School Mental Health (2020) 12:67–76
https://doi.org/10.1007/s12310-019-09341-1

ORIGINAL PAPER

Variation in Teachers' Reported Use of Classroom Management and Behavioral Health Strategies by Grade Level

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Published online: 24 July 2019

Abstract

Teachers' use of evidence-informed classroom management and behavioral health strategies may improve student behavior and classroom function. However, little is known about the extent to which teachers employ various strategies and whether strategy use varies across grades. This study aimed to determine the frequency distribution of reported use of a range of strategies in a large representative sample of teachers in Ontario, Canada, and their variation across grades (junior kindergarten to grade twelve). The teacher survey contained strategies derived from a positive behavior support questionnaire (PBSQ) and a behavioral health questionnaire (EIBHQ), eight items each. Among the PBSQ items, completed by 3004 teachers, "*Expected student behaviors and routines are taught directly*" was the most frequently endorsed at the "*always*" level (60.5%), while "*Rewards are varied to maintain student interest*" was the least at this same level (30.6%). Among the EIBHQ items, completed by 2801 teachers, "*Provided social rewards, such as praise, encouragement, and affection, to promote desired behaviors*" was the most frequently endorsed at the "*daily*" level (71.1%), while "*Taught the student to solve problems by outlining steps, such as identifying the problem, generating multiple solutions, and selecting the best alternative*" was the least frequently endorsed (24.8%). For all items, frequency of endorsement significantly decreased with increasing grade level suggesting that students in higher grades are less likely to be exposed to this particular group of strategies. Additional studies are required that incorporate a wider range of teacher strategies and verify patterns with observational data.

Keywords Teachers · Practices · Positive behavioral support · Schools · Epidemiology

Introduction

Teachers employ a variety of strategies with the intention of fostering positive behaviors of students in the classroom. However, there are few studies that describe patterns of use of different strategies within representative samples of teachers across grades. The lack of availability of such basic information leaves a knowledge gap in understanding current practices including whether certain strategies increase or decrease in frequency across grade levels. Identifying such changes could then direct inquiry to determine whether such variations align with classroom needs at different grades.

Whereas there are many investigations into how students' behaviors change with grade level (e.g., social skills, use of alcohol and drugs, peer interactions), there is comparably little investigation into how teachers' behavior varies across grades. Variability in teachers' behaviors may be expected, given developmental differences in cognitive, behavioral, and emotional functioning across age. For example, teaching basic routines and procedures may be particularly salient for younger students (Brophy & Good, 1986), whereas student autonomy and teacher–student relationships may become increasingly important for older students (Pas, Cash, O'Brennan, Debnam, & Bradshaw, 2015). It may therefore be anticipated that some variation in classroom management may be appropriate across grades; however, some commonalities may also be appropriate. Although not exclusively focused on classroom management, factor analyses of

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classroom observational data of teacher–student interactions obtained through the use of the Classroom Assessment Scoring System (CLASS) (Pianta, La Paro, & Hamre, 2008) found similar three-factor solutions from kindergarten to grade 12, labeled: Emotional Support, Classroom Organization, and Instructional Support, consistent with the Teaching Through Interaction model (Hafen et al., 2015; Hamre et al., 2013). Although it should be noted that the secondary school version of the CLASS (CLASS-S) (Pianta, Hamre, & Mintz, 2010) modified the dimension "regard for student perspective" within the Emotional Support domain to include consideration of opportunities given for student autonomy and leadership (Hafen et al., 2015).

In the examination of classroom management approaches, there has been particular attention to instructional strategies on rules and behavioral modification components. There is an important body of evidence in the use of these strategies and better classroom management (Oliver, Wehby, & Daniel, 2011); however, the majority of such evidence comes from the elementary school level, and there has been comparably little investigation at the high school level (Pas et al., 2015). In addition, positive behavior support (PBS), an important subset of behavioral strategies, appears to be disproportionately promoted at elementary versus high school levels (Flannery, Sugai, & Anderson, 2009). Whether this disproportionate promotion is warranted is not yet clear given the limited study of the effectiveness of PBS in high schools thus far (Bohanon et al., 2006; Flannery, Fenning, McGrath Kato, & McIntosh, 2014). In addition, it has been proposed that individual practices within a PBS approach, such as specific praise, need further scrutiny at higher grades to determine whether they are effective and/or need more nuanced delivery (Freeman et al., 2018). Furthermore, there may be greater challenges to implement uniform strategies, such as PBS, in high schools compared to elementary schools for several reasons including that (1) high schools are typically larger and administratively more complex, (2) teachers' preservice training may have greater emphasis on content area (e.g., math) than student behavioral expectations and management, (3) teachers may experience greater pressure to focus on academic achievement outcomes, and (4) students change classrooms more frequently throughout the day and across semesters (Bohanon et al., 2006; Flannery et al., 2009; Freeman et al., 2018).

