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This note presents one-year follow-up results from a large-scale cluster randomized trial in Danish public schools (Larsen and Simonsen, 2020). We combine the trial with survey and register-based data to investigate effects of a universal social emotional learning intervention, PERSPEKT 2.0, which was delivered to 4th and 5th graders in Danish elementary schools. Our findings corroborate the short-term results: PERSPEKT 2.0 did not affect school social well-being or academic performance. The null-findings hold for the population as a whole as well as across pre-defined subgroups.

JEL codes: I21; I31

Keywords: Social emotional learning; randomized trial; school social well-being; problem behavior.

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1. Introduction

This note presents one-year follow-up results from a large-scale cluster randomized trial in Danish public schools. We combine the trial with survey and register-based data to investigate effects of a universal social emotional learning intervention, PERSPEKT 2.0, which was delivered to 4th and 5th graders in Danish elementary schools.

Despite a very positive qualitative implementation evaluation (DCUM, 2020) and in contrast to existing studies of similar interventions from other contexts, a previous study did not find evidence that this SEL program improved child outcomes immediately after program delivery (Larsen and Simonsen, 2020). However, since the intervention targeted child behaviors and ways of interacting that could easily take substantial time and practice to alter, we carried out a one-year follow-up study as well. Our new results corroborate the findings from the short-run analyses; PERSPEKT 2.0 did not affect child social well-being, nor did it change academic performance or social emotional learning skills.

We structure the remainder of the paper as follows: Section 2 provides details about the intervention, recruitment, and randomization. For ease of reading, this section repeats parts of Section 3 of Larsen and Simonsen (2020). Section 3 shows our data and Section 4 presents the results of the evaluation. Finally, Section 5 concludes.

2. PERSPEKT 2.0, recruitment, and the experimental set-up

3.1 PERSPEKT 2.0 versus treatment as usual

PERSPEKT 2.0

Treatment classes received instruction using PERSPEKT 2.0; a set of teaching materials aimed at training pupils' emotional, personal and social skills to improve individual well-being as well as the social and learning environment in the classroom. It fulfills the four criteria for best implementation practice (SAFE). It is **S**equenced, in that there is coordinated progression of activities and practices to build competencies of the pupils; it is **A**ctive, as it includes a number of participatory elements, such as role plays; it is **F**ocused in terms of having allocated specific time and program elements to build specific SEL competencies; and it is **E**xplicit in terms of having identified specific SEL competencies, that it aims to strengthen (Durlak et al., 2010). The material bears resemblance to

PATHS (Promoting Alternative Thinking Strategies) and Second Step, both widely used social-emotional learning programs developed in the US, which have been subjected to several RCT based evaluations with positive results, particularly for the PATHS program (Korpershoek et al., 2016).

PERSPEKT 2.0 exists in three age-appropriate modules (Module I, II and III), targeting grades 0-3, 4-6, and 7-9. Treatment classes in our evaluation were grade 4 and 5, and hence received instruction based on Module II. This module consists of 15 chapters, each of which is designed to take 45-60 minutes to complete. Table 1 shows an overview of the chapters and their objectives. Exercises in the material include conversations, classroom exercises, and small group activities. Some chapters offer specific tools, such as key phrases or steps, for children to use in different situations. Roleplaying and games are included as a means of drawing attention to and practicing different skills.

In treatment classes, instruction in PERSPEKT 2.0 was initiated in August 2018, at the beginning of the school year. To the extent possible, instruction in successive chapters was to be spaced by one week, however schools were allowed some flexibility in timing, in order to accommodate other planned activities (e.g. thematic weeks or class trips) and teacher absences. The entire course was completed by the end of February 2019 in the majority of treatment classes. Instruction was provided by either teachers or pedagogues associated with the class. While it was recommended that the same instructor – typically the class teacher – teaches the entire course, up to two teachers were, under special circumstances, involved.

