Research Article

American Journal of Science Education Research

Profiles of Social and Learning Behavior Among Students with Special Educational Needs in Their Social and Emotional Development Relative to Students Without Special Educational Needs

*(**Running Head:** Behavioral profiles of students with SEN-ESD relative to students without SEN)*

Annette Lohbeck*[1,2] (iD)

[1]University of Oldenburg, Germany
[2]Hochschule Fresenius Heidelberg, Germany

*Corresponding author: Dr. Annette Lohbeck, [1]University of Oldenburg, Ammerländer Heerstraße 114-118, 26129 Oldenburg, E-mail: annette.lohbeck@uni-oldenburg.de; [2]Hochschule Fresenius Heidelberg, Sickingenstr. 63-65, 69126 Heidelberg, Phone: +49 (0)6221 644260, E-mail: annette.lohbeck@hs-fresenius.de

Abstract

Using latent profile analysis, this study aimed to explore latent profiles of social and learning behavior among 354 students with special educational needs (SEN) in their emotional and social development (ESD) relative to 1,378 students without SEN from grades 4-12 in Germany. Furthermore, the relations of these profiles to some covariates (i.e., gender, age, school grades) were investigated in these two student populations. In both groups of students, results supported a four-profile solution, labeled as "At Risk", "Adapted", "Poor Learners", and "Socially Incompetent". Support was also found for some similar relations of students' profile membership to the covariates in both groups: Boys were more likely to be assigned to the "At Risk" profile (Profile 1) relative to the "Adapted" profile (Profile 2) and "Poor Learners" profile (Profile 3) than girls, who were more likely to be assigned to the "Adapted" profile (Profile 2) relative to the "Socially Incompetent" profile (Profile 4). Furthermore, the most favorable "Adapted" profile was most highly related to better grades in mathematics. These results indicate similar behavioral profiles in both groups of students, but also a great heterogeneity of social and learning behavior among students with SEN-ESD and students without SEN, which should be considered in interventions and prevention programs.

Keywords: social and learning behavior, special educational needs, social and emotional development, comparison, similarities

In Germany, where the present study was conducted, a total of 595,696 students had a special educational need (SEN) in the school year 2022 (KMK, 2024). Of these, 233,005 students (39.1%) exhibited a SEN in learning, while 104.778 (17.6 %) students had a SEN in their emotional and social development (hereinafter SEN-ESD). However, the proportion of students with SEN-ESD has also increased continuously since 2013 (KMK, 2024), i.e., while it was around 15.2% in 2013, it was 17.6% in 2022. Students with a SEN-ESD thus represent the second largest group after students with a SEN in learning. Due to their emotional and social deficits, it is reasonable to assume that students with SEN-ESD also largely differ in their social and learning behavior at school (Blumenthal & Blumenthal, 2024; Farley et al., 2023; Gage et al., 2013; Hall et al., 2022; Lampert et al., 2022). However, research on the varying patterns of social and learning behavior among this student population relative to students without SEN has still been absent. In addition, most studies exploring behavioral profiles among students with SEN have used variable-oriented methods (e.g., Briggs et al., 2012; cf. Jiang et al., 2023), while person-oriented methods, such as latent profile analysis (LPA), have so far been neglected. A variable-oriented approach allows one to determine the relations between specific variables across an entire population but does not transfer the relations to the properties of individuals (Morin et al., 2020). In contrast, LPA categorizes subjects into relatively homogeneous subgroups (or profiles) that differ qualitatively and quantitatively from one another in

terms of their configuration (i.e., mean values) in multiple variables (Morin et al., 2020). LPA can also uncover the relations and interactions of these subgroups to more than three predictors or outcomes, which are often hard to interpret with variable-oriented methods (Morin et al., 2020). This can be particularly useful for analyzing the heterogeneity of students' behavioral problems, as students who initially show externalizing behavior problems are frequently at higher risk of developing internalizing problems or other problem problems in later adolescence (Bevilacqua et al., 2018; Choate et al., 2023; Richards et al., 2022). Until now, no person-oriented studies have yet classified specific groups of social and learning behavior among students with SEN-ESD. For this reason, the present study aimed to use LPA to explore and compare the latent profiles of social and learning behavior among students with SEN-ESD relative to students without SEN. In addition, this study sought to reveal the relations of these profiles to some covariates (i.e., gender, age, school grades). The incremental contribution of this research is, in particular, that eight specific facets of social and learning behavior were considered as profile indicators which have been identified as most important factors in the school curricula of most federal states in Germany, where teachers have to evaluate students' social and learning behavior at school (Lohbeck et al., 2015), i.e.: self-perception, self-control, empathy, and self-assertion for social behavior, and persistence, concentration, independence, as well as diligence in learning for learning behavior. Since no research has already performed LPA based on these eight specific facets of social and learning behavior simultaneously, this study provides a better understanding of the underlying patterns of emotional and behavioral skills among students with SEN-ESD relative to

students without SEN. Finally, by exploring the links of students' profiles of social and learning behavior to some covariates, this research provides additional information on the subgroups and helps construct more specific prevention and intervention programs, when analyzing internalizing and externalizing behaviors simultaneously and the comorbidities of behavioral problems in more detail.

Conceptualization of social and learning behavior

Due to the wide range of skills that overlap with social and learning behaviors, there is still no consensus in the literature on how to theoretically define these constructs, particularly which specific skills constitute social and learning behavior at school. In general, social behavior encompasses all skills required to achieve specific social tasks during interactions, such as joining a peer group, initiating and maintaining communication, or forming new friendships (cf. Lohbeck & Möller, 2023). Caldarella and Merrell (1997) identified five key behavioral skills in an extensive meta-analysis to create an empirically based taxonomy of positive social behaviors: (1) skills for building positive peer relationships, (2) self-management skills, (3) academic skills essential for learning, (4) cooperative skills, and (5) skills for asserting personal needs. Learning behavior includes all learning-related skills that support the learning process, such as concentration and persistence (cf., Schmerse, 2020). Several theoretical conceptualizations of learning behavior are based in particular on models of self-regulated learning (see for an overview, Nett & Götz, 2019) focusing on the individual components and structure of learning (e.g., specific learning techniques such as planning, monitoring, and controlling the learning process or evaluating learning outcomes) or the timing of self-regulation (cf. Lohbeck & Möller, 2023).

Classification of students' social and learning behavior at school

The use of LPA to classify specific subgroups of students regarding their social and learning skills or behavior has largely been neglected in the literature, particularly for students with SEN (e.g., Ditterline et al., 2008; Farley et al., 2023; Gage, 2013; Hall et al., 2022; Lampert et al., 2022; Trout et al., 2006). Up to now, no person-oriented study has already compared latent profiles of social and learning skills (or behaviors) among students with SEN-ESD relative to students without SEN. For instance, using a sample of 491 students with SEN-ESD aged 5-19 years, Lampert et al. (2022) performed latent class analysis (i.e., using categorical variables rather than continuous variables in LPA) based on five social and learning skills: (A) inability to learn, (B) relationship problems, (C) inappropriate behavior, (D) unhappiness or depression, and (E) physical symptoms or fears. Their results revealed five latent classes: 1) internalizing problems, 2) limited problems, 3) borderline problems, 4) externalizing problems, and 5) severe problems. The first class (12.4%) showed borderline signs of (A) inability to learn, no signs of (C) inappropriate behaviors, and clear indications of (B) relationship problems, (D) unhappiness or depression, and (E) physical symptoms. The second class (25.3%) exhibited neither borderline nor clear signs of any of the five characteristics. The third class (18.3%) showed borderline signs of both (A) inability to learn and (C) inappropriate behaviors, but no signs of the other three characteristics. The fourth class (20.8%) had borderline signs of (A) inability to learn and (B) relationship problems, with strong indications of (C) inappropriate behaviors, but no signs of the other two characteristics. Finally,

the fifth class (23.2%) exhibited clear or strong indications of all five characteristics.