There are a few studies that provide some evidence of variation in teachers' behavioral management practices across a range of grades. This includes a study using a self-report survey from a sample of elementary and middle school teachers ($n = 675$) from 26 states in the USA regarding management approaches for students with attention-deficit/hyperactivity disorder (Hart et al., 2017). That study used a 14-item behavioral support instrument that was drawn from the Classroom Management Techniques—Individual Child Questionnaire (Hart et al., 2017). Items with the highest reported endorsement included "universal" strategies of providing praise and classroom rules, while items with the least frequent endorsement included "targeted" strategies of using daily or weekly behavioral report cards (Hart et al., 2017). They also found a reduction in use of recommended strategies as a function of increasing grade (e.g., regular use of praise) (Hart et al., 2017).

An earlier US study used a series of self-report questions about specific management strategies linked to particular scenarios (e.g., in responses to appropriate and inappropriate social behavior) (Rosen et al., 1990). From this small elementary school sample ($n = 137$ teachers), they identified "praise or compliment" as the most common response to appropriate social behavior and "private reprimand" for inappropriate social behavior (Rosen et al., 1990). They also found that some, but not all, practices decreased as a function of grade level taught (e.g., "giving happy face, star, or other symbolic reward") (Rosen et al., 1990).

In addition to studies that employ self-report instruments, there are a few that have obtained direct observational data from classrooms. This includes another US elementary school study (kindergarten to grade five) of 317 teachers which found that some practices decreased with grade level, while others increased (Reddy et al., 2013). For example, praise statements were more commonly used by teachers of lower grades, while more concept summaries were used for older grades (Reddy et al., 2013).

Another US observational study, in kindergarten to grade five classes ($n = 55$ teachers), used a modified version of the Student Behavior Teacher Response system (Owens et al., 2018). These authors found low rates of recommended responses to challenging behaviors and that this pattern was relatively stable across the grade levels considered (Owens et al., 2018). However, there was some trend toward lower rates of use of praise statements with increasing grade (Owens et al., 2018).

Another earlier study used observational measures to examine variation in teacher verbal reinforcement across grades (ranging from 1 to 12) using the Teacher Approval and Disapproval Observation Record (White, 1975). From observations of 104 teachers, they identified a general pattern of a reduction in the frequency of overall approvals and disapprovals with increasing grade (White, 1975). They also found that the rate of disapprovals was more common than approvals above grade two (White, 1975). This was the only study we were able to identify that considered the full range of grades.

In addition to the limited number of studies including a full range of grades to examine classroom management variation, there may be limitations in the representativeness of the teacher samples used in several studies. Given variation across schools and school districts on potentially relevant

teacher characteristics, non-representative samples may not be generalizable. For example, there is evidence of variability between schools and school districts on teacher variables such as experience (Goldhaber, Lavery, & Theobald, 2015). Representativeness of teacher samples in studies may be particularly important if the intent is to draw cross-school implications (e.g., for preservice training) versus an aim to primarily inform the participating schools in a given study.

Given the lack of studies that cover a full range of grades using a consistent measurement to index classroom management and the importance of examining population representative samples, the key objectives of this study were to determine (1) the frequency of reported use of a range of classroom management and behavioral health strategies in a large representative sample of teachers and (2) whether the frequency of endorsement of these practices decreased as a function of grade level taught. The latter was hypothesized given the suggestive evidence of this trend for PBS items in the truncated range of grades considered to date.

Methods

General

This is a secondary analysis study of data obtained from the 2014 School Mental Health Survey (SMHS), a companion study to the 2014 Ontario Child Health Study (Boyle et al., 2019). The SMHS is a multi-level cross-sectional school-based survey of 31,124 students, 3373 teachers, and 206 principals from 248 schools in Ontario, Canada.

