Extended Education in Germany between Complementation and Compensation: An Analysis of Extracurricular Primary School Offerings With Regard to Content, Frequency, and Range, in Connection With the Composition of the Student Body

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Abstract: All-day schools, the most common school form with extended education offerings in Germany, are expected to complement regular hours of school instruction with a wide array of offers and to compensate for origin-related educational gaps by providing specific offerings for disadvantaged students. Complementation and compensation can only be achieved by providing extracurricular offerings within the all-day school program suitable for the respective student body. This study empirically investigates the extracurricular offerings at 300 German primary schools with regard to their content, frequency, and range, in connection with the composition of the student body. Descriptive findings show high prevalence of homework assistance, remedial teaching, sports, and music/art. Conducting latent profile analysis, three distinct profiles of extracurricular school programs were identified depending on the extracurricular offerings provided. Schools with a student body with lower levels of linguistic competence and higher amounts of immigrant students were more likely schools providing homework assistance and a broad range of offerings. Our results suggest that offerings partially meet the specific needs of the student body, but that the potential is not yet fully exploited in order to bring about complementation and compensation.

Keywords: extended education, extracurricular offerings, latent profile analysis, primary school, student composition

Introduction and Research Questions

In Germany, the case of extended education has been stimulated in 2003, when the German federal government decided to invest four billion Euros in the expansion of all-day schools, a form of extended education, nationwide (duration: 2003–2009) (BMBF, 2006). This political decision meant a departure from the till then in Germany prevailing model of half-day schools. By extending the school day, the growing demand of – especially young and well-educated – parents for high-quality all-day care and education was to be met in order for them to be able to combine family and working life. Furthermore, after the first PISA study in 2000 had revealed that students' skills were only average in international comparison and linked to their social and cultural background like in almost no other industrialized country (e. g., Artelt et al., 2001), all-day schools – the most common form with extended education offerings which extend school days and expand learning beyond regular classes – were expected to provide optimal framework conditions for better education and equal opportunities (StEG-Konsor-

tium, 2010). Since then all school types have expanded extended education and provide all-day offerings (KMK, 2020). In 2018, 67.5 percent of primary schools were considered all-day schools. The majority of primary schools is organized as ′open-attendance′ all-day schools [offene Ganztagsschule] where participation in modular activities in the afternoon is voluntary for students (58.4 %). Only nine percent of primary schools nationwide are ′compulsory all-day schools′ offering compulsory extended education where students in certain school classes [teilgebundene Ganztagsschule] (6.7 %) or all students of the respective school [vollge-bundene Ganztagsschule] (2.3 %) attend extended education offerings in addition to regular hours of school instruction. Overall, the proportion of primary students attending all-day school was 42.2 percent in 2018 (KMK, 2020). Even after the initial investment program has ended, the expansion continues. Today, there is a current political debate on the introduction of a nationwide legal right to all-day care for primary school-aged children by 2025. In the federal state of Berlin, for instance, already since 2010 all primary schools provide all-day school programs and are officially designated as all-day schools.

Political motivation aside, there is also pedagogical rationale in favor of a nationwide expansion and provision of all-day schools. According to Holtappels (2005), all-day schools follow four educational aims. First, all-day schools contribute to the socio-cultural infra-structure with regard to the reconciliation of family and working life and the provision of equal opportunities for learning and leisure. Second, in view of children's and adolescents' changing socialization conditions outside of school, all-day schools offer an expanded space for socialization and create an enriched learning setting, especially with regard to social integration and manifold learning opportunities for the acquisition of academic and non-academic competences. Third, all-day schools are further to be understood as a reaction to higher formal qualification and altered content-related educational requirements, and fourth, in response to the development needs of schools and the school system, e. g. regarding students at risk and educational inequality, which are to be achieved with the help of a new learning culture and expanded learning opportunities.

In conjunction with the advancing implementation of inclusive schooling, all-day schools also offer the possibility of realizing a new learning culture providing individual support especially for students at risk of academic underachievement both at the level of the individual school and the entire school system (Schüpbach, Lilla, & Groh, 2018).

Hence, put into the terms of this special issue, it is expected that all-day schools in Germany both complement regular hours of school instruction with a wide array of offers, and compensate for origin-related educational gaps by providing specific offerings for dis-advantaged students. With regard to complementation, all-day schools are expected to im-prove the possibilities for individual support for individual students by providing versatile learning arrangements that enrich the development of students' academic and non-academic competence in an extended timeframe that extends beyond regular hours of school instruction. By interlinking the extracurricular offerings in the all-day school context with the learning that is taking place in regular lessons, complementation is further to be achieved by providing educational opportunities throughout the day and creating valuable leisure activities for all students. With view of the weaknesses of the German education system, which have been repeatedly shown since PISA 2000, in which the general level does not meet today's edu-cational requirements and students' social and cultural background strongly influencing ed-ucational success (e. g., OECD 2019), all-day schools are expected to reduce origin-related educational gaps and increase equal opportunities by producing compensatory effects for

socially disadvantaged students and those facing learning difficulties (e. g., Kielblock et al., 2021; Lossen et al., 2021). In its package of measures following the PISA 2000 shock, the KMK (2001) emphasized that the expansion of all-day schools intends to create expanded educational opportunities in order to promote students' development. The discussion about complementation and compensation does not only exist in Germany, but also in other countries, e. g. Sweden (for a discussion of the concepts of complementation and compensation in extended education in the Swedish school system and its curriculum also refer to Klerfelt and Ljusberg (2018)).

Neither complementation nor compensation can be achieved by simply prolonging the school day. Research on all-day schools has shown that the quality of all-day schools is crucial for a better development of all students, and especially for students at risk (StEG-Konsortium, 2016). According to Sauerwein, Hannemann, and Rollett (2018), the content and the range of the all-day offerings are important (quality) features of all-day schools. Furthermore, extracurricular offerings are part of the schools' profiling (Altrichter, 2011), showing whether there is a main focus within the extracurricular activities provided – either matching the student body or meant to attract a specific clientele (Heinrich et al. 2011). Against this background, in this paper, we focus on the extracurricular offerings provided at primary schools, extended education, in Germany. Analyzing data from the German National Educational Panel Study (NEPS), a nationwide survey on education across the lifespan, the aim of the present study is to gain empirical knowledge on extracurricular primary school offerings and their fit to the student body. For this purpose, we empirically investigate the extracurricular primary school offerings with regard to their content, frequency, and range, in connection with the composition of the student body.