In contrast to this study, most of the available studies have focused on preschool or elementary school children (e.g., Collie et al., 2019; Gage, 2013; Hill et al., 2006; Janus et al., 2018; Trout et al., 2006) and social (problem) behaviors (e.g. Fonseca-Pedrero et al, 2020; Morales et al., 2021a,b; Olivier et al., 2018; Robinson-Link et al., 2023). For instance, Collie et al. (2019) examined latent profiles of 100,776 preschool students in Australia using five profile indicators (i.e., cooperative, socially responsible, helpful, anxious, and aggressive-disruptive behavior). They identified four distinct profiles, labeled as a) social-emotional prosocial (SE-Prosocial), b) SE-Anxious, c) SE-Aggressive, and d) SE-Vulnerable groups. Similarly, drawing on data from the first wave of the Special Education Elementary Longitudinal Study (SEELS) with 1,176 students receiving special education services for emotional disturbances from grades 1 to 9, Gage (2013) conducted a latent class analysis based on teachers' perceptions of in-class behavior as indicators, i.e., six indicators for internalizing behaviors (appear lonely, joins group activities without being told to, have low self-esteem, make friends easily, act sad or depressed, start conversations rather than waiting for others to talk first), and five indicators for externalizing behaviors (argue with others, avoid situations that are likely to result in trouble, control his or her temper in conflict situations with other students, fight with others, follow your directions). Their results revealed four latent profiles: (a) an internalizing profile (7%), (b) an externalizing profile (14%), (c) a control profile (67%) with students rated as non-extreme on both internalizing and externalizing behaviors, and (d) an "other" profile with extreme values for internalizing and externalizing behaviors (12%).

In contrast, Farley et al. (2023) used a large set of various variables as profile indicators (i.e., demographic variables, school setting, teacher ratings of behavior and academic competence, and parent reports on child suspensions) to explore latent profiles of 348 middle school students aged 8-15 years in a randomized control trial of a parent engagement intervention for families of youth with SEN-ESD. Their results also yielded four profiles: Profile 1 (15.2%, *n* = 53) included students who received special education services due to alternatively labeled emotional and behavior challenges but no suspensions, and these students had rather low scores on all problem behaviors (i.e., emotional problems, conduct problems, hyperactivity, and peer problems) but higher scores on prosocial behavior. Profile 2 (20.4%, *n* = 71) consisted of students with low academic competence and problem behaviors, and almost all students (94.4%) had been suspended. Profile 3 encompassed students (52%, *n* = 181) with the highest scores on all problem behaviors but the lowest score on academic competence who had mostly experienced school suspension (88%). Profile 4 comprised students (12.4%, *n* = 43) with the highest score on academic competence and lowest scores on problem behaviors who mostly attended school in an alternative day school setting at intake (53%).

However, it seems that the number of profiles also depends on the data source (external or self-report). For instance, Morales and colleagues performed two studies to specify problem behavior profiles using either self-reports from students (2021a) or reports from parents (2021b) in the *Strengths and Difficulties Questionnaire* (SDQ, Goodman, 1997). In the first study (Morales et al., 2021a) with 325 children aged 7 to 12 years, they

found five latent profiles: 1) a severely behaviorally difficult profile, 2) an internalizing behavioral profile, 3) an externalizing behavioral profile, 4) a hyperactive behavioral profile, and 5) a well-adjusted behavioral profile. In contrast, in the second study (Morales et al., 2021b), in which the parents of 107 students aged 6 to 8 were surveyed, only four latent profiles could be replicated: 1) the severely behaviorally difficult profile, 2) the externalizing behavioral profile, 3) the internalizing behavioral profile, and 4) the well-adjusted behavioral profile.

In sum, the current state of research using LPA for classifying the social and learning skills (or behaviors) of students with SEN(-ESD) and without SEN is very heterogeneous. In addition, most variable-oriented studies have focused on younger students at preschool or elementary school age and students' social (or problem) behaviors.

Predictors of profile membership of students
Some evidence also suggests that students' gender, age, and school grades are significant predictors of students' profile membership regarding their behavior at school. For instance, Jiang et al. (2023) showed that girls as opposed to boys were more likely to be assigned to the well-adapted behavioral profile than to the more unfavorable behavioral profiles. Boys, in turn, were more likely to be members of the risk profile than of the other more favorable behavioral profiles. Similarly, Muratori et al. (2021a) found that girls were more likely to be assigned to the mainly internalizing behavioral profile than boys who tended to dominate the externalizing behavioral profile. Furthermore, older students were more likely to exhibit an externalizing behavioral profile than an internalizing profile. Some differential results were stated by Gage (2013) who found more older students in the internalizing profile but more younger students in the externalizing profile. In contrast, Jiang et al. (2023) reported that younger students were more likely to show a risk profile than older students, whereas Ling et al. (2016) reported that girls and older students were more likely to belong to the higher and medium risk groups than to the lower risk group. These rather contradictory results may be due to the large and different age ranges in these studies.

Some more consistent findings can be found regarding the relations to academic achievement. For instance, Collie et al. (2019) showed that girls and older students were more likely to be members of the SE-Prosocial profile which was more highly associated with the highest achievement levels, while the SE-Vulnerable profiles were also linked to the lowest achievement levels. Correspondingly, Fonseca-Pedrero et al. (2020) found that students with the most favorable behavioral profiles were more likely to have better school grades than students with an externalizing or an internalizing behavioral profile, while the school grades of students with externalizing and internalizing behavioral profiles did not differ substantially from each other.

In sum, research on the predictors of students' profile membership regarding their social and emotional skills (or behaviors) mostly suggests that girls are more likely to show an internalizing profile than boys, who are more likely to demonstrate an externalizing profile. However, in terms of age, results are rather inconsistent, depending on the age ranges and profile indicators considered in the analyses. In contrast, almost all previous studies reviewed indicate that more favorable profiles are more highly associated with better academic achievement.

Research questions and hypotheses
The present study attempted to overcome multiple limitations in previous studies. First, by focusing on students without SEN, previous research has not considered students with SEN-ESD, making it difficult to determine if the findings also apply specifically to this student population. Second, most studies have focused on elementary school students and a combination of social behavior indicators, or general social and learning skills rather than considering specific facets of social and learning behavior. Consequently, these studies do not fully explore how well students perform in social and learning interactions.

To fill these gaps in previous literature, the present study aimed to examine two overarching research questions. The first research question was: What latent profiles of social and learning behavior show students with SEN-ESD relative to students without SEN? Due to the absence of studies using the eight specific facets of social and learning behavior selected for this study, and the great variety of profile indicators in previous studies, no specific hypothesis about the number of profiles for these two student populations was assumed. It was only expected that students with SEN-ESD are more likely to show a more unfavorable profile than students without SEN due to their social and emotional deficits (Hypothesis 1). Finally, the second research question was: Do differences in students' profiles of social and learning behavior vary across gender, age, and school grades? Specifically, this research question addresses the links of students' profile membership to their gender, age, and self-reported grades in mathematics and German. In line with previous studies, girls were assumed to show an internalizing profile more frequently than boys (Collie et al., 2019; Muratori et al., 2021a), while boys were assumed to demonstrate an externalizing profile more often than girls (Hypothesis 2). In contrast, due to the rather contradictory findings in earlier studies, no specific hypothesis in terms of possible age differences between the profiles was posited. It was only assumed that age significantly predicts students' profile membership (Hypothesis 3). In contrast, consistent with the empirical findings reviewed (e.g., Collie et al., 2019; Fonseca-Pedrero et al., 2020), the more favorable profiles were expected to be more highly related to better school grades than the more unfavorable profiles (Hypothesis 4).

