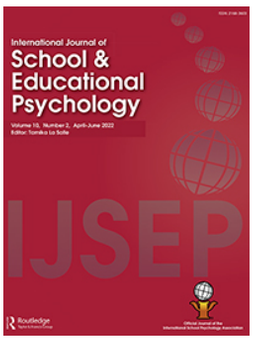

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ARTICLE

Contextual specificity in classroom adjustment: Latent profiles of primary school behavior problems in Trinidad and Tobago

Clara-Christina E. Gerstner[a], Paul A. McDermott[a], Emily M. Weiss[a], Michael J. Rovine[a], Frank C. Worrell[b], and Tracey E. Hall[c]

[a]Graduate School of Education, University of Pennsylvania, Philadelphia, Pennsylvania, USA; [b]Graduate School of Education, University of California, Berkeley, USA; [c]Center for Applied Special Technology, Wakefield, Massachusetts, USA

ABSTRACT

Behavioral problems are commonly observed in primary school children, yet the educational contexts in which children's behaviors occur vary across regions of the world. Thus, culturally adapted and context-specific behavioral assessments are needed to successfully identify and support children at risk for severe behavior problems. This study examines behavior problems in a nationally representative sample ($N = 700$) of primary school students in Trinidad and Tobago using the Adjustment Scales for Children and Adolescents, a contextually-based assessment that has been adapted and standardized for use with this population. We applied latent profile analysis, a person-centered approach, to identify distinct patterns of behavior problems and contexts in which behaviors occurred. The resultant 6-profile model consisted of two profiles of adjusted children making up 60% of the sample and four profiles of at-risk children with elevated underactive and/or overactive behavior problems associated with different classroom contexts. Profiles were differentially associated with classroom learning behaviors and reading ability. The most vulnerable subgroup of primary school students showed high levels of under- and overactive behaviors in peer, learning, and teacher contexts, deficits in reading fluency, problem-solving, and motivation.

KEYWORDS

Behavior problems; classroom contexts; latent profile analysis; person-centered methods; Trinidad and Tobago

Psychological and behavioral problems are commonly observed in children worldwide, with 10–20% of children developing mental health issues, including behavioral disorders, as they grow older (Kieling et al., 2011; Polanczyk et al., 2015). However, schooling and the classroom contexts in which children's problematic behaviors are encountered vary across regions of the world. Hence, context-specific, culturally adapted behavioral assessments are needed to successfully identify and support children at risk for serious behavior issues (Maldonado et al., 2019). School behavioral assessments typically measure different types of problematic behaviors, such as internalizing and externalizing behaviors, and are standardized within a specific student population and cultural setting. Applying existing instruments to a new cultural setting requires rigorous adaption and standardization; yet, research with culturally-responsive, standardized behavioral assessments outside of North American and European school contexts is still sporadic (Atilola, 2015; Maldonado et al., 2019).

Thus, this study identifies patterns of behavior problems in a national sample of primary school students in Trinidad and Tobago using the Adjustment Scales for Children and Adolescents (ASCA; McDermott et al., 2016, 2015), a contextually-based assessment of behavior problems that has been standardized for use with this population. This research uses latent profile analysis (LPA) to detect distinct profiles of behavior problems and the classroom contexts in which problematic behaviors occur. The results provide insights into the prevalence and patterns of children's behavior problems in Trinidad and Tobago and offer guidance on how to detect children at risk for poor social and academic outcomes using a culturally adapted measure of behavior problems.

Behavior problems in primary school

Behavioral maladjustment can have meaningful consequences for young students. Disruptive behavior problems have been associated with low educational achievement (Liu et al., 2017; Sayal et al., 2015), family stress (Campbell et al., 1996; Long et al., 2008), conflict with teachers and peers (Baker et al., 2008; Lee & Bierman, 2018), delinquency, substance abuse (Pedersen et al., 2018; Timmermans et al., 2009), and increased risk of developing psychopathology later on in

CONTACT Clara-Christina E. Gerstner clarag@upenn.edu Graduate School of Education, University of Pennsylvania, 3700 Walnut Street, Philadelphia, PA 19104-6216, USA

life (McLeod et al., 2012). Problematic behaviors often emerge when children struggle to meet the demands of their immediate environment (Ladd, 2004), and school presents myriad challenges for young students as they navigate learning activities and interactions with teachers and peers. Accordingly, research suggests that deficits in cognitive control and emotion regulation can manifest as behavioral problems like aggression, inattention, anxiety, and hyperactivity in both school and home environments (Blair et al., 2004; Granic et al., 2012).

Behavior problems at school can be categorized into underactive and overactive domains (see, e.g., Bulotsky-Shearer et al., 2021; Lutz et al., 2002), which correspond to the internalizing and externalizing dimensions in taxonomies of psychopathology (Conway et al., 2019). Overactive behaviors include fighting, being hyperactive, and disturbing others; hence, children with overactive behavior problems project negative emotionality outwardly and are more likely to disrupt classroom processes (Baker et al., 2008). Underactive problems include behaviors such as avoiding others, being withdrawn, or acting anxious, with children directing negative emotionality inwardly. These behaviors can contribute to academic disengagement and low grades as children struggle to appropriately engage in activities that drive learning in the classroom (Kalutskaya et al., 2015).

