Educated in teaching danish or comparable	0.96342	0.96040	0.96384	***	0.96356	***	0.96663	***
	(0.16587)	(0.17160)	(0.16486)		(0.16608)		(0.15803)	
Years since degree, 0-10 years, Danish	1.39579	1.43440	1.41494		1.40473		1.34032	
	(2.67607)	(2.69829)	(2.68332)		(2.68656)		(2.64765)	
10 years or above since degree, Danish	0.74080	0.73188	0.73589	**	0.73961	**	0.75365	**
	(0.43819)	(0.44298)	(0.44086)		(0.43885)		(0.43089)	
Tenure of teacher, Danish(Ref.cat.: 0-1 year)								
Tenure is 0 to 1 years, Danish	0.18620	0.20591	0.19042	***	0.18653	***	0.17028	***
	(0.37594)	(0.39016)	(0.37929)		(0.37646)		(0.36350)	
Tenure is 2 to 3 years, Danish	0.19676	0.20239	0.20032		0.19297		0.18654	
	(0.38751)	(0.39089)	(0.39000)		(0.38503)		(0.38045)	
Tenure is 4 to 5 years, Danish	0.24818	0.24182	0.24611	**	0.24816	**	0.25109	**
	(0.42325)	(0.41862)	(0.42199)		(0.42336)		(0.42578)	
Tenure is 6 years or above, Danish	0.36887	0.34988	0.36314	***	0.37234	***	0.39209	***
	(0.47489)	(0.46891)	(0.47335)		(0.47593)		(0.48088)	
Share of days absent, Danish	0.04900	0.05033	0.04901	***	0.04857	***	0.04835	***
	(0.09155)	(0.09174)	(0.09072)		(0.09057)		(0.09280)	
Age, Math	43.63583	43.59684	43.65714		43.58799		43.73325	
	(10.26406)	(10.31617)	(10.31509)		(10.23548)		(10.20142)	
Male, Math	0.44771	0.43081	0.44629	***	0.44044	***	0.43154	***
	(0.48802)	(0.48512)	(0.48823)		(0.48732)		(0.48694)	
Educated in teaching math or comparable	0.93162	0.92341	0.93255	***	0.93111	***	0.93308	***
	(0.23742)	(0.24964)	(0.23596)		(0.23822)		(0.23583)	
Years since degree, 0-10 years, Math	1.33409	1.35125	1.34011		1.34089		1.31521	
	(2.57252)	(2.57926)	(2.56550)		(2.57462)		(2.56031)	
10 years or above since degree, Math	0.73569	0.73080	0.73256		0.73370		0.74082	
	(0.44096)	(0.44355)	(0.44263)		(0.44202)		(0.43819)	
Tenure of teacher, Math(Ref.cat.: 0-1 year)								
Tenure is 0 to 1 years, Math	0.20114	0.21556	0.20415	***	0.20383	***	0.19194	***
	(0.38990)	(0.40006)	(0.39220)		(0.39185)		(0.38347)	
Tenure is 2 to 3 years, Math	0.19981	0.20431	0.20051	**	0.19585	**	0.19442	**
	(0.39209)	(0.39531)	(0.39260)		(0.38923)		(0.38837)	
Tenure is 4 to 5 years, Math	0.23423	0.22974	0.23246		0.23423		0.23662	
	(0.41719)	(0.41387)	(0.41613)		(0.41711)		(0.41900)	
Tenure is 6 years or above, Math	0.36483	0.35039	0.36288	***	0.36609	***	0.37702	***
	(0.47503)	(0.47045)	(0.47466)		(0.47534)		(0.47868)	
Share of days absent, Math	0.04584	0.04648	0.04591		0.04514		0.04563	
	(0.08765)	(0.08637)	(0.08816)		(0.08623)		(0.08881)	