Method
Participants
The sample of the present study consisted of 1,733 students from grades 4 to 12 (grade 4: n = 150, grade 5: n = 202, grade 6: n = 143; grade 7: n = 200; grade 8 = 214, grade 9 = 245, grade 10: n = 225, grade 11: n = 39, grade 12: n = 43). All students attended regular schools from 83 randomly selected schools in Germany. The mean age of the overall sample was 13.34 years (SD = 2.30; range = 9 to 19). In this overall sample, two groups of students were considered: 1) students with SEN-ESD (n_2 = 354) and 2) students without SEN (n_1 = 1,379). Students' SEN-ESD was determined by the *Strengths and Difficulties Questionnaire* (Goodman, 1997), which is arguably one of the best-validated measures to assess both the strengths and behavioral problems of children and adolescents aged 2 to 17 years. Specifically, the four problem factors of the German self-report version of the SDQ were used to define the SEN-ESD (the same procedure was also done by Blumenthal & Blumenthal, 2021), i.e. an SEN-ESD was identified by a total problem score of > 16 when summing up the scores of the four problem factors of (1) emotional problems, (2) externalizing behavioral problems, (3)

hyperactivity/attention problems, and (4) problems with peers. In both groups of students, the number of boys and girls was very similar (group 1: boys: $n = 178$, girls: $n = 176$; group 2: boys: $n = 897$, girls: $n = 836$). Apart from elementary schools, all specific types of secondary schools in Germany were included in this study, i.e.: Hauptschule (basic education, grades 5-9), Realschule (broader education, grades 5-10), Gymnasium (university preparation, grades 5-12/13), and the two middle school tracks "Oberschule" (combining Hauptschule and Realschule, grades 5-10), and "Gesamtschule" (integrating all these school tracks). Most students were in the middle school tracks (primary schools: $n = 150$, Gymnasium: $n = 581$, Hauptschule: $n = 13$, Realschule: $n = 94$, Oberschule: $n = 765$, Gesamtschule: $n = 130$).

Measures

Social and learning behavior. Students' social and learning behavior was measured with eight scales of the *Students' Self Report Checklist of Social and Learning Behavior* (in German: "Schülereinschätzliste für Sozial- und Lernverhalten"; SSL; Petermann & Petermann, 2014), i.e., for social behavior, the following four factors were assessed: (1) self-perception (e.g., I know if I made mistakes in an argument), (2) self-control (e.g., I can control my anger when I get upset.), (3) empathy (e.g., I encourage other classmates when they are sad.), and (4) self-assertion (e.g., I can follow rules when trying to end a dispute.). For learning behavior, the following four factors were measured: (1) endurance (e.g., I am patient when doing my tasks.), (2) concentration (e.g., I concentrate well in class so that I do everything right.), (3) independence (e.g., I would like to solve the tasks myself.), and (4) diligence in learning (e.g., I organize my worksheets well so that I can find them quickly.). All eight scales showed high reliabilities in both groups of students: self-perception (group 1/2: $\alpha = .779/.733$; $\omega = .785/.740$), self-control (group 1/2: $\alpha = .843/.791$; $\omega = .846/.793$), empathy (group 1/2: $\alpha = .815/.839$; $\omega = .817/.843$), self-assertion (group 1/2: $\alpha = .779/.741$; $\omega = .780/.743$), endurance (group 1/2: $\alpha = .781/.748$; $\omega = .786/.755$), concentration (group 1/2: $\alpha = .834/.818$; $\omega = .836/.819$), independence (group 1/2: $\alpha = .791/.777$; $\omega = .795/.781$), and diligence in learning (group 1/2: $\alpha = .744/.785$; $\omega = .745/.789$). Responses were made on a 4-point response scale ranging from 1 (*never*) to 4 (*frequently*; for a review of the psychometric properties of this measure, see Lohbeck et al. (2014, 2015).

To find answers to the second research question asking for the links of students' profile membership to their individual characteristics, students' gender, age, and self-reported grades in mathematics and German of their last school report were also measured.

Procedures

Data was collected as part of the SSL standardization study at numerous schools in Germany (Lohbeck et al., 2015). Participation was voluntary and only possible with the consent of the student's parents. All students responded to the questionnaire in a regular lesson at school, which was administered and read aloud in all classes by trained university students to ensure that all students were able to complete the questionnaire in a single lesson. This study was approved by the Ministry of Education in the relevant countries and the school principals of the schools where the data were collected. All procedures were performed according to the Helsinki Declaration.

Analyses

Beyond the two research questions, multiple confirmatory factor analysis models (CFA) and measurement invariance models across the two groups of students (i.e., students with SEN-ESD vs. students without SEN) were first performed. Specifically, for both groups of students, a 1-factor CFA model assuming one factor for social and learning behavior was compared to a 2-factor CFA model differentiating between social and learning behavior, which, in turn, was contrasted to an 8-factor CFA model positing eight specific factors of social and learning behavior. When testing the measurement invariance across the two groups of students, the following four models were examined: configural invariance (i.e., constraining the factor structure to be invariant across groups), metric invariance (i.e., constraining all factor loadings to be invariant across groups), scalar or strong invariance (i.e., constraining the intercepts of items to be invariant across groups), and error or strict variance (i.e., constraining all error variances to be equal across groups). Measurement invariance was established if the CFI and TLI did not decline by more than .010 and the RMSEA did not increase by more than .015 between the less and more restrictive models (Cheung & Rensvold, 2002). To find answers to the first research question, one to six latent profiles were tested separately for each group of students using the factor scores ($M = 0$, $SD = 1$) as profile indicators of the eight specific facets of social and learning behavior selected for this study. All profile solutions were estimated with the robust Maximum Likelihood estimator and the full information maximum likelihood estimation to handle missing values. The number of missing values on the self-reported items of social and learning behavior was negligible in both groups of students (group 1/2: 0 to 0.8%/ 0 to 0.4 %). In all models, the means and variances of the indicators were freely estimated based on 5000 random sets of start values, and 100 iterations, with the 200 best solutions retained for final stage optimization. To find the best solution, the substantive meaning, interpretability, theoretical adequacy, and size of the profiles as well as the following fit indicators were evaluated: the Akaike Information Criterion (AIC), the Bayesian information criterion (BIC), the Consistent AIC (CAIC), the sample-adjusted BIC (ABIC), the adjusted Lo-Mendell-Rubin, ikelihood ratio test (aLMR), and the Bootstrap Likelihood Ratio Test (BLRT). A better solution was supported by lower scores on the AIC, CAIC, BIC, and ABIC, and an entropy value close to 1. Furthermore, the p-values of the aLMR and BLRT were also considered to compare the fit of a k-profile solution with a k-1 profile solution. Significant p-values of these tests suggest that the k-profile model fits the data better than the k-1-profile model. When testing the second research question, students gender, age, and grades in mathematics and German were added to the final profile solution for each group separately using multinomial logistic regression analyses and the three-step approach with covariates (R3STEP; Asparouhov & Muthén, 2014). All analyses were performed in M*plus* 8.8.

Results

CFA and measurement invariance across students

Results of CFA and measurement invariance testing are presented in Table 1. In both groups of students, the 8-factor CFA models showed a significantly better fit to the data than the 1- or 2-factor CFA models. Results of measurement invariance testing also provided strong support for the equivalence of the factor structure (configural), factor loadings (metric), and item intercepts (scalar) of the eight factors of social and learning behavior. Only the invariance of the item uniqueness (strict

invariance) was not fully supported, as indicated by a greater decrease in CFI and TLI than .01, even if the increase in RMSEA was smaller than .15. (ΔCFI = +.015; ΔTLI = +.014, ΔRMSEA = .001).