Both domains of problematic behavior can negatively affect children's relationships with teachers and peers (Baker et al., 2008; Stenseng et al., 2016). In particular, children with overactive behavior problems often have teacher relationships marked by more conflict, while children with underactive behavior problems generally show an overreliance or dependence on the teacher (Mejia & Hoglund, 2016; Skalická et al., 2015). Research with primary school children also suggests that student-teacher conflicts are more common and harmful for boys (Jerome et al., 2009) and special needs students (Freire et al., 2020) as they are reported to display more severe behavior problems. Lastly, under- and overactive behavior problems can coincide among children with clinical levels of behavior problems who are at the highest risk of long-term social and academic difficulties (Willner et al., 2016). Nonetheless, the extent to which such problems impede school success varies for different children and depends in part on the cultural dynamics of the classroom.

Research setting

Educational contexts, which substantially vary across regions of the world, influence the types of behaviors children exhibit in the classroom. Trinidad and Tobago, the focus of this study, is a twin-Island nation located in the Southern Caribbean and is one of the region's most ethnically diverse and economically stable countries. The educational system was shaped by British colonialism, which ended in 1962, and educational improvement is a high priority for policymakers. Primary and secondary education is centralized, government-funded, and compulsory for children ages 5–16, who attend seven years of primary school (Infant 1 through Standard 5) starting from age 5 and must pass a standardized exit exam in Standard 5 before transitioning to 5 years of secondary school (Kalloo et al., 2020). Child rearing and disciplinary practices are influenced by a blend of British, East Indian, French, and African traditions, wherein adult-child interactions are marked by discipline and order, and respect for authorities is highly valued in children (Barrow, 2008). Disobedient, rude, or aggressive behaviors in children are often met with intolerance and physical punishment in the home (Cappa & Khan, 2011; Gopaul-McNicol, 1999). Moreover, children's behavior at school is of considerable concern locally, as teachers report substantial dissatisfaction with the efforts they expend in behavior management (Carrington-Blaides & Ramoutar, 2017). Thus, teachers in Trinidad and Tobago need to be better supported in identifying children with severe behavior problems and modifying the classroom environment to meet their socioemotional and behavioral needs.

Behavioral assessment

Standardized rating scales of behavioral adjustment are crucial for early identification and intervention among primary school students. Typically such scales make use of ratings on a series of behavioral indicators to identify children at risk of maladjustment. Effective assessments are specific to the school context and culturally appropriate for the student population under investigation (Gjersing et al., 2010). For behavior rating scales, respondents' judgments of behaviors are embedded in cultural expectations and local attitudes toward child-rearing (e.g., Reid et al., 1998), and nuances in language and respondents' interpretations may yield different psychometric properties for scale items depending on the target population (Frisby, 2013). Thus, social and cultural factors must be considered in the design and adaptation of such instruments.

With these concerns in mind, this study uses the ASCA (McDermott et al., 2016, 2015) to assess primary school students' context-relevant behavior problems. The ASCA, originally developed to measure behavior problems among primary and secondary schools in the

United States (McDermott, 1993; McDermott et al., 2006), was specifically adapted for use in Trinidad and Tobago through a partnership with the Ministry of Education. As part of this process, the language and vernacular of the ASCA were reviewed for their cultural relevance and a nationally representative sample of 700 primary school students was obtained. Psychometric properties of ASCA scores were examined in this sample to ensure validity and reliability at the item and scale levels and subsequently standardized scores were generated (see, McDermott et al., 2015).

A primary advantage of using the ASCA is that it provides ecologically valid, situationally specific information for intervention. As a teacher-report measure, the ASCA leverages teachers' experience and expertise to quantify children's classroom behavior. Teachers are in a superior position to identify which behaviors are typical for a child compared to students of similar age; they are able to observe a child for many hours a day across different classroom situations and hold culture-specific knowledge about behavioral expectations at school (Cruz et al., 2021; Drogalis et al., 2017). ASCA scores reflect not only the type and levels of problem behaviors but also the specific school contexts where behavior problems arise. Behavior problems rooted in different classroom situations, such as formal instruction or free play, may yield different developmental outcomes (Hamre & Pianta, 2010; Reyes et al., 2020); for example, aggressive behaviors might be more likely to occur during peer interactions, whereas inattentiveness or low energy could appear more often in learning situations. Combining data on the type, severity, and location of problematic behavior allows researchers to better understand specific patterns of behavior problems and can help teachers identify why behavior problems emerge in specific classroom contexts and modify environments to better mitigate problematic behaviors (Horner et al., 2010).