Classroom characteristics								
Size	21.32845	21.17975	21.41371	***	21.56581	***	21.63471	***
	(4.23776)	(4.30615)	(4.11619)		(4.06161)		(4.03603)	
Share of males	0.51373	0.51696	0.51277	***	0.51040	***	0.50785	***
	(0.11510)	(0.11711)	(0.11250)		(0.10991)		(0.10821)	
Share with birthweight below 2500 grams	0.05158	0.05137	0.05121		0.05117		0.05094	
	(0.05708)	(0.05685)	(0.05596)		(0.05599)		(0.05575)	
Share of who are young for grade	0.01365	0.01332	0.01370	***	0.01338	***	0.01304	***
	(0.02907)	(0.02874)	(0.02837)		(0.02837)		(0.02785)	
Share of late starters	0.08375	0.08109	0.08132		0.07831		0.07757	
	(0.09070)	(0.08899)	(0.08634)		(0.08306)		(0.08357)	
Share of who repeated a grade	0.04548	0.04572	0.04435	***	0.04244	***	0.04112	***
	(0.07572)	(0.07442)	(0.07213)		(0.06963)		(0.06947)	
Share of who switched address, since school start	0.25322	0.24210	0.25331	***	0.24101	***	0.23263	***
	(0.16516)	(0.16504)	(0.16251)		(0.16196)		(0.15812)	
Share of who switched school, since school start	0.19323	0.17836	0.18804	***	0.17332	***	0.16040	***
	(0.23200)	(0.22299)	(0.22483)		(0.21519)		(0.20673)	
Share of who switched school but not address, since school start	0.15620	0.14199	0.15075	***	0.13807	***	0.12686	***
	(0.21402)	(0.20378)	(0.20738)		(0.19738)		(0.18926)	
Share of who have been placed outside home, from 2010	0.01097	0.01134	0.01031	***	0.00977	***	0.00967	***
	(0.03442)	(0.03429)	(0.03094)		(0.02958)		(0.03003)	
Share of who received social preventive measures by municipality, since birth	0.07994	0.08360	0.07829	***	0.07428	***	0.07156	***
	(0.09970)	(0.10320)	(0.09332)		(0.08883)		(0.08594)	
Avg. no. of contacts per year to hospital, last 5 years	0.38499	0.38157	0.38088		0.37825		0.37371	
	(0.18226)	(0.17676)	(0.16960)		(0.16684)		(0.16710)	
Share of who has been in contact with psychiatric hospital, since birth	0.06198	0.06197	0.05847	***	0.05521	***	0.05277	***
	(0.11573)	(0.12133)	(0.10660)		(0.09878)		(0.09489)	
Share with special needs in ordinary classrooms	0.00347	0.00380	0.00343	***	0.00346	***	0.00332	***
	(0.01706)	(0.01835)	(0.01652)		(0.01708)		(0.01609)	

Share with a criminal parent	0.18939	0.19753	0.18876	***	0.18092	***	0.17538	***
	(0.12184)	(0.12504)	(0.11964)		(0.11662)		(0.11445)	
Share with parents have med./long education	0.50437	0.48879	0.50315	***	0.51549	***	0.52599	***
	(0.19949)	(0.19840)	(0.19747)		(0.19710)		(0.19891)	
Share with parents who received unemployment assistance/insurance, last year	0.42162	0.43363	0.42089	***	0.41433	***	0.40700	***
	(0.15890)	(0.16009)	(0.15666)		(0.15543)		(0.15444)	
Share with a parent who has been in contact with psychiatric hospital, since bir	0.15694	0.16066	0.15597	***	0.15144	***	0.14773	***
	(0.10625)	(0.10868)	(0.10418)		(0.10265)		(0.10079)	
Taxable income quartile (Ref.cat.: 1st)								
Share with mother's income in 1st quartile, last year	0.24868	0.25882	0.24712	***	0.24345	***	0.23809	***
	(0.14268)	(0.14715)	(0.14010)		(0.13771)		(0.13577)	
Share with mother's income in 2nd quartile, last year	0.24868	0.25482	0.25018	***	0.24887	***	0.24914	***
	(0.12242)	(0.12302)	(0.12201)		(0.12186)		(0.12241)	
Share with mother's income in 3rd quartile, last year	0.24868	0.24620	0.24966	***	0.25029	***	0.25059	***
	(0.11217)	(0.11233)	(0.11196)		(0.11155)		(0.11126)	
Share with mother's income in 4th quartile, last year	0.24867	0.23476	0.24781	***	0.25239	***	0.25737	***
	(0.16192)	(0.15830)	(0.16014)		(0.16249)		(0.16505)	
Taxable income quartile (Ref.cat.: 1st)								
Share with father's income in 1st quartile, last year	0.24378	0.25086	0.24248	***	0.23791	***	0.23136	***
	(0.13402)	(0.13733)	(0.13192)		(0.12989)		(0.12737)	
Share with father's income in 2nd quartile, last year	0.24378	0.25072	0.24552	***	0.24311	***	0.24156	***
	(0.12524)	(0.12579)	(0.12460)		(0.12544)		(0.12625)	
Share with father's income in 3rd quartile, last year	0.24378	0.24330	0.24472	***	0.24583	***	0.24787	***
	(0.11063)	(0.11111)	(0.10962)		(0.10982)		(0.10977)	
Share with father's income in 4th quartile, last year	0.24378	0.22946	0.24246	***	0.24938	***	0.25622	***
	(0.16103)	(0.15665)	(0.15971)		(0.16244)		(0.16587)	
School characteristics								
Turnover rate of Danish and math teachers	17.89773	18.17307	17.80744	***	17.42887	***	17.20917	***
	(20.30256)	(20.37762)	(19.46363)		(18.45994)		(18.46575)	
Turnover rate of all teachers	17.26428	17.50427	17.15226	***	16.82285	***	16.62136	***
	(20.09400)	(20.15308)	(19.23596)		(18.21994)		(18.22736)	
Size	514.40450	505.90195	512.27578	***	515.40906	***	513.35672	***
	(210.44609)	(211.07069)	(211.34562)		(212.74823)		(214.51812)	
# Observations	380.680	96.611	94.104		96.378		93.587	