Table 1: Results of the CFA and measurement invariance tests across samples.

	χ^2	df	CFI	TLI	RMSEA	90% CI
Sample 1: Students with SEN-ESD						
1-factor CFA model	2298.381	464	.610	.583	.106	.101−.110
2-factor CFA model	1610.214	463	.756	.738	.084	.079−.088
8-factor CFA model	663.840*	436	.952	.945	.038	.032−.044
Sample 2: Students without SEN						
1-factor CFA model	6955.190	464	.498	.464	.101	.099−.103
2-factor CFA model	4821.247	463	.663	.639	.083	.081−.085
8-factor CFA model	1073.619*	436	.951	.944	.033	.030−.035
Measurement invariance across samples						
Configural invariance	1765.760*	872	.952	.945	.034	.032−.037
Weak invariance	1798.208*	896	.951	.946	.034	.032−.036
Strong invariance	1884.563*	920	.948	.944	.035	.033−.037
Strict invariance	2196.072*	952	.933	.930	.034	.037−.041

Notes. CFA = Confirmatory factor analyses; χ^2 = Chi-square test of exact fit; *df* = degrees of freedom; *CFI* = Comparative fit index; *TLI* = Tucker-Lewis index; *RMSEA* = Root mean square error of approximation. CI = RMSEA 90% confidence interval, *p < .05.

LPA
For both groups of students, the results of LPA favored a 4-profile solution. The fit criteria from all LPA models estimated for each group separately are reported in Table 2. As indicated by the *p*VMRT and *p*BLRT, the fit improved significantly up to the 4-profile solution. In contrast, the 5- and 6-profile solutions did not show a significantly better fit than the 4-profile solution and did not result in one or two further qualitatively distinct and theoretically meaningful profile(s). Table 3 and Figure 1 present the mean levels of the eight indicators of social and learning behavior in the four profiles for both groups separately.

Table 2: Results of the LPA models under investigation for both samples of this study (students with SEN-ESD vs. students without SEN).

k	#fp	LL	Scaling	AIC	BIC	SABIC	*p*VMRT	*p*BLRT	Entropy
Sample 1: Students with SEN-ESD									
1	16	−4368.712	1.0856	8769.425	8831.334	8780.575	–	–	–
2	25	−4076.171	1.6399	8202.342	8299.074	8219.764	.0644	< .001	.955
3	34	−3983.235	1.4021	8034.469	8166.025	8058.163	.0261	< .001	.981
4	43	−3923.664	1.4019	7933.329	8099.708	7963.294	.0437	< .001	.962
5	52	−3890.439	1.2464	7884.878	8086.081	7921.115	.1916	< .001	.970
6	61	−3859.823	1.4025	7841.646	8077.673	7884.156	.5579	< .001	.911
Sample 2: Students without SEN									
1	16	−14984.310	1.1335	30000.620	30084.274	30033.448	–	–	–
2	25	−14216.143	1.5103	28482.286	28612.995	28533.580	< .001	< .001	.767
3	34	−13977.123	1.6578	28022.246	28200.011	28092.006	.0246	< .001	.788
4	43	−13761.702	1.6774	27609.405	27834.225	27697.631	.0167	< .001	.786
5	52	−13699.231	1.5977	27442.462	27714.339	27549.155	.0909	< .001	.779
6	61	−13587.137	1.7286	27296.274	27615.206	27421.433	.5570	< .001	.800

Notes. k = number of profiles, #fp = free parameters, LL = model log likelihood; Scaling = scaling factor associated with MLR loglikelihood estimates; AIC = Akaike information criterion; BIC = Bayesian information criterion; SABIC = sample adjusted BIC; *p*VMRT = *p*-value of the Vuong-Lo-Mendell-Rubin likelihood ratio test. *p*BLRT = *p*-value of the bootstrap likelihood ratio test.

Table 3: Standardized mean levels of the eight factors in the four latent profiles.

Sample 1: Students with SEN-ESD	Profile 1 (9.32 %, *n* = 33)	Profile 2 (44.63 %, *n* = 158)	Profile 3 (35.59 %, *n* = 126)	Profile 4 (10.46 %, *n* = 37)
Self-awareness	−2.628 (0.531)	0.380 (0.090)	−0.234 (0.164)	−1.445 (0.334)
Self-control	−2.133 (0.360)	0.265 (0.086)	−0.746 (0.128)	−1.617 (0.483)
Empathy	−1.248 (0.344)	0.457 (0.101)	−0.053 (0.152)	−0.978 (0.294)
Self-assertion	−2.906 (0.405)	0.668 (0.103)	−0.611 (0.170)	−1.780 (0.447)
Endurance	−2.111 (0.300)	0.507 (0.124)	−1.365 (0.170)	−0.034 (0.244)
Concentration	−2.457 (0.242)	0.259 (0.107)	−1.268 (0.153)	0.213 (0.317)
Independence	−2.071 (0.432)	0.418 (0.088)	−0.922 (0.140)	0.149 (0.283)
Diligence in learning	−1.848 (0.232)	0.192 (0.092)	−0.745 (0.140)	−0.035 (0.236)
Sample 2: Students without SEN	Profile 1 (4.94 %, *n* = 68)	Profile 2 (41.95 %, *n* = 578)	Profile 3 (35.77 %, *n* = 493)	Profile 4 (17.34 %, *n* = 239)
Self-awareness	−1.277 (0.329)	0.502 (0.053)	0.218 (0.083)	−0.724 (0.180)
Self-control	−1.526 (0.000)	0.660 (0.052)	0.127 (0.093)	−0.476 (0.200)
Empathy	−1.406 (0.309)	0.573 (0.093)	0.242 (0.109)	−1.322 (0.188)
Self-assertion	−2.035 (0.370)	0.940 (0.074)	0.147 (0.106)	−1.264 (0.149)
Endurance	−1.670 (0.218)	0.879 (0.058)	−0.515 (0.156)	0.133 (0.141)
Concentration	−2.589 (0.420)	1.356 (0.274)	−0.846 (0.095)	0.212 (0.191)
Independence	−2.185 (0.405)	0.800 (0.059)	−0.426 (0.193)	0.131 (0.160)
Diligence in learning	−1.442 (0.313)	0.573 (0.053)	−0.211 (0.079)	0.013 (0.112)

Notes. Profile 1: At Risk; Profile 2: Adapted; Profile 3: Poor Learners; Profile 4: Socially Incompetent.