Person-centered research with behavioral assessments

Variations in children's problem behaviors and developmental outcomes have been increasingly studied through person-oriented approaches, such as LPA. Person-centered methods identify latent classes or profiles among which multiple indicators differ in meaningful ways (Howard & Hoffman, 2018), which allow researchers to detect subgroups of children with differing capacities and experiences that are not known a priori. These methods produce sets of parameters for each subgroup that characterize how variables of interest operate within these unique subpopulations; this is different from variable-centered methods like regression that produce a single set of parameters for an entire sample or population. In the present study, this approach enabled us to detect behavioral profiles with varying levels of under- and/or overactive behavior problems localized in different classroom contexts that were common for subgroups of children. This methodology also comports with clinical frameworks wherein diagnosticians identify clusters of problematic behaviors manifesting an underlying disorder, rather than relying on single indicators (Carter et al., 2004).

Although not new, person-centered methods are still underused in behavioral research, especially in studies outside of North America and Europe. LPA and Latent Class Analysis have been conducted with common behavioral assessments such as the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001) and the Child Behavior Checklist (Achenbach & Rescorla, 2000); however, most research has concentrated on primary and secondary school students in high-income countries, including Spain (Fonseca-Pedrero et al., 2020; Morales et al., 2021), China (Ling et al., 2016), the Netherlands (van Leeuwen et al., 2004), and the United States (Althoff et al., 2006; Rubin et al., 2013). Across these studies, researchers typically identified three to five latent subpopulations consisting of one subgroup of low-risk or well-adjusted children (i.e., they did not demonstrate behavioral problems in any domain) and several subgroups of at-risk children with internalizing and externalizing problems (e.g., Fonseca-Pedrero et al., 2020) or high difficulties and uncooperative tendencies (e.g., Ling et al., 2016).

One drawback of previous work with the SDQ and the Child Behavior Checklist is that these instruments were designed to detect general behavior disorders rather than context-specific behaviors most relevant to teachers (LeBoeuf et al., 2010), and as such they may not generalize comprehensively to classroom settings. A few studies using person-centered methods with ecologically valid classroom measures have explored behavior profiles among American preschoolers (e.g., Bulotsky-Shearer et al., 2012; McDermott et al., 2022), but to date similar studies have not been conducted with primary school students or children outside of the U.S. school system.

Building upon this literature, the present research provides new perspectives on primary school children's behavioral adjustment by investigating latent profiles of behavior problems and problem contexts in a sample of Caribbean students. We study children's behavior problems using a contextually-based measure of problem behaviors that allows us to differentiate where such behaviors occur; thus, this approach provides more nuanced

information to identify subgroups of students with different behavioral needs and reveal potential avenues for intervention.

The current study

This research aims to extend the current knowledge on children's behavioral adjustment problems by exploring the heterogeneity in classroom behavior problems and problem contexts in a national sample of primary school students in Trinidad and Tobago. Our objective was to identify latent profiles of classroom behavior problems and the contexts in which they arise and to examine how profile membership relates to school-related skills, such as reading fluency and positive learning behaviors.

We hypothesize that most children would comprise a well-adjusted group with little to no behavior problems across classroom contexts. Furthermore, we expected to find different risk profiles of elevated under- and overactive behaviors localized in specific classroom contexts, with the most vulnerable children demonstrating the lowest reading proficiency and the most significant deficits in learning behaviors.

Method

Sample and participants

Data for this study are drawn from a study of primary school students in Trinidad and Tobago conducted by the Ministry of Education in collaboration with U.S. researchers (Watkins et al., 2014). Participants were 700 students enrolled in primary schools who were randomly selected to be a representative sample of the primary school population in Trinidad and Tobago. Participating children ranged in age from 4–14 years (M = 8, SD = 2) and were enrolled in grades Infant 1 through Standard 5. The sample is 50.3% female, with 39.9% African, 38.3% East Indian, and 21.7% mixed race/ethnicity. In this sample, there were no missing data for the behavior problem scales described below and minor missingness (<5%) for learning behavior scales for which multiple imputations would provide little benefit (Schafer, 1999). More details on the data collection procedures and sample demographics are reported by Watkins et al. (2014).

Measures

Adjustment scales for children and adolescents

The ASCA (McDermott, 1993; McDermott et al., 2006) is a behaviorally-based teacher rating scale with 156 indicators describing adaptive and problematic school behaviors. Dichotomous items, scored present or absent within the last two months, are embedded within 24 classroom contexts, including peer interactions and play, learning activities, and interactions with teachers. For instance, an item might ask whether a student "responds with an angry look or turns away" (Overactive behavior problem) when "greeting [their] teacher" (Teacher context). Whereas 127 items describe problem behaviors, 29 describe adaptive or healthy behaviors that serve to reduce teacher response sets but are not included in the scoring process. Previous research suggests that teachers find it easier to respond to item sets that include positively worded items (McDermott, 1993). Ample reliability and validity evidence for the ASCA has been provided for North American children (Canivez & Beran, 2009; McDermott, 1993; Watkins & Canivez, 1997) and for the nationally representative sample of school children in Trinidad and Tobago used in this study (George et al., 2012; McDermott et al., 2016, 2015).