PERSPEKT 2.0 was designed to require no special training of instructors. Instructors in treatment classes were introduced to the materials through a video that demonstrated classroom practice. The teaching material itself is available through a custom-built web application, though a printed version of the material is also available upon request. Instructors were equipped with personal usernames and passwords and once logged in, they could read the chapters and exercise instructions and display project exercise materials on a smartboard in the classroom. In addition, instructors could easily keep track of the progression of their class(es) through the material at the level of individual exercises. Only instructors in treatment classes had access to the material.

Table 1
Overview of PERSPEKT 2.0 chapters in Module II

Chapter: Title	Objectives
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1: Thoughts and emotions	Pupils understand that different people may perceive the same situation differently, and how emotions are closely related to perceptions.
2: Body language	Pupils become aware of body language and its importance in communication.
3: Communication	Pupils are introduced to the concepts of passive, aggressive, and assertive communication, and learn that they can affect situations by actively choosing communication strategy. They are introduced to and practice a strategy for assertive communication.
4: Digital communication	Pupils learn that “faceless” communication places special requirements on both sender and recipient.
5: Saying “no”	Pupils are introduced to and practice a strategy for saying “no” in difficult situations involving peer pressure.
6. Facts and assumptions	Pupils understand the difference between facts and assumptions and learn how to identify facts. In addition, they learn why we sometimes need to rely on assumptions and why it is important to be aware that they are not facts
7: Opinions	Pupils understand how opinions differ from assumptions and facts and practice distinguishing between the three.
8: From thoughts to emotion and action	Pupils gain awareness of the relationship between thoughts, emotions and actions and reflect on how their own thoughts and emotions are related to actions.
9: Consequences	Pupils reflect on how actions, including online behavior, as well as lack of action can have consequences – for oneself and for others.
10: Rules, agreements, and expectations	Pupils gain awareness of the role of rules in society and in the classroom and understand that rules are often created for the sake of the community.
11: Admitting something	Pupils are introduced to and practice a strategy for formulating an apology if, for example, rules, agreements, or expectations have been broken.
12: Roles	Pupils gain awareness of how people can have different roles in different contexts, and how this influences behaviors and expectations.
13: Other people’s point of view	Pupils gain awareness of the importance of taking other people’s viewpoints into consideration, and practice understanding other people’s points of view.
14: Negotiation and compromise	Pupils practice negotiation and compromise and learn that sometimes we have to set aside our own wishes for the sake of the community.
15: Completion / summary	Pupils reflect on what they have learned through the course.

Treatment as usual

Classrooms allocated to the control group received “treatment as usual” (henceforth TAU). The content of this varied across schools as well as classrooms within schools, as there is no national curriculum or common goals for social skills training. The Danish Education Act stipulates that teaching of obligatory subjects and themes must be supplemented by “supportive teaching”, which may include courses or activities aimed at strengthening social skills and well-being (Danish Ministry of Education, 2017a). However, the act does not include specific requirements regarding form, content, or extent. Similarly, a national Act on Educational Environment stipulates that schools

undertake assessments of the educational environment at least every third year and formulate a set of school values, including an anti-bullying strategy, but requirements for content are minimal (Danish Ministry of Education, 2017b).

At participating schools, all classes that were not part of the trial (i.e. those that are grades 0-3 or 6-9 in the 2018/2019 school year) were allowed to implement PERSPEKT 2.0 throughout the trial period. We released PERSPEKT 2.0 for use in all schools and across all classes from the beginning of the school year 2020/21 after follow-up measures had been collected.