Sample

A complex sampling design was employed for the SMHS. The same geographic areas selected for the companion study (the 2014 Ontario Child Health Study [OCHS]) were used to maximize the probability of having students in both studies. The OCHS sampling used urban/rural strata and median family income strata (low, medium, high) to facilitate analysis by socioeconomic status and location (Boyle et al., 2019). Further sampling adjustments were employed to ensure sufficient samples of schools in each of the median family income strata and elementary and secondary schools. In addition, schools had to meet the following inclusion criteria: (1) elementary schools had to have grade 6–8 students and (2) schools had to meet a minimum school size (150 students/school for junior kindergarten to grade 8 schools; 50 students/school for all others). "Junior" kindergarten is schooling provided for the age group 1 year prior to standard kindergarten (which is called "senior" kindergarten in Ontario) and would be equivalent to preschool or prekindergarten in other jurisdictions.

A total of 248 of 359 selected schools participated (69%). Secondary schools and public schools were less likely to participate and participating schools had, on average, slightly lower school enrollment. Schools did not differ on any socioeconomic and demographic characteristics, or provincial academic achievement indicators. Among participating schools, 72% were elementary and 28% secondary schools; 96% were English and 4% French schools; and 66% were part of public and 34% separate school boards (e.g., Catholic).

This specific study only used data derived from the teacher component. All teachers in selected elementary schools and three randomly selected teachers/grade in selected secondary schools were invited to participate. A total of 3373 JK to grade 12 teachers participated in the survey, which represented a response rate of 71.2% of eligible teachers.

Procedures

Schools were given the option for teachers to complete the anonymous survey as a paper-and-pencil version (and return it in a prepaid self-addressed envelope or with the school return package) or online (given an URL to complete the survey through the Snap Surveys WebHost service). The online version was used by 67.7%, while 32.3% used the paper-and-pencil version.

Measures

Grade Level Taught

Teachers were asked to indicate grade levels currently taught, with all options available between JK to grade 12. For analysis purposes, responses were collapsed into five categories: junior/senior kindergarten (JK/SK), grade 1–3, 4–6, 7–9, and 10–12. Responses not fitting exclusively in these categories were dropped (e.g., grade 3/4).

Positive Behavior Supports Questionnaire (PBSQ)

Teachers were asked eight items that described aspects of positive behavior support. The items were drawn from an earlier version of the Effective Behavior Support Survey (Kincaid et al., 2010; Sugai, et al., 2005). For use in the SMHS, teachers were asked to "Please indicate how often the following features are in place in this classroom." (The eight items are reproduced in Table 2.) Each item was presented with five response options: "not at all," "rarely," "sometimes," "often," or "always." Respondents not completing all eight items were dropped for PBSQ item analysis.

Evidence-Informed Behavior Health Questionnaire (EIBHQ)

All teachers were also asked eight items that described aspects of evidence-informed child behavioral health strategies. The items were drawn from the Knowledge of Evidence Based Services Questionnaire (Stumpf, Higa-McMillan, & Chorpita, 2009). The rationale for including this additional instrument was to draw upon evidence-informed strategies from the child mental health field (outside of schools) to supplement examination of teachers' endorsement of day-to-day practices in their classrooms. Some of the items in this instrument include cognitive informed strategies (e.g., problem solving), in addition to some overlap with PBS items. For use in the SMHS, teachers were asked "During the past 3 months, how often have you used the following strategies with students in this classroom." (The eight items are reproduced in Table 3.) Each item was presented with five response options: "never," "once or twice," "weekly," "2 or 3 times a week," or "daily." Respondents not completing all eight items were dropped for EIBHQ item analysis.

Analysis

First, the frequency distributions of classroom characteristics of teacher respondents with grade information and complete behavioral questionnaire data were compared with those missing these data. For this analysis, statistical significance was set at $p < 0.05$. Second, frequency distributions of responses for each practice item were determined for each grade grouping and associations between grade grouping and frequency of endorsement of practice items were assessed using a nonparametric trend test (npTrend) taking into account the ordinal nature of the data. Level for statistical significance for this analysis was set at the more conservative $p < 0.003$ using the Bonferroni correction: $\alpha = 0.05/16$ tests. All statistical analyses were performed using Stata (version 14.0, StataCorp, College Station, Texas, USA).