The ASCA features two distinctive types of problem indicator scales—phenotype scales and situtype scales. The two broad phenotype scales are Overactivity (α = .92; e.g., "Starts fights," "Inattentive to schoolwork," "Loses temper") and Underactivity (α = .74; e.g., "Withdrawn," "Rarely smiles," "Dejected look"), which describe the characteristic problem behaviors exhibited by children. The three situtype scales describe the contexts wherein problem behaviors emerge. They include Peer Contexts (α = .85; e.g., "Playing fairly," "Standing in line"), Teacher Contexts (α = .70; "Seeking teacher help," "Talking to teacher"), and Learning Contexts (α = .86; "Paying attention in class," "Sitting at desk"). All scales were calibrated using item response theory (IRT) models and scored via Bayesian expected a posteriori (EAP) estimation, where the latent population mean for scaled scores (*SS*s) equals 50 and standard deviation equals 10 (see, McDermott et al., 2016, 2015). For the current sample, situtype and phenotype *SS*s range from 49.8 to 50.1, with standard deviations ranging from 7.9 to 10.1.

Classroom learning behavior

The relationship between children's behavior problems and their learning behaviors was evaluated with the Learning Behaviors Scale (LBS; McDermott, 1999), a teacher rating device that captures positive learning behaviors that may act as protective factors against behavioral maladjustment. This study utilizes the Competence Motivation scale (8 items, α = .89; e.g., "Easily gives up task," "Says tasks too hard, makes no attempt") and the Strategy-Flexibility scale (7 items, α = .79; e.g., "Performs task by own, not accepted way," "Aggressive or hostile when corrected") to externally

validate the latent profile solution. Each behavior is rated by classroom teachers who observe the child for at least 50 days using a three-point Likert scale (2 = *Most often applies*, 1 = *Sometimes applies*, 0 = *Does not apply*). Substantial reliability and validity evidence for LBS scores has been demonstrated for Trinidad and Tobago (Chao et al., 2018) and for North America (e.g., Canivez & Beran, 2011; Canivez et al., 2006; McDermott, 1993; Worrell et al., 2001).

Reading ability

Oral reading fluency (ORF; Fuchs et al., 2001) was used to study associations between children's behavior profiles and academic outcomes. ORF is an individually-administered measure of reading which assesses the speed and accuracy with which a student reads text (Hasbrouck & Tindal, 2006). The ORF score for each student is the average number of words read correctly in one minute on two grade-appropriate reading passages. The average correlation between the two passages for this sample was .88, with M = 72.42 and SD = 41.23 (for details, see, Hall et al., 2002; McDermott et al., 2015). Associations between ORF and other curriculum-based measures indicate convergent and predictive validity (e.g., Shin & McMaster, 2019; Yeo, 2011) as well as clinical utility (Hart et al., 2013; Petscher & Kim, 2011).

Analytic procedure

The five ASCA phenotype and situtype scores served as indicator variables in the LPA analysis. Models with 1- through 7-profiles were assessed to determine the appropriate number of profiles, where means of indicator variables were freely estimated, and variances were constrained to be equal (Berlin et al., 2014). Successively complex LPA models were fitted to identify the best latent profile solution as based on the following a priori criteria: (a) minimal values for Schwarz's Bayesian Information Criterion (BIC) and Integrated Classification Likelihood with Bayesian-Type Approximation (ICL-BIC; Biernacki et al., 2000), (b) maximal values for entropy and average posterior classification accuracy (Wang & Wang, 2019), (c) statistical significance of the Vuong-Lo-Mendell-Rubin (VLMR), the Lo-Mendell-Rubin adjusted (LMR; Lo et al., 2001), and parametric bootstrapped (with 500 draws) likelihood ratio tests (BLRT; McLachlan & Peel, 2004), and (d) theoretically meaningful profiles retaining membership ≥ 5% of the full sample (Nylund-Gibson & Choi, 2018). LPA models that met the most fit criteria simultaneously were regarded as preferable. Analyses were conducted with *Mplus* 8.4 (Muthén & Muthén, 2018) using full-information maximum-likelihood estimation. To ensure convergence at the global maximum, we used 10,000 random sets of starting values with 500 iterations each, where the 200 best solutions were retained for final stage optimization.

Strategy-Flexibility, Competence Motivation, and ORF scores were separately regressed on the latent profile membership variable to ascertain relevant implications of profile membership. Means and standard errors for each profile were estimated through the *Mplus* BCH function, which applies a weighted multiple-group analysis and allows variances across profiles to differ (Asparouhov & Muthén, 2014). Profile means were compared for statistically meaningful differences using chi-square tests.

Results

Latent profile model

Solutions for the 1- through 7-profile models are displayed in Table 1. Solutions with 7 or more profiles were deemed improper because profile membership fell below the 5% criterion, with signs of model over-fitting as associated with artificial splintering of classes into non-substantive profiles that produced no meaningful differences in level or shape. Hence, the 6-profile solution was

Table 1. Fit indices for latent profiles of primary school problem behavior.