In both groups of students, the profiles could be characterized similarly, because the mean levels pointed in the same directions, although they also differed qualitatively from each other. Profile 1, labeled as "At risk", was the smallest profile in both groups of students, including 9.32 % (group 1) or 4.94 % (group 2) of the participants. This profile was characterized by the lowest scores on all eight factors of social and learning behavior. In contrast, Profile 2, called "Adapted", represented the largest profile in both groups of students, with 44.63 % (group 1) or 41.95 % (group 2) of the participants. This profile showed rather average scores on all eight factors of social and learning behavior. Profile 3, labeled as "Poor Learners", consisted of 35.59 % (group 1) or 35.77 % (group 2) of the students. This profile was the second largest group and had the lowest scores on the four factors of learning behavior, accompanied by rather low (group 1) or average (group 2) scores on the four factors of social behavior. Finally, a rather reverse pattern was found for the fourth profile, labeled as "Socially Incompetent". This profile included 10.46 % (group 1) or 17.34 (group 2) of the students and exhibited the smallest scores on the four factors of social behavior and small to average scores on the four factors of learning behavior. A particularly consistent pattern was also observed for these two last profiles for students without SEN.
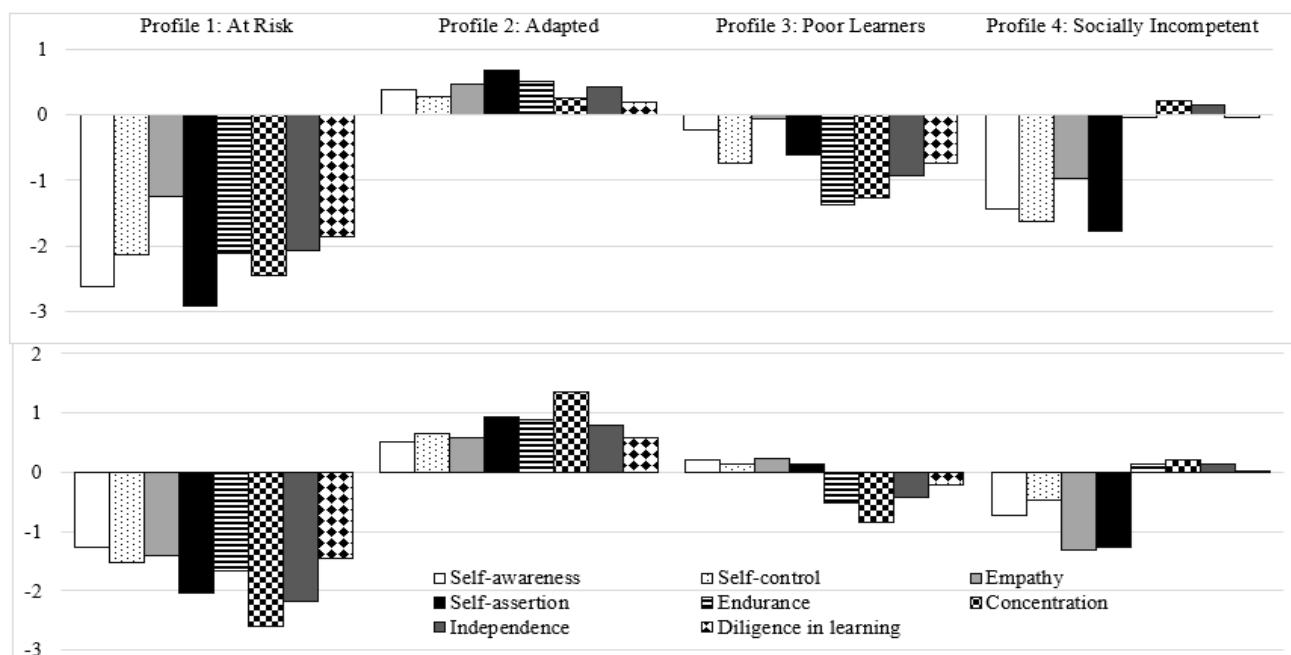
Figure 1: Final 4-profile solution for students with SEN-ESD (first figure) and students without SEN (second figure).

Notes. The profile indicators are estimated from factor scores with a mean of 0 and a standard deviation of 1

Covariate analysis

When exploring the second research question, results from the multinomial logistic regressions revealed some significant differences between the four profiles and the covariates. Table 4 shows the results of this analysis for both groups of students separately.

Table 4: Results from multinomial logic regressions for the predictors of the four profiles in each sample (students with SEN-ESD vs. students with SEN)

	P1 vs. P2			P1 vs. P3			P1 vs. P4		
	Coeff.	SE	OR	Coeff.	SE	OR	Coeff.	SE	OR
Sample 1: Students with SEN-ESD									
Gender	−1.902**	0.633	0.149	−1.520*	0.642	0.219	−0.770	0.766	2.160
Age	0.022	0.133	1.022	−0.109	0.133	0.897	−0.125	0.158	1.133
Grades in German	0.176	0.317	1.192	0.429	0.334	1.536	0.555	0.385	0.574
Grades in mathematics	−0.775*	0.335	0.461	−0.168	0.325	0.845	−0.806	0.415	2.239
	P2 vs. P3			P2 vs. P4			P3 vs. P4		
	Coeff.	SE	OR	Coeff.	SE	OR	Coeff.	SE	OR
Gender	0.383	0.418	1.466	1.132*	0.555	0.322	0.750	0.595	0.472
Age	−0.131	0.090	0.877	−0.147	0.124	1.158	−0.016	0.125	1.016
Grades in German	−0.253	0.247	1.288	0.379	0.314	0.685	0.126	0.336	0.882
Grades in mathematics	0.607*	0.300	1.835	−0.031	0.347	1.031	−0.638	0.394	1.892
Sample 2: Students without SEN	P1 vs. P2			P1 vs. P3			P1 vs. P4		
	Coeff.	SE	OR	Coeff.	SE	OR	Coeff.	SE	OR
Gender	−1.600**	0.427	1.057	−1.693***	0.429	5.234	0.055	0.487	5.745
Age	0.214**	0.068	1.020	0.048	0.068	0.823	0.020	0.074	0.972
Grades in German	−0.659**	0.203	1.000	−0.293	0.203	1.934	−0.000	0.999	1.341
Grades in mathematics	−0.613***	0.173	0.539	−0.036	0.168	0.995	−0.619	0.185	0.559
	P2 vs. P3			P2 vs. P4			P3 vs. P4		
	Coeff.	SE	OR	Coeff.	SE	OR	Coeff.	SE	OR
Gender	−0.093	0.183	1.098	1.655***	0.278	0.191	1.748***	0.301	0.174
Age	−0.167***	0.039	1.181	−0.195***	0.050	1.215	−0.028	0.055	1.028
Grades in German	0.366**	0.110	0.694	0.660	0.144	0.517	0.294	0.150	0.745
Grades in mathematics	0.577***	0.110	0.562	−0.005	0.137	1.005	−0.582***	0.137	1.790

Notes. SE = standard error of the coefficient; *OR* = odds ratio; the coefficients and odd ratios reflect the effects of the predictors on the likelihood of membership into the first listed profile relative to the second listed profile. P: Profile; Profile 1: At Risk; Profile 2: Adapted; Profile 3: Poor Learners; Profile 4: Socially Incompetent. Gender: 1 = boys, 2 = girls. *p < .05. **p < .01; ***p < .001.

For students with SEN-ESD, boys as opposed to girls were more likely to be members of the "At Risk" profile (Profile 1) relative to the "Adapted" profile (Profile 2) and the "Poor Learners" profile (Profile 3). In contrast, girls were more likely to be members of the "Adapted" profile (Profile 2) relative to the "Socially Incompetent" profile (Profile 4). Furthermore, students with better grades in mathematics were also more likely to be assigned to the "Adapted" profile (Profile 2) relative to the "At Risk" profile (Profile 1) and the "Poor Learners" profile (Profile 3).

The same and some more significant relations were found for the four profiles of students without SEN: As for students with SEN-ESD, boys had a greater likelihood of membership into the most unfavorable "At Risk" profile (Profile 1) than into the "Adapted" profile (Profile 2) and the "Poor Learners" profile (Profile 3) than girls. Girls, in turn, were more likely to be members of the "Adapted" profile (Profile 2) and the "Poor Learners" profile (Profile 3) relative to the "Socially Incompetent" profile (Profile 4) than boys. Furthermore, older students and students with lower grades in mathematics and German were more frequently members of the most desirable "At Risk" profile (Profile 1) relative to the "Adapted" profile (Profile 2). The exact reverse pattern was observed for the "Adapted" profile (Profile 2) relative to the "Poor Learners" profile (Profile 3): Younger students and students with better grades in mathematics and German had a greater likelihood of membership into the "Adapted" profile (Profile 2) than into the "Poor Learners" profile (Profile 3), and they were more frequently members of the "Adapted" profile (Profile 2) relative to the "Socially Incompetent" profile (Profile 4). Finally, students with lower grades in mathematics were more likely to be members of the "Poor Learners" profile (Profile 3) relative to the "Socially Incompetent" profile (Profile 4).