Review of the Literature

From 2005 to 2019, the expansion of all-day schools in Germany has been scientifically accompanied by the *Studie zur Entwicklung der Ganztagsschule* (StEG; study on the development of all-day schools). Accordingly, the current state of research on all-day school in Germany is predominantly, but not restrictively, based on findings based on data from the StEG assessments.

Effects of All-Day School Attendance

The state of research within Germany on effects of attending extracurricular all-day school offerings provides mixed empirical support for the notion that all-day schools can achieve complementation and compensation. Within the primary school context, Steinberg and colleagues (2018) for instance found positive effects of attendance in dance and physical theater offerings on students' socio-emotional skills. Positive effects on primary students' social behavior were also found following specific intervention (Hanisch et al., 2017). With regard to compensatory effects in the German primary school context, a number of longitudinal studies did not observe positive effects of attending all-day school or extracurricular offerings on primary students' achievement in reading, mathematics, and natural science in general

(e. g., Lossen et al., 2016; Reinders et al., 2011; Schründer-Lenzen & Mücke, 2010; Tillmann et al., 2018). However, one study conducted by Bellin and Tamke (2011) found small indications for compensatory effects in reading achievement specifically for immigrant students. Findings from intervention studies further provide evidence that attending specific subject-related offerings actually provoked the intended improvements in primary students' achievement, if offerings were goal-oriented and competence-oriented, and educational quality was high (StEG-Konsortium, 2019). Thus, reading competence, for instance, improved through extracurricular reading support, especially in primary students whose initial competence was rather low (StEG-Konsortium, 2019).

Student Composition in All-Day Primary Schools

One prerequisites for compensation and complementation of extracurricular offerings and all-day school is that students from diverse backgrounds and disadvantaged student groups are reached with differentiated learning arrangements. In short, students need to make use of all-day school offers. Following this concern, data from the StEG-assessments were analyzed to identify possible selective patterns of attendance of all-day school offerings. Analysis conducted by Steiner (2011) for instance found no difference in attendance based on primary students' gender or ethnic origin but revealed that primary students of socially less privileged family background made less use of all-day school offerings than children from better-off families, especially when both parents were full-time employees.

Comparing data from earlier StEG-assessments with later data, Holtappels, Jarsinski, and Rollett (2011), however found that the social composition of the student body according to socio-economic background became more balanced over time. While more students with high socio-economic background attended all-day primary schools initially, possible selection effects in favor of students from better-off families in the first survey in 2005, largely disappeared over time. With regard to the proportion of immigrant students in all-day school offerings, time series comparisons showed that gradually more immigrant students have been taking advantage of all-day school offerings. Differences in attendance between immigrant students and their native peers were traced back to the average proportion of immigrant students in primary school and not to possible social selection based on immigrant background.

As the mere attendance of all-day school offerings seems less decisive for positive effects than the active use of learning opportunities Holtappels et al. (2011) further investigated participation in specific extracurricular offerings and found that there were largely no differences based on students' socio-economic background or immigrant background, with the exception of remedial teaching, which was more often attended by both, students with a low socio-economic background, and immigrant students.

Structure of Offerings

The structure of offerings has been assessed in the first phase of StEG at three measurement points in 2005, 2007 and 2009: School principals were presented a list of 18 elements of offerings and asked whether they were offered (yes or no) in the context of the all-day school

program at their school (Rollett et al., 2011). Subsequently, in the second phase of StEG, the structure of offerings was examined in the school principal surveys in 2012/2013 (StEG-Konsortium, 2015), 2014/2015 (StEG-Konsortium, 2016) and 2017/2018 (StEG-Konsortium, 2019). The most recent results and the development regarding the elements of offerings since 2012/2013 are briefly presented below.

As a part of the final principal survey in the 2017/2018 school year, 419 primary school principals were asked about the extracurricular offerings at their all-day school in the current school year and principals reported whether contents were offered (yes or no). In the descriptive report (StEG-Konsortium, 2019) providing representative insight in the offerings at all-day primary schools in Germany, five areas of offerings were distinguished: (1) learning support offerings, (2) offerings in the MINT area, (3) offerings in the area of linguistics and humanities, (4) musical-cultural, practical and job-oriented offerings, and (5) offerings on leisure, exercise, health and social learning. With regard to the first area, the majority of primary schools offered learning support. With almost 90 percent, homework supervision was the most commonly practiced learning support, followed by remedial teaching and/or remedial classes (76 %), and specific support measures (72 %). Offerings in the area of MINT subjects were less frequent. In descending order, courses on natural science (51 %), new media (48 %), technical courses (33 %), and mathematical courses (30 %) were offered in primary schools. Within the area of linguistics and humanities, more than 70 percent of primary schools provided offerings that can be assigned to the subject areas of German, literature and reading. At almost every fourth primary school, there were offerings of a variety of foreign language courses. Only 13 percent of primary schools provided offerings that can be assigned to the subject areas of history, politics or local history, and geography. Offerings of music and art were represented at the majority of primary all-day schools (90 %). Offerings of handicraft and/or household were represented at more than three quarters of primary schools (77 %). In the area of leisure and exercise offerings, almost all schools provided offerings that enable students to do sports (94 %). The majority of schools provided further leisure activities in the form of games and brainteasers (71 %), social learning (68 %), and health and nutrition offerings (64 %).

Overall, the findings have been somewhat stable over time since 2012/2013. However, a negative trend could be observed in some areas, i. e. a decrease in offerings in courses on natural sciences and new media, in the areas of linguistics and humanities, music and art, and leisure and exercise offerings (StEG-Konsortium, 2019).