3.2 Recruitment

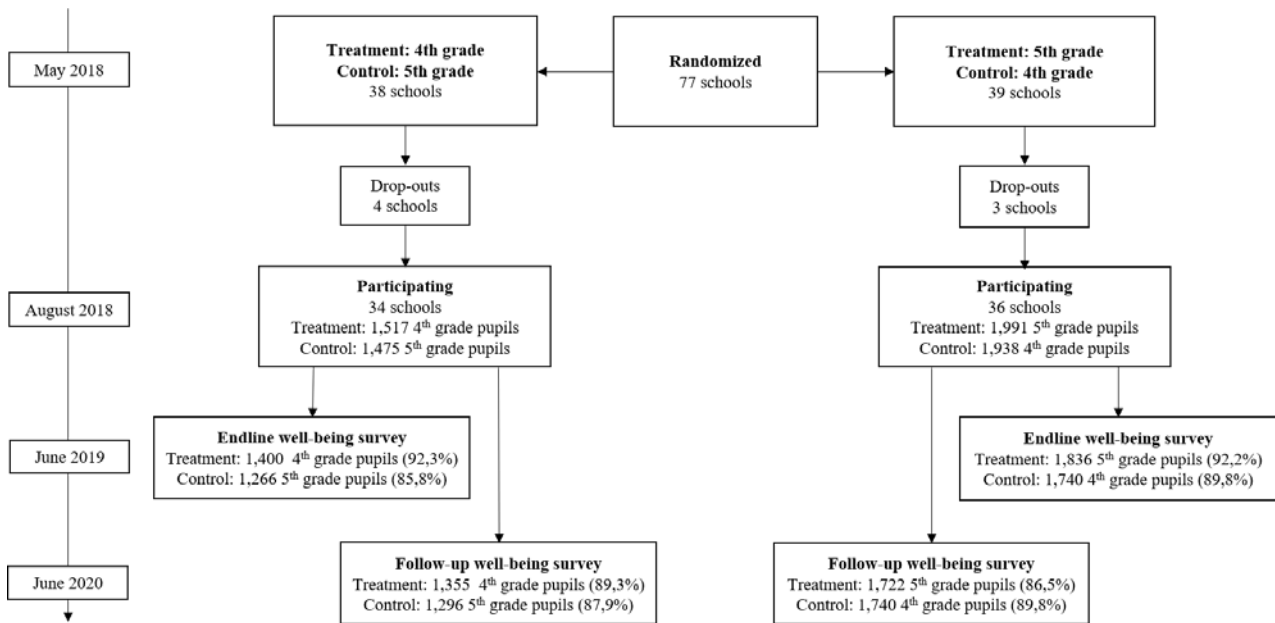
Recruitment was carried out by the DCUM during spring to fall of 2017. School level participation was voluntary and the decision to enroll was made by school principals.¹ Figure 1 illustrates randomization and school-level attrition. Seventy-seven schools agreed to participate, signed the final data agreements, and had cohorts of classrooms randomized. We randomized 38 schools to 4th grade treatment and 5th grade control and 39 schools to 4th grade control and 5th grade treatment. After randomization, four schools dropped out from the former arm and three from the latter. The remaining 70 schools together enrolled 6,921 pupils in 4th or 5th grade at the time of implementation with 3,508 pupils in the treatment group and 3,413 pupils in the control group.² Response rates on the primary outcome measure, described in detail below, were generally high. At follow-up, response rates were very similar across the treatment and control group; averaging across 4th and 5th grade, 87.7% of the treatment group answered the survey, while the average response rate was 89.0% for the control group.

¹ Further details about the recruitment process can be found in the study protocol, Klejnstrup et al. (2018)

² Based on administrative registers.

Figure 1

Flow chart of participating schools



Note: 4th and 5th grade refers to the grade the pupils attended in the school year of implementation 2018/19

3.3 Randomization

We employed a two-level cluster randomized trial for children in two adjacent school cohorts (fourth and fifth grades) within the same school. There is otherwise no blocking. This means that we have randomly allocated schools into teaching PERSPEKT 2.0 in either 4th grade or 5th grade such that all schools implement PERSPEKT 2.0 in only one of the two grade levels. We chose to randomize at the grade level instead of the class level to minimize spill-overs from treatment to control as teachers typically work together in grade-teams and some teachers teach multiple classes within the same grade.