Discussion

The current study expands upon previous literature in multiple ways: First, as research on the behavioral profiles of students with SEN-ESD has received very little attention relative to students without SEN, this study is the first to compare latent profiles of both groups of students. Second, this study is unique in performing LPA based on eight specific facets of social and learning behavior as profile indicators to identify the profiles of social and learning behavior among both student populations. Third, by disentangling the relations between students' profile membership and some covariates in each student population, this study provides detailed information on the possible predictors of students' profile membership in terms of their social and learning behavior at school.

When exploring the first research question asking for the number of profiles in each student population, results of LPA revealed four qualitatively distinct and theoretically meaningful profiles in both groups of students, labeled as "At Risk" (Profile 1), "Adapted" (Profile 2), "Poor Learners" (Profile 3), and "Socially Incompetent" (Profile 4). Although the number and nature of these four profiles were very similar in both groups of the students, the mean levels of the eight specific facets of social and learning behavior also differed slightly across both groups: Students with SEN-ESD of the more unfavorable "At Risk" profile (Profile 1), "Poor Learners" profile (Profile 3), and "Socially Incompetent" profile (Profile 4) showed lower scores on all eight factors of social and learning behavior than students without SEN of these profiles. In contrast, students with SEN of

the most favorable "Adapted" profile (Profile 2) exhibited higher scores on all eight factors of social and learning behavior than students with SEN-ESD. These results also support Hypothesis 1 and previous research (e.g., Blumenthal & Blumenthal, 2024; Farley et al., 2023; Gage et al., 2013; Lampert et al., 2022) indicating great deficits in the social and emotional development of students with SEN-ESD. Fortunately, in both groups of students, the most prevalent profile was the most favorable "Adapted" profile (Profile 2), while the least prevalent group was the most unfavorable "At Risk" profile (Profile 1). A possible explanation for this result is that the sample included the general population of school students, and the SEN-ESD was only determined by the *Strengths and Difficulties Questionnaire* (Goodman, 1997), but not diagnosed. Thus, the prevalence of students in the "At Risk" profile (Profile 1) may be higher in students who have also been diagnosed with SEN. Another striking result of this research was that the mean levels of the most unfavorable "Poor Learners" profile (Profile 2) and "Socially Incompetent" profile (Profile 4) in either the four factors of social behavior or in the four factors of learning behavior were lower than the mean levels in the four factors of learning or social behavior. This result suggests that students with social problems do not necessarily have problems with learning behavior, although social behavior and learning behavior may also influence each other.

The results of the multinomial logistic regression analyses provided further support for the validity of the four profiles, as indicated by significant differences in students' profile membership as a function of their gender, age, and grades in mathematics and German. Although Hypothesis 2 was not fully supported, a striking result was that in both groups of students, boys as opposed to girls were more likely to be members of the "At Risk" profile (Profile 1) relative to the "Adapted" profile (Profile 1) and the "Poor Learners" profile (Profile 3). In contrast, girls were more likely to be members of the most favorable "Adapted" profile (Profile 2) than boys relative to the "Socially Incompetent" profile (Profile 3) in both student populations. These results also correspond to the findings reported by Jiang et al. (2023) or Collie et al. (2019) who found that girls were more likely to show a more adaptive behavioral profile than boys. Besides these significant gender differences in both student populations, girls as opposed to boys were also more frequently represented in the "Poor Learners" profile (Profile 2) relative to the "Socially Incompetent" profile (Profile 4). This result also seems not unusual and aligns with previous research showing that boys are typically more likely to develop an externalizing profile (Muratori et al. (2021a) or more externalizing problems than girls (e.g., Murray et al., 2022; Vega et al., 2021; Yin & Wang, 2023).

In contrast, significant age differences between the profiles were only observed among students without SEN, providing only partial support for Hypothesis 3. In detail, in this student population, older students were more likely to be members of the most unfavorable "At Risk" profile (Profile 1) relative to the most favorable "Adapted" profile (Profile 2), while younger students were more frequently members of the most favorable "Adapted" profile (Profile 2) relative to the "Poor Learners" profile (Profile 3) and the "Socially Incompetent" profile (Profile 4). Similar results were also reported by Ling et al. (2016) who found older students to be more highly represented in the higher and medium risk groups than in the lower risk group.

Finally, there was also evidence for some significant links between students' profile membership and their grades in mathematics and German. More specifically, in both groups of students, lower grades in mathematics were more highly associated with the most unfavorable "At Risk" profile (Profile 1) relative to the "Adapted" profile (Profile 2) that was more highly linked to better grades in this school subject relative to the "Poor Learners" profile (Profile 3). The same pattern was also found for the German grades of students without SEN who also had a greater likelihood of membership into the "Poor Learners" profile (Profile 3) relative to the "Socially Incompetent" profile (Profile 4) when they had lower grades in mathematics. These findings also mainly confirm other empirical findings (e.g., Collie et al., 2019; Fonseca-Pedrero et al., 2020) and Hypothesis 4 stating that more favorable profiles are associated with better school grades than more unfavorable profiles. Altogether, these findings indicate that students' gender, age, and school grades are of great significance when exploring latent profiles of social and learning behavior among students.

Limitations
Apart from the strengths of this study (using LPA including eight specific facets of social and learning behavior and exploring latent profiles of students with SEN-ESD relative to students without SEN), the present study has also some limitations. First, this study used a convenience sample of students from numerous schools in one state of Germany, focusing on students with SEN-ESD and students without SEN at regular schools. Future research should therefore collect data from other federal states of Germany and students with other types of SEN to replicate the results obtained in this study and increase their generalizability. Second, this study relied on self-reports of students, which might be biased by social desirability. Additional measures, such as teachers' or parents' reports, could strengthen the validity of students' self-reports. Third, the results of this study rely on cross-sectional data. An interesting research question for further research would, in particular, be whether the profiles identified in this study are also stable over time. Latent transition analysis which explains the development and stability of behavioral problems could be very informative for the development of intervention strategies (Basten et al., 2016). Finally, since this study focused solely on gender, age, and school grades as predictors without examining any outcomes, future research should also include a broader range of predictors and outcomes to offer more insights into the factors influencing students' profile membership and the potential effects of belonging to specific profiles.

Implications
The results of this study offer valuable insights for implementing targeted interventions aimed at preventing the potential development of specific or co-occurring social and learning problems. First, the co-occurrence of deficits across social and learning-related skills, particularly within the "At risk" profile underscores the need for integrated intervention strategies. Rather than classifying students solely by isolated behavioral issues, effective school interventions should always address both social and learning-related skills simultaneously. For instance, implementing universal, school-based social-emotional learning (SEL) programs (see for some meta-analyses, Cipriano et al., 2023; Shi & Cheung, 2024), such as the multi-tiered Response to Intervention (RTI) approach, can facilitate early identification of at-risk students. More specifically, the RTI approach encompasses three escalating levels of intervention, from high-quality universal instruction (Tier 1) to more intensive, small-group support (Tier 2), and specialized, individualized services for persistent non-responders (Tier 3). Abundant evidence provides support for the effectiveness of this approach (e.g., Fletcher & VauFolehn, 2009; Denton, 2012). Furthermore, students' behavioral profiles varied by their gender, age, and academic performance: Girls, younger students, and those with higher grades were more likely to be members of the adaptive profile. This result implies that interventions should be sensitive to demographic and performance-based factors, particularly by providing targeted support to older students or those with lower academic achievement, for example, through individualized assignments or alternative assessments.