Taken together, descriptive findings show a picture of a wide array of different offerings provided at all-day primary schools. However, specific analysis also revealed that there were location-related differences in the structure of offerings (StEG-Konsortium, 2015). Considering offerings of learning support, and content-related offerings in the MINT area, and in the area of linguistics and humanities to target students' academic development, and musical-cultural, practical and job-oriented offerings or offerings on leisure, exercise, health, and social learning as rather non-academic competence development offerings, the picture further indicates that – besides homework supervision which seems to be a steady component in almost every all-day primary school in Germany –offerings that aim at non-academic competence development and thus more complementary appear to be more prevalent than academic offerings, from which compensatory effects could be expected

Range of Offerings

A wide range of offerings and thus a variety of all-day offerings are widely considered a quality feature of all-day schools (Radisch et al., 2017; Rollett, Lossen, Jarsinski, Lüpschen & Holtappels, 2011; Sauerwein, Hannemann & Rollett, 2018). A review of US studies on the effectiveness of afterschool programs furthermore showed that a broad range of offerings that are available to students may increase the likelihood of participation for the individual and maintain participants' interest of attendance (Simpkins, Little, & Weiss, 2004).

Within the framework of the StEG assessments, the range of offerings provided within all-day primary school programs has been examined in the early phase of the study by differentiating four types of offering structures and generating indexes ranging from 0 – indicating that none the offerings were provided, to 1 – meaning that all offerings were provided. These indexes enabled statements regarding the main focus in the priorities of the offerings at the level of the different types of offerings. In addition, an overall index "range of offerings" was compiled to provide a global measure of the diversity of offerings within all-day schools (Holtappels, 2008). Regarding the development of all-day primary school offerings from 2005 to 2009 using these indexes, Rollett and colleagues (2011) showed a positive development and strong linear increase in the overall range of offerings provided in all-day primary schools.

In the late phase of the StEG, another approach to describe the range of offerings in all-day schools was carried out by Sauerwein and colleagues (2018) using latent class analysis (LCA) to empirically identify distinct profiles of all-day school programs. The analyses, which included 11 offerings of all-day primary and secondary schools, revealed a four-class solution with four profiles: (1) "Offering school" with a wide range of offerings (37 %; 28 % of primary schools (ps)), (2) "sports and music-related all-day school" providing offerings known to be frequently chosen (31 %, ps 44 %), (3) "learning school" (similar to offering schools, but less homework support; 25 %, ps 20 %), and (4) "low-offering all-day school" (low choice of offerings; 7 %, ps 9 %). Strikingly the profile "sports and music-related all-day school" was more prevalent in primary schools than in secondary school types. The authors of this study considered the range of offerings to be a distinguishing feature of all-day schools – in addition to the organization of time and the conceptual connection between teaching and offering in all-day schools.

Using data from the school principal assessments conducted within the StEG framework, both studies were based on the school principals' statements whether contents were offered (yes or no) without considering their frequency. Thus, there is only limited information on the range of offerings provided within all-day school programs. Accordingly, we argue that an evaluation of the range of extracurricular offerings should also account for the frequency with which extracurricular offerings are provided at primary schools.

Range of Offerings and Composition of Student Body

School development in narrower sense can be defined as the "conscious and systematic development of individual schools" (Rolff, 1998, p. 326). Rolff (1998) describes this as intentional school development. On this basis, it has been assumed that the school development of the individual school is driven by the structural characteristics at school level. This

includes the composition of the student body (socio-economic status, migration background, etc.), the form of the all-day school (open-attendance or compulsory), and school size. The range of offerings as a quality feature of all-day schools thus seems to be an obvious aspect for the further development of all-day schools. Moreover, considering that all-day schools in Germany are expected to complement regular hours of school instruction with a wide array of offers and to compensate for origin-related educational gaps by providing specific offerings for disadvantaged students, it is important to know what needs to be complemented and what exactly is to be compensated. Schools with a low level of performance, with a large proportion of immigrant students or a student body of low social background, for instance, have other needs than schools with a high level of performance, with a low proportion of immigrant students or a student body of high social background for which the all-day school program should include suitable offerings.

Within the StEG context, Rollett et al. (2011) investigated whether different characteristics of the school (flexible time organization, evaluation of the cooperation of the educators, and participation of teachers in offerings) play a role as conditional factors for the development in the range of offerings. Their analysis showed that any conceptual characteristics or the schools' goal orientations were unrelated and the only structural characteristic influencing the development of the range of offerings was school size. However, the range of offerings at the first data collection showed to be more diverse at larger primary schools, and where the student body was described as having a high socio-economic background (Rollett et al., 2011).

Based on a representative sample of primary schools in Germany including data on the frequency of extracurricular offerings, Stirner and colleagues (2019) investigated whether primary schools match their extracurricular offerings to their student body. They found significant positive associations between the socioeconomic background of the student body and the frequency with which extracurricular offerings in the area of handicraft, and in the area of music and arts were provided. Negative associations, on the other hand, were found with regard to extracurricular offerings in remedial teaching in German, native language lessons, social and intercultural learning as well as "offerings to improve learning and work techniques". Further controlling for the size of the school and location differences, the analysis revealed that as the socio-economic status of the student body declines, there is also a decrease in the frequency of extracurricular offerings anchored in the school's all-day program.

Regarding the provision of extracurricular activities, school principals play an important role, as they are the most important actors for school development and implementation of educational reforms (Muslic, 2017). Within the context of the governance of all-day school programs, empirical evidence suggests that it is largely school principals, who are in charge of the set-up of extracurricular offerings, especially in all-day primary schools (StEG, 2019). Hence, school principals' assessments on the composition of the student body together with data from competence tests are in focus of this study.

We know of no study that has used the latent class approach on extracurricular offerings to investigate a possible connection between the composition of student body of a school and the extracurricular offerings provided, i. e. whether the extracurricular program reaches the target population.