						Likelihood ratio tests		
Model	AIC	BIC	ICL-BIC	Entropy	Average PCA	VLMR	LMR	BLRT
1-profile	25621.66	25667.17	25667.17	1.00	1.00	-	-	-
2-profile	24316.81	24389.63	24525.49	0.86	0.96	<.0001	<.0001	<.0001
3-profile	23825.40	23925.52	24079.33	0.90	0.95	0.0182	0.0196	<.0001
4-profile	23360.50	23487.93	23610.97	0.92	0.95	0.0001	0.0001	<.0001
5-profile	23067.92	23222.66	23402.92	0.94	0.96	<.0001	<.0001	<.0001
6-profile	22825.55	23007.59	23133.01	0.95	0.96	0.0196	0.0212	<.0001
7-profile	22704.86	22914.21	23050.42	0.95	0.96	0.0181	0.0195	<.0001

Note. AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, ICL-BIC = Integrated Classification Likelihood with Bayesian-Type Approximation, PCA = Posterior Classification Accuracy, VLMR = Vuong-Lo-Mendell Rubin, LMR = Lo-Mendell-Rubin, BLRT = Bootstrapped Likelihood Ratio Test.

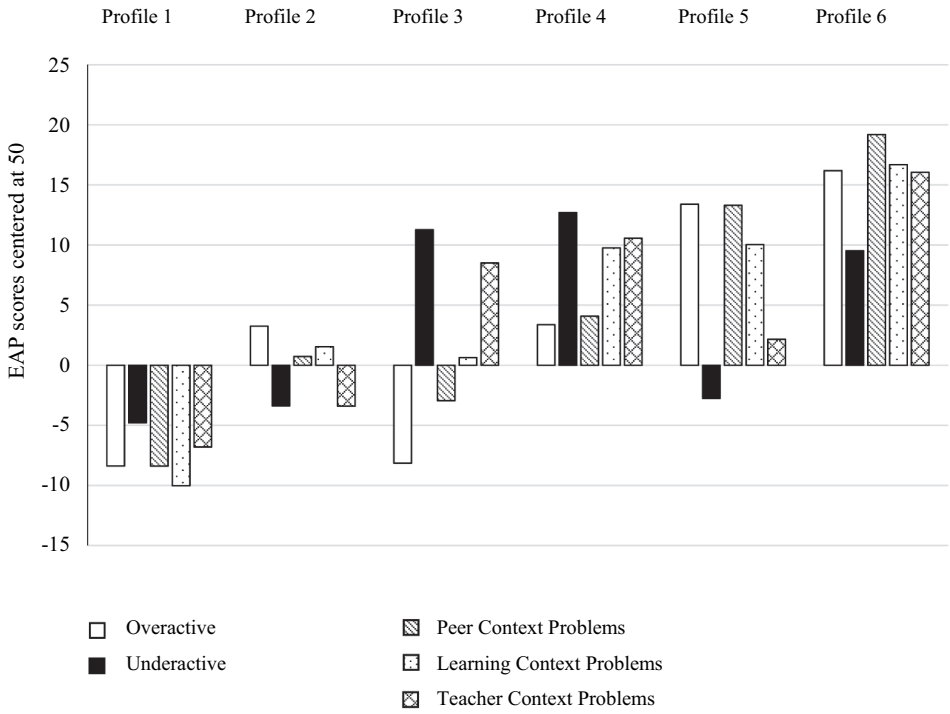

Figure 1. Results from 6-profile latent profile model.

selected for further analysis. It provided better fit than less complex models, as shown through AIC, BIC, ICL-BIC, and likelihood ratio tests, as well as high average posterior classification accuracy (.96) and higher entropy (.95) than less complex models.

The selected model is illustrated in Figure 1 and the means and standard errors of ASCA scores are provided in Table 2. Each profile is conceptually meaningful and clearly distinguishable by level, shape, and membership size. We found two profiles characterized by well- or adequately-adjusted behavior (60% of children), two profiles characterized by underactive behavior problems (20%), one characterized by overactive problems (15%), and one of general overall risk (5%). Profiles were named based on the patterns of indicator means, where levels greater than 1 *SD* above the population mean represent serious behaviors and levels ½ *SD* above represent moderate behaviors. Profiles are described in further detail below:

Profile 1—well adjusted

Comprising 37% of children, this profile features below-average levels of behavior problems for all five indicators. They display very few problems in learning contexts, with scores falling more than 1 *SD* below the population mean.

Profile 2—adequately adjusted

This group includes 23% of children who exhibit average-normal behaviors across contexts. All five indicators fall within ½ *SD* of the population mean. The

Table 2. Estimated means (and Standard Errors) for latent profiles of primary school problem behavior.