In May 2018, we informed DCUM of which schools were randomly allocated to implement PERSPEKT 2.0 in 4th grade, and which schools were allocated to implement the program in 5th grade. DCUM immediately informed the schools and subsequently followed up with them to ensure that there had been no miscommunications, and that implementation of PERSPEKT 2.0 would be taking place in the correct grades.

3. Data

The follow-up study makes use of a series of data sources with individual level information about children, their families, and teachers. These include 1) nationally administered well-being surveys developed by the Danish Ministry of Education, 2) nationally administered IT-based tests of Danish reading skills and Math, 3) register-based data maintained by Statistics Denmark, 4) administrative data linking instructors to classes, and 5) data from a pupil survey developed specifically for this trial. 1)-4) are collected for all public schools and pupils, regardless of whether they participate in the study.

4.1 Outcomes

Child well-being

Our primary outcome in the original study was a measure of attitudes towards school and emotional well-being in the classroom. We consider this in the follow-up study as well. As described in our protocol (Klejnstrup et al., 2018), we base the measure on the recently implemented national well-being indicators (Andersen et al., 2015; Danish Ministry of Education, 2018). For the follow-up analyses, we use responses to the survey collected in the first half of 2020.³ Among the full list of 40 questions in the national well-being survey for grade 4 to 9, we use only the ten questions that enter the Social Well-being subscale (Danish Ministry of Education, 2018). The answers to all questions are coded to range from one to five, with five being the most positive. We present the ten included questions in Table 2. We subsequently calculate social well-being as the within-individual average of the answers provided. Finally, we standardize social well-being at the grade level to have a mean of zero and a standard deviation of one.

Pupils in grade 0-3 also answer a well-being survey with slightly different questions that are coded to range from one to three with three being the most positive. In order to construct baseline measures of social well-being prior to the implementation of PERSPEKT 2.0 for children in 4th grade at the time of implementation, 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. We use the grade 3

³ Due to covid-19, Danish schools were closed from March 16 to April 14, 2020, potentially affecting pupil well-being. A somewhat larger share of the control group answered the survey before the lockdown (74.4% of the control group versus 70.5% of the treatment group), but we do not expect this difference to alter the results.

responses to these questions to construct a similar social well-being baseline measure for the 4th grade pupils. We standardize by grade level to make the baseline measure comparable. See Larsen et al. (2020) for further details about the social well-being measure.

Table 2

Social Well-being indicator questions included in primary study outcome

Question:	Answers range from 1 to 5
Do you like your school?	Never (1), rarely, sometimes, often, very often (5)
Do you like the other children in your classroom?	
Are you afraid of being ridiculed at school?	Always (1), mostly, sometimes, rarely, never (5)
How often do you feel safe at school?	Never (1), rarely, sometimes, mostly, always (5)
Do you feel lonely?	Very often (1), often, sometimes, rarely, never (5)
Since the start of the school year, did anyone bully you?	
I feel I belong at my school.	Strongly disagree (1), disagree, neither agree nor disagree, agree, strongly agree (5)
I like the breaks at school.	
Most of the pupils in my classroom are kind and helpful.	
Other pupils accept me as I am.	

Academic performance

We measure academic performance using nationally administered IT-based tests of Danish reading skills and math. These have been shown to correlate highly with later higher-stakes tests (Beuchert and Nandrup, 2018). Relevant for our sample, Danish tests are administered to 4th and 6th grade pupils, while math is administered to 6th grade pupils. Hence, for the short-term term results we had data on Danish reading skills for pupils in 4th grade. For this one-year follow-up, we have data on Danish reading skills and math for the pupils in 5th grade at the time of implementation. Unfortunately, for political reasons⁴, the national tests were only carried out at a subset of schools in the school year 2019/20, which reduces our sample size considerably to about 10 percent of the population.

⁴ <https://www.uvm.dk/folkeskolen/elevplaner-nationale-test--trivselsmaaling-og-sprogproever/nationale-test/politisk-aftale-om-nationale-test-2020>

Social emotional learning skills.