Research Questions

The German state of research provides comprehensive information on whether specific offerings are provided within the primary after-school context. However, the StEG assessments do not provide information on the frequency of each type of extracurricular offering in German primary schools as school principals were only asked to indicate whether contents were offered (yes or no). Hence, analysis based on data from StEG assessments suffer limitations in this regard. Furthermore, the prevalence of offerings in German primary schools has not yet been investigated in further large-scale studies in Germany apart from StEG. Against this background, the aim of the present study is to examine the extracurricular offerings of primary schools by analyzing the content, frequency, and range of offerings, in connection with composition of student body of the school. Following the aim of gaining empirical knowledge about the accuracy of fit between extracurricular offerings and student composition, we hope to be able to draw further conclusions about the fulfillment of complementation and compensation in the all-day primary context. Therefore our research questions are:

1. What extracurricular offerings are provided at German primary schools and how frequently are these offerings provided across all schools? What are the most prevalent academic and non-academic offerings?
2. How do German primary schools differ regarding the range of extracurricular offerings? What profiles of extracurricular school programs can be identified?
3. What are the connections between different profiles of extracurricular school programs and composition of student body of the school in terms of a) mean level of academic competences and b) cultural and social background?

Methods

Sample

The research questions are investigated in the context of the German National Educational Panel Study[1] (NEPS, Blossfeld, Roßbach, & von Maurice, 2011). NEPS is a representative study on learning across the lifespan following a multi-cohort sequence design. For our study, data from Wave 3 and Wave 4 of Starting Cohort 2: From Kindergarten to Elementary school was analyzed. More specifically, questionnaire data from 303 primary school principals was available in the scientific use file. Due to partially contradicting information from the school principals regarding the type of their school, all data from school principals who had answered the questions on extracurricular activities at their school were included in the analysis ($N = 300$). Competence data was derived from individual competence tests of $N = 5607$ students in

Grade 1 and aggregated on school level. The mean number of first grade students who participated in the competence tests per school was 24.74 ($SD = 12.73$).

Instruments

School principals provided information on the size of their school ($N = 275$, $M = 238.47$, $SD = 132.10$) and were further asked *"Are the following extracurricular all-day school programs and elements offered at your school and, if yes, how often?"* with regard to several different contents (items see Figure 1). Answer options were labeled "no", "yes, namely twice a year or less frequently", "yes, namely quarterly", "yes, namely monthly", "yes, namely weekly", "yes, namely 2–3 times a week", and "yes, namely 4–5 times a week".

School principals were also asked about the composition of student body at their school regarding the amount of students with a migration background (*"How large approximately is the amount of students in your school that have a migrant background?"*) ($N = 255$, $M = 22.76$, $SD = 21.81$) and regarding social background (*"What proportion of the students of your school are from families from low social class?"*) ($N = 222$, $M = 25.95$, $SD = 18.50$).

Students' linguistic competence was assessed through listening comprehension at word level. Following the Peabody Picture Vocabulary Test (PPVT, Dunn, 1959, Dunn & Dunn, 2007), in the NEPS, receptive vocabulary was measured using a total of 66 selected items arranged in complexity and students' task was to select the correct picture from a set of four pictures. For students' linguistic competence, the scientific use file provides sum scores of 66 items, which we aggregated on school level ($N = 300$, $Min = 21.41$, $Max = 54.55$; $M = 39.93$, $SD = 5.22$).

The construct of mathematical competence in NEPS is based on the idea of mathematical literacy (OECD, 2003), which refers to the ability of solving mathematical problems in age-specific contexts. In order to measure mathematical competence independent of students' reading competence, items were read aloud and different pictures provided from which the right answer needed to be chosen. Students' mathematical competence is provided as weighted likelihood estimates (WLEs), which are estimates of a person's most likely competence score (see also Pohl & Carstensen, 2013) ($N = 300$, $Min = -1.26$, $Max = 1.57$; $M = 0.04$, $SD = 0.52$).

Data Analysis

Statistical analyses were performed using IBM SPSS Statistics 26 and Mplus Version 8.2 (Muthén & Muthén, 1998–2017). Following descriptive analysis, latent profile analysis (LPA) was conducted in order to obtain distinct profiles of all-day school programs taking into account the information on content and frequency of offerings provided within all-day schools. The aim of LPA is to assign objects based on their characteristics to as few groups as possible, which are internally homogeneous and externally as heterogeneous as possible (Giegler & Rost, 1993). Hence, conducting LPA based on the schools' characteristics referring to their extracurricular offerings, different profiles were estimated and every school was assigned to a certain profile with a certain probability. According to the general approach, the

number of profiles was increased stepwise starting with two profiles and the resulting fit indices compared to the previous profile solution as recommended by Nylund, Asparouhouv, and Muthén (2007). In addition, according to the literature, models are to be evaluated on interpretability, and solutions with fewer profiles to be preferred. Furthermore, to investigate the connection between profile of extracurricular activities and student body of the school, multinomial regression analysis were conducted where profiles were regressed on mean levels of students' linguistic and mathematical competences and the amount of immigrant students as well as students of low social background. Tests to see if the data met the assumption of collinearity indicated that multi-collinearity was not a concern (linguistic competence: Tolerance = .51, *VIF* = 1.96; mathematical competence: Tolerance = .64, *VIF* = 1.57; amount of students with an immigrant background: Tolerance = .47, *VIF* = 2.12; amount of students from a low social class: Tolerance = .50, *VIF* = 1.99; school size: Tolerance = .92, *VIF* = 1.09).
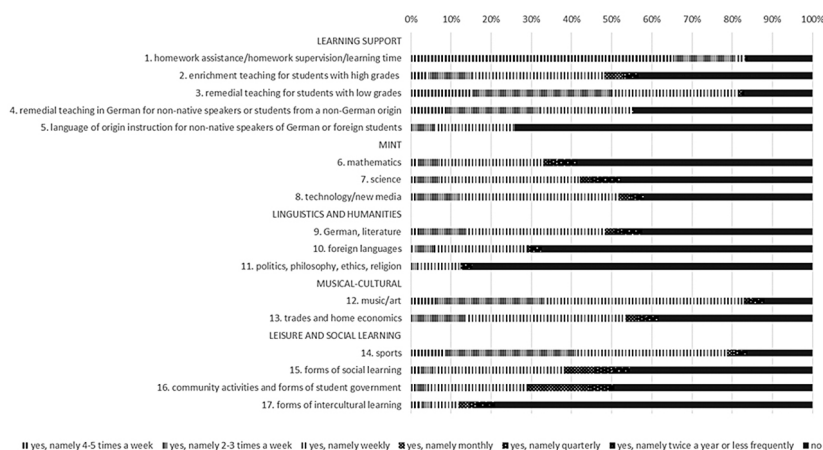
Results