Notes: This table presents means and std. dev. across standardized quartiles of social well-being. Tests represent two-sided t-tests compared to 1st quartile. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A3

Persistence in social well-being: propensity to belong to 1st quartile

	1st quartile in 2019	
1st quartile in social well-being 2018	0.31813	***
	(0.00236)	
1st quartile in social well-being 2017	0.14764	***
	(0.00226)	

Notes: Table shows regression of indicator for belonging to 1st quartile of social well-being on lags of similar measure. Regressions also include child, parental, teacher and school, and classroom characteristics in addition to indicators for missing values as in Table 3. Robust standard errors shown in parentheses. * $p < 0.01$, ** $p < 0.05$, *** $p < 0.01$. No. observations 247,987. R^2-adjusted is 0.184.

Table A4

Selection into answering well-being survey

	Answering well-being survey	
Child characteristics		
Male	-0.00680	***
	(0.00111)	
Birthweight is below 2500 grams	0.00639	***
	(0.00241)	
Age relative to cohort (Ref.cat.: Adequate for grade)		
Young for grade	-0.00440	
	(0.00457)	
Late school start	-0.01649	***
	(0.00207)	
Repeated a grade	-0.01653	***
	(0.00285)	
Switched address, since school start	-0.00992	***
	(0.00137)	
Switched school, since school start	-0.00631	*
	(0.00336)	
Switched school but not address , since school start	-0.02275	***
	(0.00355)	
Placed outside home, from 2010	0.03023	***
	(0.00633)	
Received social preventive measures by municipality, since birth	-0.05216	***
	(0.00257)	
Avg. no. of contacts per year to hospital, last 5 years	-0.02020	***
	(0.00099)	
Been in contact with psychiatric hospital, since birth	-0.08844	***
	(0.00293)	
Special needs student in ordinary classroom	-0.05689	***
	(0.01168)	
Special needs student in special needs classoom	0.10837	***
	(0.01804)	

Maternal characteristics in 2018		
Age at child birth	-0.00016	
	(0.00015)	
Education (Ref.cat.: Vocational)		
Unskilled	-0.00717	***
	(0.00208)	
Highschool	0.00126	
	(0.00266)	
Short further	0.00730	***
	(0.00239)	
Medium further	0.00323	**
	(0.00140)	
Long further or PhD	0.00035	
	(0.00207)	
Taxable income in 2nd quartile, last year	0.00839	***
	(0.00169)	
Taxable income in 3rd quartile, last year	0.00793	***
	(0.00178)	
Taxable income in 4th quartile, last year	0.00786	***
	(0.00189)	
Received unemployment assistance, last year	-0.01247	***
	(0.00147)	
Received unemployment insurance, last year	-0.00073	
	(0.00221)	
Avg. no. of contacts per year to hospital, last 5 years	0.00063	
	(0.00062)	
Been in contact with psychiatric hospital, since birth of pupil	-0.00019	
	(0.00205)	
Committed criminal offense, since birth of pupil	-0.01119	***
	(0.00370)	