Conclusion
The results of this study revealed four qualitatively distinct and theoretically meaningful profiles for students with SEN-ESD and students without SEN at regular schools, labeled as "At Risk" (Profile 1), "Adapted" (Profile 2), "Poor Learners" (Profile 3), and "Socially Incompetent" (Profile 4). Most students showed the "Adapted" profile (Profile 2), while the fewest students exhibited an "At Risk" profile (Profile 1) in both student populations. Students' gender, age, and grades in mathematics and German were significantly associated with their profile membership. The most striking result was that in both student populations, girls were more likely to be members of the most favorable "Adapted" profile (Profile 2) than boys who were more likely to be members of the most unfavorable "At Risk" profile (Profile 1). In addition, lower grades in mathematics were more highly associated with the "At Risk" profile relative to the "Adapted" profile in both student populations. This also applies to the lower grades in German among students without SEN but not among students with SEN-ESD.

Declarations
Disclosure of potential conflicts of interest
The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author received no financial support for the research, authorship, and/or publication of this article.

Ethics approval
This study was approved by the Ministry of Education in the relevant countries and the school principals of the schools where the data were collected. All procedures were performed according to the Helsinki Declaration.

Informed consent
Informed consent was granted by all participants.

Consent to participate
Written informed consent was obtained from the parents of the students.

Consent to publish
Written informed consent included publication of non-identifiable data that was signed by the participants.

Data availability statement
The data analyzed in this study comes from a confidential dataset available upon request.

References

1. Asparouhov, T., & Muthén, B.O. (2014). Auxiliary variables in mixture modeling: Three-step approaches using M*plus*. *Structural Equation Modeling, 21*(3), 1–13. https://doi.org/10.1080/10705511.2014.915181

2. Basten, M., Tiemeier, H., Althoff, R. R., van de Schoot, R., Jaddoe, V. W., Hofman, A., ... & van der Ende, J. (2016). The stability of problem behavior across the preschool years: An empirical approach in the general population. *Journal of Abnormal Child Psychology*, *44*, 393–404. https://doi.org/10.1007/s10802-015-9993-y

3. Bevilacqua, L., Hale, D., Barker, E. D., & Viner, R. (2018). Conduct problems trajectories and psychosocial outcomes: a systematic review and meta-analysis. *European Child & Adolescent Psychiatry*, *27*, 1239–1260. https://doi.org/10.1007/s00787-017-1053-4

4. Blumenthal, Y., & Blumenthal, S. (2024). Zur Situation von Grundschülerinnen und Grundschülern mit sonderpädagogischem Förderbedarf im Bereich emotionale und soziale Entwicklung im inklusiven Unterricht [Students with special needs in their emotional and social development in the inclusive classrooms: Longitudinal analysis of classroom climate, teacher-pupil relationship and social participation]. *Zeitschrift für Pädagogische Psychologie, 38*(1–2), 69–84. doi:10.1024/1010-0652/a000323

5. Briggs, R. D., Stettler, E. M., Silver, E. J., et al. (2012). Social-emotional screening for infants and toddlers in primary care. *Pediatrics*, *129*(2), 377–384. https://doi.org/10.1542/peds.2010-2211

6. Caldarella, P., &. Merrell, K. W. (1997). Common dimensions of social skills of children and adolescents: A taxonomy of positive behaviors. *School Psychology Review, 56*(2), 264–278. https://doi.org/10.1080/02796015.1997.12085865

7. Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*(2), 233–255. https://doi.org/10.1207/S15328007SEM0902_5.

8. Choate, A. M., Bornovalova, M. A., Hipwell, A. E., Chung, T., & Stepp, S. D. (2023). The general psychopathology factor (p) from adolescence to adulthood: Exploring the developmental trajectories of p using a multi-method approach. *Development and Psychopathology*, *35*, 1775–1793. https://doi.org/10.1017/S0954579422000463

9. Cipriano, C., Strambler, M. J., Naples, L. H., Ha, C., Kirk, M., Wood, M., Sehgal, K., Zieher, A. K., Eveleigh, A., McCarthy, M., Funaro, M., Ponnock, A., Chow, J. C., & Durlak, J. (2023). The state of evidence for social and emotional learning: A contemporary meta-analysis of universal school-based SEL interventions. *Child Development, 94*, 1181–1204. https://doi.org/10.1111/cdev.13968

10. Collie, R. J., Martin, A. J., Nassar, N., & Roberts, C. L. (2019). Social and emotional behavioral profiles in kindergarten: A population-based latent profile analysis of links to socio-educational characteristics and later achievement. *Journal of Educational Psychology, 111*(1), 170–187. https://doi.org/10.1037/edu0000262

11. Denton, C. A. (2012). Response to intervention for reading difficulties in the primary grades: Some answers and lingering questions. *Journal of Learning Disabilities, 45*(3), 232–243. https://doi.org/10.1177/0022219412442155

12. Ditterline, J., Banner, D., Oakland, T., & Becton, D. (2008). Adaptive behavior profiles of students with disabilities. *Journal of Applied School Psychology*, *24*(2), 191–208. https://doi.org/10.1080/15377900802089973

13. Duprey, E. B., Oshri, A., & Liu, S. (2020). Developmental pathways from child maltreatment to adolescent suicide-related behaviors: The internalizing and externalizing comorbidity hypothesis. *Development and Psychopathology*, *32*(3), 945–959. doi:10.1017/S0954579419000919

14. Farley, J., Duppong Hurley, K., Lambert, M. C., & Gross, T. J. (2023). Profiles of behavioral, academic, and demographic characteristics of middle school students with emotional or behavioral needs. *Journal of Emotional and Behavioral Disorders, 31*(3), 171–183. https://doi.org/10.1177/10634266221099241

15. Fletcher, J. M., & Vaughn, S. (2009). Response to Intervention: Preventing and remediating academic difficulties. *Child Development Perspectives, 3*(1), 30–37. https://doi.org/10.1111/j.1750-8606.2008.00072.x

16. Fonseca-Pedrero, E., Ortuño-Sierra, J., & Pérez-Albéniz, A. (2020). Emotional and behavioural difficulties and prosocial behaviour in adolescents: A latent profile analysis. *Revista de Psiquiatría y Salud Mental, 13,* 202–212. https://doi.org/10.1016/j.rpsmen.2020.01.003

17. Gage, N. A. (2013). Characteristics of students with emotional disturbance manifesting internalizing behaviors: A latent class analysis. *Education and Treatment of Children 36*(4), 127–145. https://dx.doi.org/10.1353/etc.2013.0038.

18. Gage N., Gersten R., Sugai G., & Newman-Gonchar R. (2013). Disproportionality of English learners with emotional and/or behavioral disorders: A comparative meta-analysis with English learners with learning disabilities. *Behavioral Disorders, 38*(3), 123–136. https://doi.org/10.1177/019874291303800302

19. Goodman, R. (1997). The Strengths and Difficulties Questionnaire. A research note. *Journal of Child Psychology and Psychiatry, 38,* 581–586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x

20. Hall, C. M., Bierman, K. L., & Jacobson, L. N. (2022). Latent profiles of students at social-emotional risk: Heterogeneity among peer-rejected students in early elementary school. *Journal of Emotional and Behavioral Disorders, 30*(4), 260–272. https://doi.org/10.1177/10634266211051405

21. Hill, A. L., Degnan, K. A., Calkins, S. D., & Keane, S. P. (2006). Profiles of externalizing behavior problems for boys and girls across preschool: The roles of emotion regulation and inattention. *Developmental Psychology, 42*, 913–928. https://doi.org/10.1037/0012-1649.42.5.913

22. Hollo, A., Wehby, J. H., & Oliver, R. M. (2014). Unidentified language deficits in children with emotional and behavioral disorders: A meta-analysis. *Exceptional Children, 80*(2), 169–186. https://doi.org/10.1177/001440291408000203

23. Janus, M., Mauti, E., Horner, M., Duku, E., Siddiqua, A., & Davies, S. (2018). Behavior profiles of children with autism spectrum disorder in kindergarten: Comparison with other developmental disabilities and typically developing children. *Autism Research, 11*(3), 410–420. https://doi.org/10.1002/aur.1904.