Descriptive Findings on Content and Frequency of Offerings

Figure 1 shows the different items that school principals gave information about whether these extracurricular offerings are provided at their primary school or not and if yes how frequently. With regard to the first item, *homework assistance/homework supervision/learning time*, only 17 % of schools answered not to provide any such offerings. The majority of primary schools provided such offerings 4–5 times a week (65%). Similarly common within the area of *LEARNING SUPPORT* were offerings of *remedial teaching for students with low grades.* Only 18% of school principals answered that no such offering was provided at their school. With regard to frequency, every second school provided *remedial teaching for students with low grades* either 2–3 or 4–5 times a week and another 32% percent once a week. For students with first languages other than German *remedial teaching in German* was offered on a weekly basis at least in 55% of schools, and *language of origin instruction* in only 27% of schools on a weekly basis or more frequently. *Enrichment teaching for students with high grades* was not offered at all in 44% of schools, while in almost half of all schools such offerings were provided on a weekly basis or more frequently. Offerings in the area of MINT-subjects were less prevalent altogether. The majority of schools did not provide learning opportunities in *mathematics*, and only one third provided such offerings on a weekly basis at least. Learning opportunities in *science* and general offers in *technology/new media* were slightly more prevalent with at least weekly offerings in 42% and 52% of primary schools, respectively. Within the area of *LINGUISTICS AND HUMANITIES*, less than half of all primary schools provided offerings that can be assigned to *German, literature* at least once a week. At almost one third of primary schools, *foreign language* learning opportunities were offered on a weekly basis at least (32%). Only 13 percent of primary schools provided learning opportunities in *politics, philosophy, ethics, religion* weekly or more often. Offerings in *music/art* were represented at more than eight out of ten primary schools (83%). Offerings of *handicraft and/or household* were provided at the majority of primary schools on a weekly basis at least (53%). In the area of *LEISURE AND SOCIAL LEARNING*, almost all schools provided offerings that enable students to do *sports* on a weekly basis at least (78%). The majority of

schools did not provide further leisure activities in forms of *social learning*, *community activities/student government,* or *intercultural learning* on a weekly basis at least. Amongst these offerings, a monthly or quarterly basis were more prevalent than in all other offerings. With regard to the frequency of offerings, it is noticeable that if one looks only at the answer categories "yes, namely weekly", "yes, namely 2–3 times a week", and "yes, namely 4–5 times a week" – where one can realistically expect positive student outcomes to occur – is that in the areas of *MINT* as well as *LINGUISTICS AND HUMANITIES* the majority of schools does not provide any of these offerings. Further, this is especially the case for offerings for non-native German speakers and offerings in the area of *LEISURE AND SOCIAL LEARNING* especially with regard to forms of *intercultural learning.*

With regard to the prevalence of academic and non-academic offerings, in case of the former, *homework assistance* and *remedial teaching* are the most prevalent while offerings in *music/art* and *sports* are most prevalent non-academic offerings.

Figure 1. Overview of Extracurricular Offerings Across Primary Schools

Results of Latent Profile Analysis

Latent profile analysis were conducted accounting for content and frequency of extra-curricular offerings (items are identical to those in Figure 1 and shown again in Figure 2) to identify distinct profiles of all-day school offerings. Following the general approach described above, models containing two, three, four, and five latent profiles were estimated. Table 1 presents the fit indices for the different models. According to the p value of the Lo-Mendell-Rubin test, the three-profile solution seemed to be superior to the two-profile solution, and the four-profile solution seemed superior to the three-profile solution. The same was indicated by decreasing AIC and BIC values. The Lo-Mendell-Rubin test, comparing the five-profile model to the four-profile model, indicated that the four-profile model had a significantly better fit to the data though AIC and BIC values further decreased. Entropy, i.e. the measure of how well profiles can be distinguished, however, decreased from .914 for the three-profile solution to .884 for the four-profile solution, meaning that fewer objects can correctly be classified by

the four-profile model in comparison to the three-profile model. Considering the standard to rely on fewer profiles, we decided to rely on the three-profile solution and three distinct profiles were identified. Further, the LMR test clearly indicated that the five-profile model was not superior to the four-profile model though entropy slightly increased but stayed below the entropy of the three-profile solution. The BLRT did not point to any specific model. Figure 2 shows the results of the three-profile solution that emerged.

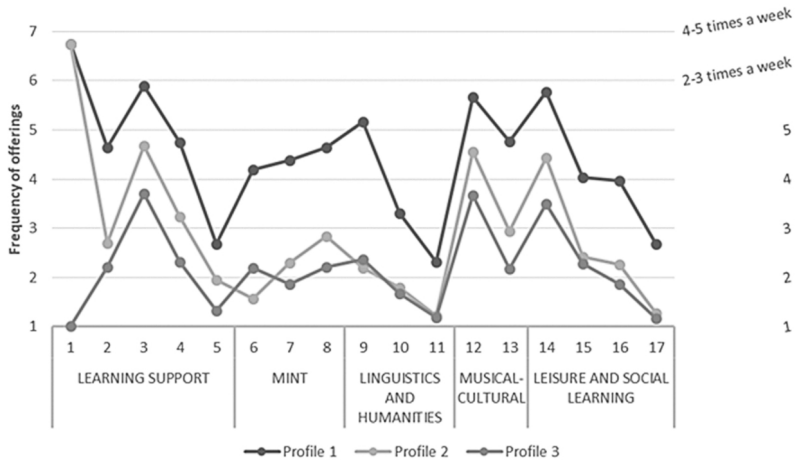Figure 2. Estimated means for the three-profile solution.