Paternal characteristics in 2018		
Age at child birth	0.00012	
	(0.00012)	
Education (Ref.cat.: Vocational)		
Unskilled	-0.00445	**
	(0.00177)	
Highschool	-0.00320	
	(0.00260)	
Short further	0.00164	
	(0.00204)	
Medium further	-0.00226	
	(0.00167)	
Long further or PhD	-0.00131	
	(0.00199)	
Taxable income in 2nd quartile, last year	0.00423	**
	(0.00165)	
Taxable income in 3rd quartile, last year	0.00473	***
	(0.00172)	
Taxable income in 4th quartile, last year	0.00907	***
	(0.00177)	
Received unemployment assistance, last year	-0.00387	**
	(0.00169)	
Received unemployment insurance, last year	0.00267	
	(0.00253)	
Avg. no. of contacts per year to hospital, last 5 years	-0.00027	
	(0.00071)	
Been in contact with psychiatric hospital, since birth of pupil	-0.00295	
	(0.00239)	
Committed criminal offense, since birth of pupil	-0.01375	***
	(0.00235)	
Household characteristics in 2018		
Number of siblings	-0.00267	***
	(0.00067)	
Birth order on mother's side	-0.00112	
	(0.00082)	
Parents have lived apart for two consecutive years	0.00102	
	(0.00193)	
Single provider household	-0.01396	***
	(0.00194)	

Teacher characteristics		
Male, Danish	-0.02306	***
	(0.00509)	
Age, Danish	0.00003	
	(0.00021)	
Educated in teaching Danish or comparable	0.00718	
	(0.00923)	
Years since degree, 0-10 years, Danish	0.00058	
	(0.00125)	
10 years or above since degree, Danish	0.00277	
	(0.00863)	
Tenure of teacher, Danish(Ref.cat.: 0-1 year)		
Tenure is 2 to 3 years, Danish	-0.00609	
	(0.00550)	
Tenure is 4 to 5 years, Danish	-0.00868	
	(0.00540)	
Tenure is 6 years or above, Danish	-0.00778	
	(0.00523)	
Share of days absent, Danish	-0.01928	
	(0.01962)	
Age, Math	0.00055	**
	(0.00022)	
Male, Math	-0.01369	***
	(0.00348)	
Educated in teaching math or comparable	-0.00600	
	(0.00569)	
Years since degree, 0-10 years, Math	-0.00175	
	(0.00130)	
10 years or above since degree, Math	-0.01377	
	(0.00870)	
Tenure of teacher, Math(Ref.cat.: 0-1 year)		
Tenure is 2 to 3 years, Math	-0.00871	
	(0.00531)	
Tenure is 4 to 5 years, Math	-0.01302	**
	(0.00541)	
Tenure is 6 years or above, Math	-0.01512	***
	(0.00530)	
Share of days absent, Math	-0.04692	**
	(0.01945)	

Classroom characteristics		
Size	0.00277	***
	(0.00046)	
Share of males	-0.01028	
	(0.01442)	
Share with birthweight below 2500 grams	-0.01649	
	(0.02637)	
Share of who are young for grade	-0.08195	
	(0.05442)	
Share of late starters	-0.20064	***
	(0.02138)	
Share who repeated a grade	-0.00846	
	(0.02284)	
Share who switched address, since school start	-0.14280	***
	(0.01284)	
Share who switched school, since school start	0.16316	***
	(0.03828)	
Share who switched school but not address, since school start	-0.32187	***
	(0.04020)	
Share who have been placed outside home, from 2010	-0.14482	***
	(0.04935)	
Share who received social preventive measures by municipality, since birth	0.06252	***
	(0.02143)	
Avg. no. of contacts per year to hospital, last 5 years	-0.05412	***
	(0.00945)	
Share who has been in contact with psychiatric hospital, since birth	-0.08378	***
	(0.02295)	
Share with special needs in ordinary classrooms	0.24491	***
	(0.08174)	

Share with a criminal parent	-0.01765	
	(0.01690)	
Share with parents have med./long education	0.02488	**
	(0.01194)	
Share with parents who received unemployment assistance/insurance, last year	0.01762	
	(0.01470)	
Share with a parent who has been in contact with psychiatric hospital, since bir	0.00023	
	(0.01808)	
Share with mother's income in 2nd quartile, last year	-0.01113	
	(0.01819)	
Share with mother's income in 3rd quartile, last year	-0.07759	***
	(0.01883)	
Share with mother's income in 4th quartile, last year	-0.11253	***
	(0.02052)	
Share with father's income in 2nd quartile, last year	0.04846	***
	(0.01779)	
Share with father's income in 3rd quartile, last year	0.03660	**
	(0.01855)	
Share with father's income in 4th quartile, last year	0.02667	
	(0.01828)	
School characteristics		
Turnover rate of Danish and math teachers	0.00021	
	(0.00035)	
Turnover rate of all teachers	-0.00049	
	(0.00035)	
Size	-0.00003	***
	(0.00001)	

Notes: Table shows regression of indicator for participating in the social well-being survey on child, parental, teacher and school, and classroom characteristics in addition to indicators for missing values as in Table 3. Robust standard errors shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. No. observations 449,971. R^2-adjusted is 0.065.

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