	ASCA phenotype indicator		ASCA situtype indicator		
Latent Profile	Overactive	Underactive	Peer Context Problems	Learning Context Problems	Teacher Context Problems
Profile 1 Well Adjusted (37%)	*41.62* (0.20)	45.22 (0.20)	*41.61* (0.26)	**39.98** (0.22)	*43.20* (0.41)
Profile 2 Adequately Adjusted (23%)	53.24 (0.27)	46.62 (0.44)	50.72 (0.60)	51.54 (0.51)	46.60 (0.63)
Profile 3 Underactive in Teacher Contexts (10%)	*41.85* (0.46)	**61.28** (0.86)	47.05 (0.86)	50.64 (0.75)	*58.51* (1.12)
Profile 4 Underactive in Teacher and Learning Contexts (10%)	53.37 (0.41)	**62.70** (0.84)	54.08 (0.86)	*59.76* (0.89)	**60.57** (1.25)
Profile 5 Overactive in Peer and Learning Contexts (15%)	**63.40** (0.29)	47.24 (0.59)	**63.30** (0.58)	**60.04** (0.56)	52.16 (0.75)
Profile 6 Overall Risk (5%)	**66.18** (1.12)	*59.52* (1.11)	**69.19** (1.51)	**66.68** (1.54)	**66.05** (1.51)

Note. Values are EAP scored means where $M = 50$ and $SD = 10$. Values one standard deviation above or below the mean are in bold. Values half a standard deviation above or below the mean are in italics.

underactive behavior mean approaches Profile 1, but overactive behaviors, learning context, and peer context problems are more than 1 *SD* above the Profile 1 mean.

Profile 3— underactive in teacher contexts

This profile (10%) is marked by high underactive behavior, with a mean greater than 1.5 *SD*s above well-adjusted children, and very low overactive behavior problems. Teacher context problems are moderately elevated while other indicators approach the population mean.

Profile 4—underactive in teacher and learning contexts

The second underactive profile also includes 10% of children and is characterized by high levels of underactive behavior in teacher *and* learning contexts. Also, overactive behaviors in this profile are also almost 1.5 *SD*s above Profile 3, slightly exceeding the population mean.

Profile 5—overactive in peer and learning contexts

This profile is the largest risk profile comprising 15% of children. It is characterized by elevated overactivity, peer context, and learning context problems, with near-mean levels of underactivity and teacher context problems.

Profile 6—overall risk

This group (5%) displays extreme levels of problem behaviors with means 1.5 *SD*s above the population mean for overactivity and peer, learning, and teacher context problems. Underactive problems are also elevated by almost 1 *SD*; thus, children in this profile are at the highest risk for adverse developmental outcomes.

Distal outcomes

Table 3 presents the means (and standard errors) of distal outcomes associated with latent profile membership. LBS and ORF scores were dissimilar across the six profiles. Well-adjusted children in Profile 1 were the most motivated and strategic in approaching learning activities and had the highest reading fluency. In contrast, children displaying overall risk (Profile 6) had the lowest LBS and ORF scores.

The LBS score for Strategy-Flexibility for children with underactive behaviors (Profile 3) was similar to well-adjusted children (Profile 1), but their other two scores were substantially lower. Children in Profile 3 displayed more underactive behaviors, but overall fewer overactive behaviors. The lowest Strategy-Flexibility scores were found for Profiles 5 and 6, which have high and extreme overactivity levels. The LBS score for Competence Motivation was the lowest for children in Profile 4 who exhibit underactive behavior problems and Profile 6 who exhibit problems on all indicators. Both profiles had elevated learning and teacher context problems. Finally, academic achievement assessed by oral reading fluency was lowest for Profiles 3 through 6, which all had high underactivity and/or overactivity problems.

Discussion

This study used LPA to distinguish six profiles of behavior problems and the classroom contexts in which problems were most prevalent among primary school children in Trinidad and Tobago. As both phenotype and situtype scales were used as indicators, we identified relatively more theoretically meaningful profiles than prior research that relied solely on phenotypic information or behaviors (e.g., Fonseca-Pedrero et al., 2020; Ling et al., 2016; Morales et al., 2021). Overall, we found two profiles of children with adaptive and normative behavior, constituting 60% of the sample, and four profiles of children with elevated underactive and/or overactive problems in different classroom situations.

As hypothesized, most children belonged to a well-adjusted (Profile 1) or adequately-adjusted (Profile 2) group. Well-adjusted children had by far the lowest behavior problems across the phenotypes and situtypes and thus were behaviorally and academically in the best position to succeed in school. Their overactive behavior problems were more than 1 *SD* below those of the adequately-adjusted children and, by comparison, they

Table 3. Distal outcomes associated with latent profiles of primary school problem behavior.

		Adjusted children		At-risk children			
Outcome	M (*SD*)	Profile 1 Well Adjusted	Profile 2 Adequately Adjusted	Profile 3 Underactive in Teacher Contexts	Profile 4 Underactive in Teacher and Learning Contexts	Profile 5 Overactive in Peer and Learning Contexts	Profile 6 Overall Risk
Competence Motivation	45.46 (11.09)	52.65 (0.49)	46.04 (0.67)	41.46^{a} (1.10)	33.92^{b} (1.35)	42.56^{a} (1.08)	30.35^{b} (2.12)
Strategy-Flexibility	45.46 (10.85)	51.38^{a} (0.52)	44.84^{b} (0.60)	49.26^{a} (1.03)	42.56^{b} (1.57)	36.05 (1.09)	30.69 (2.03)
Oral Reading Fluency	72.42 (41.23)	88.43 (2.80)	67.79^{a} (3.50)	65.51^{ab} (5.46)	52.35^{b} (5.64)	61.57^{ab} (4.36)	47.09^{b} (8.11)

Note. Non parenthetical values are estimated means and parenthetical values are standard errors. Means that do not share a subscript are significantly different at $p < .05$.

demonstrated considerably fewer problems in learning situations. On average, well-adjusted children read 20 words more per minute than adequately-adjusted children and showed higher motivation and problem-solving skills in the classroom. Despite comparative deficits in reading ability and motivation, children in Profile 2 also exhibit behaviors normatively average for primary school students. Their slight inclination toward overactivity is common among primary schoolers, especially younger students, who are still developing robust communication and self-regulation skills (Bongers et al., 2003).