Table 1. Model Fit Indices

Profiles	AIC	BIC	aBIC	LMR	BLRT	Entropy
2	19225.843	19418.440	19253.526	–	–	.835
3	18647.622	18906.886	18684.888	$p < .001$	$p < .001$	.914
4	18335.497	18661.430	18382.346	$p = .0346$	$p < .001$	.884
5	18219.536	18612.137	18275.968	$p = .4873$	$p < .001$	.897

Notes. AIC = Akaike information criterion, BIC = Bayesian information criterion, aBIC = adjusted Bayesian information criterion, LMR = Lo-Mendell-Rubin adjusted LRT test, BLRT= bootstrapped parametric likelihood ratio test, – indicates that the test was not conducted.

Profile 1 characterizes primary schools who provide *homework assistance* daily and offerings of *remedial teaching for students with low grades*, *music/art* and *sports* several days a week. Primary schools in this profile further provide weekly offerings within the area of *LEARNING SUPPORT*, namely *enrichment teaching for students with high grades*, and *remedial teaching in German for non-native speakers of students from a non-German origin*, within the area of *MINT* (*technology/new media*), within the area of *LINGUISTICS AND HUMANITIES* (*German, literature*) and *handicraft* within the *MUSICAL-CULTURAL* area. Learning opportunities in *mathematics* and *science* (*MINT* area) and *forms of social learning* and *community activities* (*LEISURE AND SOCIAL LEARNING* area) are provided monthly or more frequently. All other offerings are provided less frequently in the extracurricular school

offerings of schools in Profile 1. This profile includes 35 percent of all-day primary schools in the sample. Based on the characteristics of this profile, Profile 1 was coined "homework assistance and wide range of offerings".

Profile 2 comprises primary schools whose extracurricular program provides daily *homework assistance. Remedial teaching for students with low grades*, *music/art* and *sports* are offered on a weekly to monthly basis. All other offerings, especially in the areas of *MINT* and *LINGUISTICS AND HUMANITIES* as well as *forms of social learning* and *community activities* are provided only sporadically, in terms of quarterly or less frequently. Learning opportunities in *politics, philosophy, ethics, religion* and *forms of intercultural learning* are no part of the extracurricular school programs belonging to Profile 2 at all. Profile 2 comprises 48 percent of primary schools in the sample. Based on the description of this profile, Profile 2 was referred to as "homework assistance and medium range of offerings".

Profile 3 characterizes primary schools who in contrast to the extracurricular programs described in Profile 1 and Profile 2 do not provide *homework assistance. Remedial teaching for students with low grades*, *music/art* and *sports* are the most frequently provided offerings on a monthly to quarterly basis. Offerings of *language of origin instruction*, learning opportunities in *politics, philosophy, ethics, religion* and *forms of intercultural learning* are not provided at all within the extracurricular school programs described by Profile 3. All other offerings are provided only sporadically, similar to Profile 2. Profile 3 is named "no homework assistance and small range of offerings" and includes 17 percent of primary schools in the sample.

Student Body of the School and Profiles of the Extracurricular School Programs

Table 2 displays descriptives of mean level of student competences and composition of student body together with school size within the different profiles of extracurricular school programs. One-way analysis of variance showed that there were no statistically significant differences between profiles in students' mean level of reading competence and mathematical competence. However, profiles differed statistically significant regarding the amount of immigrant students ($F(2,252)$=13.52, $p < .001$, $\eta^2 = .10$) and regarding school size ($F(2,272)$ =14.64, $p < .001$, $\eta^2 = .10$). For both, the effect size value suggested medium effects. The analysis of variance regarding the amount of students from a low social background indicated only marginally significant differences between profiles, and the effect size suggested a small effect ($F(2,219)$=2.65, $p = .07$, $\eta^2 = .02$).

Multinomial regression analyses examined differences in likely profile membership based on mean competence levels in linguistics and mathematics, amount of students with an immigrant background, amount of students from a low social background, and school size (see Table 3). For the comparison between Profile 2 "homework assistance and medium range of offerings" and Profile 1 "homework assistance and wide range of offerings", mean level of linguistic competence showed to be a significant predictor, while mean level of mathematical competence was only marginally significant (Model 1). Higher levels of linguistic competence were associated with a higher likelihood of belonging to Profile 2 relative to Profile 1 ($OR = 1.08, p = .02$; 95% CI = 1.01, 1.14). Though not significant, mean level of mathematical competence showed a tendency of higher levels of mathematical competence being associated

Table 2. Student competences, composition of student body, and school size in different profiles

	Profile 1 "homework assistance and wide range of offerings" (n = 104; 34,7%)			Profile 2 "homework assistance and medium range of offerings" (n = 146; 48,7%)			Profile 3 "no homework assistance and small range of offerings" (n = 50; 16,7%)		
	N	M	SD	N	M	SD	N	M	SD
Mean level of linguistic competence	104	39.07	5.36	146	40.25	4.91	50	40.79	5.09
Mean level of mathematical competence	104	0.05	0.53	146	0.02	0.49	50	0.08	0.60
Amount of students with an immigrant background	91	30.71	23.49	119	20.86	20.79	45	11.69	13.86
Amount of students from a low social class	84	29.25	19.77	103	24.82	17.91	35	21.34	16.01
School size	93	289.85	146.25	133	225.98	118.90	49	174.84	100.34

Note. School size refers to total number of students.

with a lower likelihood of belonging in Profile 2 relative to Profile 1 ($OR = 0.59$, $p = .08$; 95% CI = 0.33, 1.07).