Our pupil survey measures relationship skills, responsible decision making, self-awareness, self-management and social awareness. For details, we refer to Table 3 of Larsen and Simonsen (2020) that provides details about how these social emotional learning skills are described in the literature, the degree to which they are covered in the PERSPEKT 2.0 curriculum, and exactly how we measure each of the five skill areas in our survey. In practice, we construct scores within each skill that sum the answers from the separate items. Subsequently, we standardize each score by grade.

4. Results

This section presents estimates of the effect of being offered the intervention for pupil-level outcomes; or intention-to-treat effects. In practice, we compare PERSPEKT 2.0 with TAU using linear regressions with and without control for pre-randomization variables. In versions that control for pre-randomization variables, we include an indicator for 5th grade enrollment, the baseline measure of the outcome, interactions between these two, child gender, and month of birth dummies. All standard errors are clustered at the grade-by-school level. Larsen and Simonsen (2020) found no issues with balance between the treatment and control group when investigating the distribution of an enriched set of pupil and teacher characteristics and outcomes across treatment and control classroom prior to randomization.

Table 3 continues to show estimated effects for the overall population. In the first two columns, we reproduce the short-term evaluation results from Larsen and Simonsen (2020) Table 4 for comparison. The next two columns show corresponding estimates using the follow-up outcome measures one year after implementation. In line with the short-term analyses, we find no evidence that PERSPEKT 2.0 improved child well-being, social emotional learning skills, or academic performance. Effects are all small and precisely estimated; we can reject even small positive (and negative) effects.

Table 3
Effects of PERSPEKT 2.0 on child well-being, social emotional learning skills,
and academic performance

	Short term evaluation		Follow-up evaluation	
	No controls	Basic controls	No controls	Basic controls
Social well-being	-0.044 (0.045) [6242]	-0.043 (0.034) [6242]	0,009 (0,046) [6113]	0,010 (0,039) [6113]
Self-awareness	-0.013 (0.035) [5425]	-0.002 (0.032) [5425]	-0,071 (0,054) [3277]	-0,044 (0,051) [3277]
Self-management	-0.055 (0.038) [5394]	-0.025 (0.030) [5394]	-0,060 (0,053) [3265]	-0,025 (0,046) [3265]
Social awareness	0.043 (0.038) [5419]	0.042 (0.032) [5419]	-0,044 (0,055) [3283]	-0,037 (0,048) [3283]
Relationship skills	-0.043 (0.039) [5416]	-0.025 (0.032) [5416]	-0,063 (0,050) [3285]	-0,038 (0,042) [3285]
Responsible decision-making	-0.006 (0.042) [5380]	0.004 (0.038) [5380]	0,020 (0,059) [3258]	0,041 (0,052) [3258]
I am often sad	0.043 (0.033) [5169]	0.021 (0.032) [5169]	-0,027 (0,047) [3168]	-0,055 (0,043) [3168]
I often worry	-0.009 (0.033) [5186]	-0.013 (0.032) [5186]	-0,022 (0,036) [3204]	-0,034 (0,035) [3204]
I initiate quarrels with others	0.051 (0.037) [5126]	0.046 (0.034) [5126]	0,026 (0,046) [3160]	0,016 (0,043) [3160]
Absenteeism rate	-0.023 (0.049) [6811]	-0.002 (0.034) [6811]		
Danish, national test	-0.024 (0.070) [3328]	-0.019 (0.056) [3328]	-0,199 (0,126) [656]	0,037 (0,070) [656]
Math, national test			-0,284 (0,187) [640]	0,053 (0,086) [640]

Notes: Each row presents the regression coefficient from a regression of the given outcome variable on a PERSPEKT 2.0 indicator. Column 1 and 2 presents the results of PERSPEKT 2.0 immediately following the RCT, whereas column 3 and 4 are conducted 1 year after as a follow-up evaluation. In column 2 and 4, we control for an indicator for 5th grade enrollment, the baseline measure of the outcome, interactions between these two, child gender, and month of birth dummies. All outcomes are standardized by grade. Grade-by-school cluster-robust standard errors in parentheses and number of observations in squared brackets. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