Profiles 3 through 6 were considered at risk of difficulties at school, as suggested by their elevated behavior problems, lower reading proficiency, and deficits in positive learning behaviors. In aggregate, 20% of children exhibited elevated underactive behaviors only, 15% overactive behaviors only, and 5% both types. Children in Profiles 3 and 4 showed underactive behavior problems approximately 1 *SD* above the population mean. However, while children in Profile 3 exhibited below-average overactive behaviors (similar to well-adjusted children), children in Profile 4 showed higher overactive behaviors (similar to adequately-adjusted children). This difference was also reflected in the situtype scores, with underactive children in Profile 4 demonstrating elevated behavior problems in teacher *and* learning contexts. Problems in learning contexts were further related to academic difficulties: children in Profile 4 obtained reading scores similar to extremely at-risk children (Profile 6) and had lower motivation and problem-solving skills than underactive children in Profile 3. Prior research has shown that disengagement from learning contexts is associated with academic difficulties (McDermott et al., 2017; Olivier et al., 2020) and our results reinforce this conclusion.

Children in Profile 5 exhibited elevated overactive behaviors concentrated in peer and learning contexts. Although they had comparable reading proficiency to the underactive students in Profile 3, they had the second-lowest scores on the Strategy-Flexibility scale, which indicates deficits in problem-solving skills. However, the lowest LBS and ORF scores were found for extremely at-risk children in Profile 6, such that these children were at the highest risk of academic and social difficulties. Their problematic behaviors were evident in peer (2 *SD*s above mean), learning, and teacher contexts (1.5 *SD*s above mean), and their LBS scores were 2 *SD*s below those obtained by well-adjusted children. Moreover, extremely at-risk children demonstrated low reading proficiency, with ORF scores indicating that they read only about half as many words as their well-adjusted peers (Profile 1). Children classified in Profile 6 may reflect a clinical subpopulation, as pervasive problems across settings are often a diagnostic criterion (Barbarin, 2007); nonetheless, the ASCA is not a diagnostic instrument, and appropriate psycho-educational evaluation would be needed to determine whether the elevated problem behaviors exhibited by children in Profile 6 warrant clinical attention.

In our nationally-representative sample, underactive children generally showed more deficits in Competence-Motivation, that is, learning behaviors that support children's academic engagement. Conversely, overactive children showed lower problem-solving skills (Strategy-Flexibility) and more problems in peer situations. Lastly, the severity of behavioral and academic problems tended to align with the pervasiveness of behavior problems across contexts; children with moderate or localized problems had relatively better school-related skills than children with problems across contexts. Children in the Overall Risk profile were rated as having by far the most academic and social issues and, thus, are considered most in need of intervention.

Altogether, our results support a multidimensional definition of behavioral maladjustment in schools with both types *and* contexts of behavioral problems serving as indicators for identifying at-risk children (May & Kundert, 1997; Richardson-Koehler et al., 1989). Our findings with person-centered methods contrast with prevalence rates at the population level. Using home-based ratings, it is estimated that 81–94% of primary school students in Trinidad and Tobago are *adjusted* with regard to attention deficit hyperactivity, conduct problems, and/or underactivity syndromes, with 6–16% being *at-risk* and 1–3% being *maladjusted* (Carrington-Blaides & Ramoutar, 2017); our results find a much smaller proportion of well-adjusted students when accounting for individual patterns of behavior within specific school contexts. We also detect more latent classes than LPA studies evaluating only behavior problem types (e.g., Fonseca-Pedrero et al., 2020; Ling et al., 2016). Recently, Watkins et al. (2020) identified adjusted, internalizing, and externalizing classes – comprising 60.5%, 19.3%, and 20.3% of students, respectively – when utilizing home and school indicators of behavior problem types among the same population. By incorporating Teacher, Peer, and Learning Context problems, our analyses detected greater nuance in latent class composition pertaining specifically to the educational setting and revealed how both the type and context of behavior problems are related to school difficulties.

Limitations and future directions

Although this nationally representative dataset gives a sound picture of the population-level prevalence of primary schoolers' behavior problems in Trinidad and Tobago, it lacks repeated measures that could be used to

evaluate how behavior profiles predict later outcomes. Moreover, with a longitudinal sample, one could apply latent transition analysis to study whether behavioral profiles are stable over time (see, e.g., Basten et al., 2016). Others have suggested that approximately 25% of Trinidadian adolescents may suffer from depression (Maharaj et al., 2008) and that educational policies such as academic tracking are associated with psychopathology among Caribbean adolescents (Lipps et al., 2010). Thus, measuring individuals' classroom behavior over time may be critical for preventing later psychopathology.