Including further characteristics of the student body in Model 2, amount of immigrant students was a significant predictor. Higher amounts of immigrant students were associated with a lower likelihood of belonging to Profile 2 relative to Profile 1 ($OR = 0.97$, $p = .01$; 95% CI = 0.96, 0.99). Mean level of linguistic and mathematical competence as well as the amount of students of low social background did not significantly contribute to the prediction of profile membership (Model 2). Including school size as an additional predictor (Model 3), none of the other predictors reached statistical significance. However, amount of students with an immigrant background – together with mean level of mathematical competence – showed to be marginally significant predictors ($ps = .07$).

For the comparison between Profile 3 "no homework assistance and small range of offerings" and Profile 1 "homework assistance and wide range of offerings", mean level of linguistic competence showed to significantly predict profile membership (Model 1). Higher levels of linguistic competence were associated with a higher likelihood of belonging to Profile 3 relative to Profile 1 ($OR = 1.09$, $p = .04$; 95% CI = 1.01, 1.18). Including further characteristics of student body in Model 2, amount of immigrant students was the only significant predictor. Higher amounts of immigrant students were associated with a lower likelihood of belonging to Profile 3 relative to Profile 1 ($OR = 0.92$, $p < .001$; 95% CI = 0.88, 0.96). All other predictors did not significantly contribute to the prediction of profile membership in Model 2. Amount of immigrant students was still a significant predictor when controlling for school size (Model 3). Still, higher amounts of immigrant students were associated with a lower likelihood of belonging to Profile 3 relative to Profile 1 ($OR = 0.93$, $p = .001$; 95% CI = 0.90, 0.97).

For the comparison between Profile 2 "homework assistance and medium range of offerings" and Profile 3 "no homework assistance and small range of offerings", both mean level of linguistic competence and mathematical competence, showed to be non-significant predictors (Model 1). Including further characteristics of student body in Model 2, amount of immigrant students showed to be a significant predictor. Higher amounts of immigrant students were associated with a higher likelihood of belonging to Profile 2 relative to Profile 3 ($OR = 1.06$, $p = .002$; 95% CI = 1.02, 1.10). Also in Model 3, when controlling for school size, amount of immigrant students was associated with a higher likelihood of belonging in Profile 2 relative to Profile 3 ($OR = 1.05$, $p = .009$; 95% CI = 1.01, 1.09). All other predictors did not significantly contribute to the prediction of profile membership.

Discussion

In this study, we analyzed the extracurricular offerings provided at German primary schools. From an educational policy perspective, all-day schools are expected to provide all-day care and better education with equal opportunities. From educational perspective, all-day schools are expected to complement regular hours of school instruction and compensate students' family background.

Table 3. Results of multinomial regression predicting profile by characteristics of student body and school size

	Model 1				Model 2				Model 3			
		95% CI for Odds Ratio				95% CI for Odds Ratio				95% CI for Odds Ratio		
	B (SE)	Lower	OR	Upper	B (SE)	Lower	OR	Upper	B (SE)	Lower	OR	Upper
Profile 2 vs. Profile 1												
Intercept	-2.52* (1.20)				1.14 (1.79)				1.07 (1.82)			
Mean level of linguistic competence	0.07* (0.03)	1.01	1.08	1.14	-0.01 (0.04)	0.91	0.99	1.08	0.01 (0.04)	0.93	1.01	1.10
Mean level of mathematical competence	-0.53+ (0.30)	0.33	0.59	1.07	-0.58 (0.37)	0.27	0.56	1.16	-0.69+ (0.38)	0.24	0.50	1.06
Amount of students with an immigrant background					-0.03* (0.01)	0.96	0.97	0.99	-0.02+ (0.01)	0.96	0.98	1.00
Amount of students from a low social class					0.00 (0.01)	0.98	1.00	1.03	0.00 (0.01)	0.98	1.00	1.03
School size					0.00 (0.01)				-0.00* (0.00)	0.99	1.00	1.00
Profile 3 vs. Profile 1												
Intercept	-4.14* (1.67)				2.66 (2.54)				2.81 (2.59)			
Mean level of linguistic competence	0.09* (0.04)	1.01	1.09	1.18	-0.06 (0.06)	0.84	0.94	1.06	-0.03 (0.06)	0.86	0.97	1.09
Mean level of mathematical competence	-0.38 (0.40)	0.31	0.69	1.50	-0.12 (0.50)	0.33	0.89	2.38	-0.32 (0.52)	0.26	0.72	1.99

	Model 1				Model 2				Model 3			
	B (SE)	95% CI for Odds Ratio			B (SE)	95% CI for Odds Ratio			B (SE)	95% CI for Odds Ratio		
		Lower	OR	Upper		Lower	OR	Upper		Lower	OR	Upper
Amount of students with an immigrant background					-0.08** (.02)	0.88	0.92	0.96	-0.07** (0.02)	0.90	0.93	0.97
Amount of students from a low social class					0.01 (.02)	0.98	1.01	1.05	0.01 (0.02)	0.98	1.01	1.05
School size									-0.01** (0.00)	0.99	0.99	1.00
Profile 2 vs. Profile 3												
Intercept	1.62 (1.60)				-1.52 (2.38)				-1.75 (2.40)			
Mean level of linguistic competence	-0.01 (0.04)	0.91	0.99	1.07	0.05 (0.06)	0.94	1.05	1.17	0.04 (0.06)	0.93	1.04	1.16
Mean level of mathematical competence	-0.15 (0.38)	0.41	0.86	1.81	-0.46 (0.48)	0.25	0.63	1.61	-0.36 (0.48)	0.27	0.70	1.79
Amount of students with an immigrant background					0.06** (0.02)	1.02	1.06	1.10	0.05** (0.02)	1.01	1.05	1.09
Amount of students from a low social class					-0.01 (0.02)	0.96	0.99	1.03	-0.01 (0.02)	0.96	0.99	1.02
School size									0.00+ (0.00)	1.00	1.00	1.01
N	300				211				207			

Note. CI = confidence interval, Model 1: R^2= .03 (Cox & Snell), .03 (Nagelkerke), .01 (McFadden). Model $x^2(4)$= 7.88, p = .096
Model 2: R^2= .15 (Cox & Snell), .17 (Nagelkerke), .08 (McFadden). Model $x^2(8)$= 34.62, p < .001.
Model 3: R^2= .19 (Cox & Snell), .22 (Nagelkerke), .11 (McFadden). Model $x^2(10)$= 43.97, p < .001
+ p < .10, * p < .05, ** p < .01

Analyzing data of the German National Educational Panel Study (NEPS), descriptive insight in the extracurricular offerings provided at German primary schools was given with regard to the content and frequency of these offerings.