5.2 Effects on subgroups

We next investigate whether effects of exposure to PERSPEKT 2.0 vary across pre-specified subgroups, following Klejnstrup et al. (2018) and Larsen and Simonsen (2020). We split children into subgroups based on their baseline value of the social well-being indicator. These results are shown in Table 4. Specifically, we consider children below the median value and children in the 1st and 2nd quartile of the distribution separately. In addition, Table 5 considers subgroups based on gender, parents' country of origin (both non-Danish versus at least one parent Danish), and mother's education level (high school/less than high school versus more than high school). Taken together, we investigate results for nine different subgroups across eleven different outcome measures amounting to 99 hypothesis tests in total. The stars indicating level of significance are not corrected for multiple hypothesis testing. This implies that under the null hypothesis of no impact, we should expect five estimates to be significant different from zero at a five percent level by chance. Only two of the 99 estimates are significantly different from zero (in opposite directions), while the remaining 97 estimates cannot be distinguished from zero at the conventional significance level.

Given these findings, there are no clear indications that PERSPEKT 2.0 improves (or worsens) child outcomes at follow-up.

Table 4
Effects of PERSPEKT 2.0, by subgroups based on baseline value of primary outcome

	Below median	1st quartile	2nd quartile
Social well-being	-0,001 (0,049) [2487]	-0,021 (0,062) [1520]	0,022 (0,072) [967]
Self-awareness	-0,074 (0,063) [1268]	-0,189 ** (0,081) [771]	0,133 (0,095) [497]
Self-management	0,013 (0,058) [1261]	-0,045 (0,069) [768]	0,126 (0,092) [493]
Social awareness	-0,081 (0,064) [1270]	-0,026 (0,084) [774]	-0,127 (0,086) [496]
Relationship skills	-0,014 (0,059) [1274]	0,034 (0,082) [777]	-0,035 (0,085) [497]
Responsible decision-making	0,014 (0,065) [1258]	-0,024 (0,078) [765]	0,073 (0,097) [493]
I am often sad	-0,063 (0,067) [1212]	-0,028 (0,089) [737]	-0,154 * (0,088) [475]
I often worry	-0,048 (0,049) [1234]	-0,034 (0,065) [747]	-0,077 (0,076) [487]
I initiate quarrels with others	0,061 (0,062) [1209]	0,101 (0,074) [728]	-0,046 (0,093) [481]
Danish, national test	-0,062 (0,086) [325]	0,131 (0,133) [182]	-0,193 (0,129) [143]
Math, national test	0,119 (0,109) [315]	0,146 (0,163) [177]	0,124 (0,125) [138]

Notes: Table presents effects of PERSPEKT 2.0 on pupil level outcomes from regressions that control for baseline characteristics as in Table 4. ‘Below median’ indicates subgroup with baseline value of primary outcome below the median; 1st and 2nd quartile are defined analogously. Grade-by-school cluster-robust standard errors in parentheses and number of observations in squared brackets. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5

Effects of PERSPEKT 2.0, by subgroups based on characteristics measured at baseline