Secondly, more academic achievement measures would be desirable to better understand the consequences of membership in a risk profile. In this study, only ORF scores were available to externally validate the LPA solution. The availability of standardized assessment scores in math and reading could help distinguish profiles and identify children most in need of academic intervention. Furthermore, more detailed information on the demographic and/or household characteristics of participant children could help identify risk and protective factors to further inform detection and prevention of behavioral maladjustment.

Implications for practice

We have highlighted the social and academic difficulties associated with different behavior profiles. Fortunately, early intervention has been shown to be effective in promoting positive behavioral adjustment in primary school and beyond; for example, healthy student-teacher relationships can mitigate the severity of later problem behavior (Silver et al., 2005), and social-emotional learning (SEL) programs may facilitate the development of children's social skills over time (Duncan et al., 2007; Taylor et al., 2017). SEL research in the United States has demonstrated that comprehensive school-wide programs can positively impact school climate by improving peer and student-teacher interactions (Taylor et al., 2017). Furthermore, if behavior problems are reduced, teachers may experience less job-related stress and more job satisfaction (Schonert-Reichl, 2017), contributing to a better learning environment.

Our results highlight the importance of providing targeted supports and intervention for subgroups of children with different behavioral needs. For instance, children who show underactive behaviors in teacher and/or learning contexts may benefit from additional teacher support in academic situations, e.g., providing continuous feedback and behavior-specific praise, lowering the stakes by making activities more playful, modeling adaptive thoughts and behaviors (Nyborg et al., 2020; Stormont et al., 2015). Children who demonstrate overactive behaviors in peer and learning contexts may similarly benefit more from learning supports but also from social skills training to promote positive peer interactions (e.g., Hudley et al., 2007). In general, teachers are tasked with providing a learning environment that supports positive interactions with and between students and reduces disruptive behaviors; this requires effective classroom management, including setting classroom expectations for student behavior, maintaining consistent routines, using pre-corrective statements and proximity to reduce disruptive behaviors, etc. (Reinke et al., 2018). Training teachers in classroom management approaches (e.g., the Incredible Years Teacher Classroom Management Program) has been found to reduce student problem behaviors and increase social competence across different countries (Aasheim et al., 2019; Hutchings et al., 2013; Reinke et al., 2018). Although few of these interventions have been evaluated in the Caribbeans and further research is therefore needed, teachers in Trinidad and Tobago could likely benefit from similar training to better serve the diverse behavioral needs in their classrooms.

Parent-based interventions that raise parents' knowledge and experience in dealing with children's problematic behaviors are a substantial addition to classroom-level interventions. As long as parents are unaware of the causes and consequences of behavior problems, they will likely make unrealistic behavioral demands on children (Roopnarine et al., 2015). For example, corporal punishment might be more common and acceptable as a disciplinary strategy if the parent lacks knowledge of child development. Behavioral parent training interventions can be an effective way to change parents' understanding and parenting practices and raise children's social skills (Shaffer et al., 2001). Meta-analyses of evidence-based parenting programs suggest that they can effectively prevent child maltreatment and enhance children's development (Chen & Chan, 2015) and that they are as effective or even more effective when implemented in low- and middle-income countries (Gardner et al., 2016). Yet, it is essential to consider cultural beliefs and child rearing practices that may affect the acceptability and effectiveness of such interventions. Behavioral assessments and interventions alike need to be culturally adapted and piloted in the target population to effectively reduce children's behavioral adjustment problems.

Conclusion

Behavioral maladjustment is a significant problem in primary schools as it prevents children from developing social and academic skills essential for learning. Our findings suggest that two out of five primary school children in Trinidad and Tobago display elevated under- and/or overactive behavior problems, with higher levels of behavior

problems predicting larger school-related deficits. Using a person-centered approach, we could link different patterns of behavioral problems to three types of classroom situations. Providing practitioners with more information on the severity and types of behavior problems and the contexts in which behaviors occur may allow them to design more targeted interventions to reduce the prevalence of behavior problems in the classroom.

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Notes on contributors

Paul A. McDermott, PhD, is a Professor of Quantitative Methods at the University of Pennsylvania, Graduate School of Education.

Michael J. Rovine, PhD, is a Senior Fellow in Quantitative Methods at the University of Pennsylvania, Graduate School of Education.

Clara-Christina E. Gerstner, MPhil, is a graduate student in Quantitative Methods at the University of Pennsylvania, Graduate School of Education.

Emily M. Weiss, MS, is a graduate student in Quantitative Methods at the University of Pennsylvania, Graduate School of Education.

Frank C. Worrell, PhD, is a Professor of School Psychology at the University of California- Berkeley, Graduate School of Education.

Tracey E. Hall, PhD, is a Senior Research Scientist and Instructional Designer at the Center for Applied Special Technology.

ORCID

Clara-Christina E. Gerstner http://orcid.org/0000-0002-3347-2245
Emily M. Weiss http://orcid.org/0000-0003-1424-4973
Frank C. Worrell http://orcid.org/0000-0002-7122-527X

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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