24. Jiang, N., Gao, R., DiStefano, C., Liu, J., Weist, M., Splett, J. W., & Halliday-Boykins, C. A. (2023). Social-emotional and behavioral functioning profiles and demographic factors: A latent profile analysis in elementary students. *Journal of Psychoeducational Assessment, 41,* 483–500. https://doi.org/10.1177/07342829231167726

25. KMK - Sekretariat der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland. (2024). Retrieved from https://www.kmk.org/dokumentation-statistik/statistik/schulstatistik/schueler-innen-klassen-lehrkraefte-und-absolvierende.html

26. Lambert, M. C., Katsiyannis, A., Epstein, M. H., Cullinan, D., & Sointu, E. (2022). Profiles of emotional disturbance across the five characteristics of the federal definition. *Behavioral Disorders, 47*(4), 223–235. https://doi.org/10.1177/01987429211033567

27. Ling, Y., Huebner, E. S., Yuan, H., Li, Z., & Liu, W. (2016). Subtyping of strengths and difficulties in a Chinese adolescent sample: A latent class analysis. *Child Indicators Research, 9,* 933–948. https://doi.org/10.1007/s12187-015-9348-9

28. Lohbeck, A., & Möller, J. (2023). Students' social and learning behavior at school: Applying the generalized internal/external frame of reference model. *Learning and Individual Differences, 105,* 102301. https://doi.org/10.1016/j.lindif.2023.102301

29. Lohbeck, A., Nitkowski, D., Petermann, F., & Petermann, U. (2014). Erfassung von Schülerselbsteinschätzungen zum schulbezogenen Sozial- und Lernverhalten: Validierung einer Schülereinschätzliste für Sozial- und Lernverhalten (SSL) [Assessment of students' self-concepts for school-related social and learning behavior: Validation of the Self-Report Checklist for Social and Learning Behavior (SSL)]. *Zeitschrift für Erziehungswissenschaft, 17*(4), 701–722. https://doi.org/10.1007/s11618-014-0582-6.

30. Lohbeck, A., Schultheiß, J., Petermann, F., & Petermann, U. (2015). Die deutsche Selbstbeurteilungsversion des Strengths and Difficulties Questionnaire (SDQ-Deu-S): Psychometrische Qualität, Faktorenstruktur und Grenzwerte [The German self-report version of the Strengths and Difficulties Questionnaire (SDQ-Deu-S): Psychometric properties, factor structure, and critical values]. *Diagnostica, 61,* 1–14. https://doi.org/10.1026/0012-1924/a000153

31. Morales, A., Melero, S., Tomczyk, S., Espada, J. P., & Orgilés, M. (2021a). Subtyping of strengths and difficulties in a Spanish children sample: A latent class analysis. *Journal of Affective Disorders, 280,* 272–278. https://doi.org/10.1016/j.jad.2020.11.047

32. Morales, A., Rodríguez-Menchón, M., Tomczyk, S., Fernández-Martínez, I., Orgilés, M., & Espada, J. P. (2021b). Internalizing and externalizing symptoms in Spanish children aged 6–8. Results of a latent profile analysis. *Journal of Affective Disorders, 279,* 617–623. https://doi.org/10.1016/j.jad.2020.10.066

33. Morin, A. J. S., McLarnon, M. J. W., & Litalien, D. (2020). Mixture modeling for organizational behavior research. In Y. Griep & S. Hansen (Eds.), *Handbook on the temporal dynamics of organizational behavior* (pp. 351–379). Cheltenham, UK: Edward Elgar Publishing. https://doi.org/10.4337/9781788974387.00031

34. Muratori, P., Paciello, M., Castro, E., Levantini, V., Masi, G., Milone, A., . . . Catone, G. (2021). At-risk early adolescents profiles in the community: A cluster analysis using the strengths and difficulties questionnaire. *Psychiatry Research, 305,* 114209. https://doi.org/10.1016/j.psychres.2021.114209

35. Murray, A. L., Nivette, A., Obsuth, I., Hafetz Mirman, J., Mirman, D., Ribeaud, D., & Eisner, M. (2022). Gender differences in cross-informant discrepancies in aggressive and prosocial behavior: A latent difference score analysis. *Psychological Assessment, 34,* 409–418. https://doi.org/10.1037/pas0001091

36. Nett, U. E., & Götz, T. (2019). Selbstreguliertes Lernen. In D. Urhahne, M. Dresel, & F. Fischer (Eds.), *Psychologie für den Lehrberuf* [Psychology for the teaching profession] (pp. 68–83). Springer.

37. Olivier, E., Archambault, I., & Dupéré, V. (2018). Boys' and girls' latent profiles of behavior and social adjustment in school: Longitudinal links with later student behavioral engagement and academic achievement?. *Journal of School Psychology, 69,* 28–44. https://doi.org/10.1016/j.jsp.2018.05.006

38. Petermann, F., & Petermann, U. (2014). Schülereinschätzliste für Sozial- und Lernverhalten *[The Students' Self-Report Checklist for Social and Learning Behavior].* Hogrefe.

39. Richards, J. S., Hartman, C. A., Ormel, J., & Oldehinkel, A. J. (2022). Continuity of psychopathology throughout adolescence and young adulthood. *Journal of Clinical Child & Adolescent Psychology,* 1–14. https://doi.org/10.1080/15374416.2022.2042695

40. Robinson-Link, P., Fowler, D., Daniels, B., & Battal, J. (2023). Social, emotional and behavioral screening profiles among students in a large urban school district. *Journal of Psychoeducational Assessment, 41*(4), 380–394. https://doi.org/10.1177/0734282923115747

41. Schmerse, D. (2020). Preschool quality effects on learning behavior and later achievement in Germany: Moderation by socioeconomic status. *Child Development, 91*(6), 2237−2254. https://doi.org/10.1111/cdev.13357.

42. Shi, J., & Cheung, A. C. (2024). Effective components of social emotional learning programs: a meta-analysis. *Journal of Youth and Adolescence, 53*(4), 755–771. https://doi.org/10.1007/s10964-024-01942-7

43. Trout, A. L., Epstein, M. H., Nelson, R., Synhorst, L., & Duppong Hurley, K. (2006). Profiles of children served in early intervention programs for behavioral disorders: Early literacy and behavioral characteristics. *Topics in Early Childhood Special Education, 26*(4), 206–218. https://doi.org/10.1177/02711214060260040201

44. Vega, A., Cabello, R., Megías-Robles, A., Gómez-Leal, R., & Fernández-Berrocal, P. (2021). Emotional intelligence and aggressive behaviors in adolescents: A systematic review and meta-analysis. *Trauma, Violence, & Abuse, 23*(4), 1173–1183. https://doi.org/10.1177/1524838021991296

45. Yin, Y., & Wang, Y. (2023). Is empathy associated with more prosocial behaviour? A meta-analysis. *Asian Journal of Social Psychology, 26*(1), 3–22.