	Boys	Girls	Danish parents	Non-Danish parent(s)	Mother prim/sec educ.	Mother tertiary educ.
Social well-being	-0,022 (0,047) [3141]	0,045 (0,046) [2972]	-0,003 (0,040) [5566]	0,126 (0,085) [547]	0,009 (0,044) [3346]	0,014 (0,047) [2767]
Self-awareness	-0,028 (0,054) [1665]	-0,057 (0,068) [1612]	-0,042 (0,052) [2995]	-0,075 (0,141) [282]	-0,067 (0,062) [1802]	-0,011 (0,062) [1475]
Self-management	-0,006 (0,054) [1659]	-0,046 (0,063) [1606]	-0,020 (0,050) [2986]	-0,133 (0,124) [279]	-0,016 (0,058) [1793]	-0,028 (0,055) [1472]
Social awareness	-0,062 (0,058) [1669]	-0,013 (0,061) [1614]	-0,043 (0,049) [3002]	-0,024 (0,144) [281]	-0,049 (0,058) [1806]	-0,010 (0,055) [1477]
Relationship skills	-0,009 (0,048) [1669]	-0,067 (0,054) [1616]	-0,043 (0,045) [3001]	0,024 (0,150) [284]	-0,042 (0,052) [1810]	-0,024 (0,053) [1475]
Responsible decision-making	0,093 * (0,055) [1655]	-0,011 (0,071) [1603]	0,026 (0,054) [2978]	0,136 (0,144) [280]	-0,017 (0,063) [1795]	0,115 * (0,064) [1463]
I am often sad	-0,083 (0,051) [1623]	-0,028 (0,062) [1545]	-0,046 (0,045) [2901]	-0,162 (0,153) [267]	-0,086 (0,055) [1736]	-0,027 (0,052) [1432]
I often worry	-0,027 (0,049) [1628]	-0,046 (0,046) [1576]	-0,040 (0,038) [2934]	-0,019 (0,115) [270]	-0,036 (0,040) [1763]	-0,028 (0,051) [1441]
I initiate quarrels with others	-0,069 (0,054) [1607]	0,107 * (0,061) [1553]	0,026 (0,045) [2895]	-0,009 (0,147) [265]	0,041 (0,051) [1730]	-0,013 (0,061) [1430]
Danish, national test	0,054 (0,077) [311]	-0,003 (0,093) [345]	0,054 (0,058) [571]	-0,380 (0,259) [85]	0,024 (0,087) [432]	0,066 (0,091) [224]
Math, national test	0,011 (0,080) [300]	0,078 (0,129) [340]	0,050 (0,085) [554]	0,220 ** (0,091) [86]	-0,032 (0,080) [421]	0,129 (0,129) [219]

Notes: Table presents effects of PERSPEKT 2.0 on pupil level outcomes from regressions that control for baseline characteristics as in Table 4. Grade-by-school cluster-robust standard errors in parentheses and number of observations in squared brackets. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

5. Conclusion

This note uses a large-scale randomized trial to evaluate the effects of a structured social emotional learning intervention, PERSPEKT 2.0, on pupil outcomes in Danish public schools at one-year follow-up. The intervention is similar in nature to various international programs that have previously shown positive effects. The quantitative evaluation combines survey data with register-based data that allows for tracking of participant outcomes with minimal risk of attrition.

A previous short-run analysis (Larsen and Simonsen, 2020) found no evidence that PERSPEKT 2.0 led to improvements in pupil's school social well-being, academic performance, or social emotional learning skills. The concurrent implementation evaluation, in contrast, indicated that the program was delivered as intended and that both teachers and pupils generally found the material to be accessible and well structured, just as the themes and core elements were found to be meaningful and relevant. Moreover, a much-cited meta-analysis finds that universal school-based SEL programs, which are both well designed according to best-practice criteria for SELs and well implemented, lead to immediate improvements in cognitive, social and emotional competences (Durlak et al., 2011).

Against this backdrop, a follow-up study was important. In the short-run evaluation of PERSPEKT 2.0, outcomes were measured shortly after the full delivery of the intervention. It is possible that any impact of the intervention on pupil well-being could take time to materialize since it may require a longer period of practice to alter child behaviors and ways of interacting after delivery of the intervention.

Still, we find no evidence that PERSPEKT 2.0 lead to improvements in pupils' school social well-being, nor do we detect effects on academic performance. These conclusions hold in the population as a whole as well as in all pre-defined subgroups. Our findings are in line with the conclusions from the short-run analysis of Larsen and Simonsen (2020). They point to the widespread use of more informal supportive teaching as a reason for the lack of results; we maintain the hypothesis and emphasize the importance of performing replication studies across a variety of settings, even when existing findings are overwhelmingly positive. We also stress the importance of quantitative impact analysis as an important complement to qualitative implementation evaluations.

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