Taken together, our analyses showed findings in line with findings from the StEG assessments (StEG-Konsortium, 2016, 2019). The most prevalent offering was homework assistance, provided by more than 80 percent of schools in the sample at least several times a week. Also rather prevalent were offerings of remedial teaching for students with low grades within the area of academic offerings. Amongst non-academic offerings, music/art, and sports were most prevalent offerings, provided weekly or more frequently by 33, and 42 percent of all primary schools, respectively. Altogether descriptive findings indicate that compensation is strived for in extracurricular offerings with regard to homework assistance and remedial teaching, whereas complementation, in terms of enriching students' development and learning by providing versatile learning arrangements, seems to be less in focus.

Further, the present study examined the range of extracurricular offerings within German primary schools conducting latent profile analysis. Three distinct profiles of extracurricular school programs pertaining to primary schools were empirically identified. Profile 1 was characterized by schools who provided homework support on a daily basis and remedial teaching, offerings in music/art, and sports several times a week. With the exception of language of origin support, offerings in foreign languages, in politics/philosophy/ethics/religion and different forms of social learning, all other offerings were provided weekly to at least monthly across school programs. Profile 2 was characterized by schools who provided homework support frequently, namely daily, while all other offerings were provided considerably less often, in terms of quarterly or less frequently. Only remedial teaching, offerings in music/art, and offerings in sports were provided on a weekly to monthly basis across school programs. Profile 3 differed from the others by characterizing schools who do not provide homework support. The most prevalent offerings in school programs of schools belonging to Profile 3 are remedial teaching, offerings in music/art, and sports. While these are offered less frequently than monthly, all other offerings are provided even less often. The most prevalent profile, composed of almost half of all primary schools in the sample was Profile 2, every third school was characterized as Profile 1, and the least prevalent was Profile 3 composed of 17 percent of the sample. Although Sauerwein et al. (2018), identified four profiles in German all-day schools, our findings relate to their findings as the most prevalent profile for primary schools seems to have a main focus on homework support in connection with offerings in music and arts, and sports.

Furthermore, multinomial logistic regression models were calculated to investigate the connection between profile of extracurricular school program and different performance-related characteristics and composition characteristics of the student body of the school. Considering mean levels of students' academic competences, differences in profile membership were found as a function of mean level of linguistic competence. Higher mean levels of linguistic competence indicated a greater likelihood of belonging in Profile 3 or in Profile 2 relative to Profile 1. Additionally accounting for composition of student body of the school and controlling for school size, group differences were found by the amount of immigrant students. Schools with a higher amount of immigrant students were more likely to be classified as Profile 1 than Profile 2 and Profile 3. In the extended models, in each case the contribution of amount of students of low social background was not significant in any model. Although all effects were of small size, our study extends the findings from Rollett and

colleagues (2011), whose analyses showed that only school size related to the range of offerings of all-day primary schools over time.

Taken together, the present study suggests that there is at least to some extent a match between the profile, i.e. the content, frequency, and range of the extracurricular offerings, with regard to students' linguistic competences and the ethnic composition, in terms of the amount of immigrant students in school. However, our results indicate that the setting up of extra-curricular offerings provided at primary schools needs a more accurate fit, which matches with the student composition and their specific needs in order to complement and compensate. In conjunction with the findings from Rollett and colleagues (2011), especially small schools may face challenges to provide extracurricular activities suitable to fulfill their obligations of complementation and compensation.

The results of this study need to be interpreted within the context of several limitations. First, the data were collected within the NEPS framework. While this offers a satisfying sample size, there are restrictions on part of the items and scales. Principals provided in-formation on the extracurricular activities at their schools and were employed as the sole source for the composition of the student body. Since we were interested in the principals' perspective on the student body, we refrained from checking the validity of principals' evaluations, which would have been possible by comparing with individual student data from Grade 1 on immigrant background or social class. While principals' information on charac-teristics of the student body concerned the school as a whole, competence data was only available from students of Grade 1. However, we want to argue that the mean levels of one grade can be used as a proxy-variable for the mean competence level of the school. Further, no information on quality of offerings was considered in our analysis. Quality of offerings showed to be a very relevant explaining variable in studies on outcomes of extended education (e.g., von Allmen, Schüpbach, Frei, & Nieuwenboom, 2019) and should therefore be con-sidered in future investigations. Especially in conjunction with the method of latent profile analysis, this could provide valuable insights. More importantly however, we were restricted regarding information on students' attendance of all-day school in general and attendance of extracurricular offerings in specific. Hence, the results of our study are focused at school, the meso level, and do not provide a perspective at the micro level. No statement can be made about how the competences of students who depend on compensatory and/or complementary effects in academic and non-academic offerings and who attend them regularly develop in association with the respective profiles of extracurricular school programs. That means for future research to investigate whether a specific profile of extracurricular school program oriented towards the prevailing student body can effectively achieve individual com-plementation of regular hours of school instruction and/or individual compensation of stu-dent's family background on student level. Whether a particular profile of a school succeeds in meeting both demands equally well or whether one goal is achieved better than the other, remains open and is difficult to prove empirically as complementation and compensation cannot be clearly demarcated but merge into one another. The question arises whether the mission of complementation and compensation is fundamentally inseparable whenever there is a group of individual students studying together?

Nevertheless, on the basis of the present investigation, it can be hypothesized that the potential of matching extracurricular school offerings to the specific needs of the school's student body is not yet fully exploited in order to endeavor complementation and compen-

sation through the content, frequency, and range of offerings provided within the extra-curricular school program.

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