Ethics

The SMHS was approved by the Hamilton Integrated Research Ethics Board.

Results

Data were available from 3004 teachers for the PBSQ item analysis. Those with missing data were more likely to be teachers of (1) grades 10–12, (2) special education classrooms, (3) classrooms with between 21 and 25 students, and (4) schools in rural areas (Table 1). Data were available from 2801 teachers for the EIBHQ item analysis, with those teachers with missing data more likely to (1) teach special education, (2) be in classrooms with between 21 and 25 students, and (3) be in a school in a rural area. The vast majority of the samples were composed of teachers in urban settings instructing in general education classrooms. Teachers without a grade level classification were more likely to teach special education classes, likely given the tendency for larger grade ranges of students within specialized classrooms.

Overall, "Expected student behaviors and routines are taught directly" (#1) was the PBSQ item most frequently endorsed as "always" employed (Table 2). The least frequently reported PBSQ item was "Rewards are varied to maintain student interest" (#8). Response patterns were highly skewed to frequent endorsement, i.e., very few endorsed "not at all" or "rarely." The frequency of endorsement of each of the eight practices fell significantly as a function of increasing grade level (all $p < 0.001$). "Expected

Table 1 Frequency distribution of classroom characteristics for different samples

Characteristics	Full sample ($n = 3373$) % (n)	PBSQ sample[a] ($n = 3004$) % (n)	EIBHQ sample[b] ($n = 2801$) % (n)
Grade level			
JK–SK	12.5 (421)	13.7 (413)	13.7 (383)
1–3	24.1 (812)	26.7 (801)	26.6 (746)
4–6	20.1 (687)	22.5 (676)	22.2 (622)
7–9	21.7 (732)	23.9 (718)	24.2 (679)
10–12	12.3 (416)	13.2 (396)[c]	13.3 (371)
Missing	9.0 (305)	0.0 (0)	0.0 (0)
Classroom type			
General	93.1 (3139)	96.2 (2889)	96.2 (2694)
Special education	2.6 (88)	1.3 (39)[d]	1.4 (38)[d]
Other	3.1 (105)	2.4 (72)	2.4 (66)
Missing	1.2 (41)	0.1 (4)	0.1 (3)
Classroom size			
1–15	1.8 (60)	1.3 (40)	1.3 (37)
16–20	25.0 (844)	25.9 (777)	25.8 (722)
21–25	32.8 (1108)	32.9 (987)[e]	32.6 (912)[e]
26–30	30.9 (1042)	32.5 (975)	32.7 (915)
31 or more	4.9 (164)	4.8 (144)	4.9 (137)
Missing	4.6 (155)	2.7 (81)	2.8 (78)
School location			
Urban	89.5 (3018)	89.9 (2701)	90.1 (2524)
Rural	10.5 (355)	10.1 (303)[f]	9.9 (277)[g]

[a]*PBSQ* positive behavior support questionnaire

[b]*EIBHQ* evidence-informed behavior health questionnaire

[c]More missing for grade 10–12 ($p < 0.005$)

[d]More missing for special education ($p < 0.001$)

[e]More missing for classroom size 21–25 students ($p < 0.005$)

[f]More missing for rural location ($p < 0.05$)

[g]More missing for rural location ($p < 0.01$)

Table 2 Summary of the extent of teacher endorsement of positive behavior support questionnaire (PBSQ) items by grade level taught

PBSQ items	Frequency	Total $n=3004$ (%)	JK/SK $n=383$ (%)	G1–3 $n=746$ (%)	G4–6 $n=622$ (%)	G7–9 $n=679$ (%)	G10–12 $n=371$ (%)	Trend test[a]
1. Expected student behaviors and routines are taught directly	Not at all	0.2	0.0	0.0	0.1	0.3	1.0	$z=-14.69$***
	Rarely	0.6	0.0	0.1	0.4	0.6	2.5	
	Sometimes	5.4	1.2	1.6	3.4	8.5	14.9	
	Often	33.3	25.2	27.7	33.0	40.4	40.9	
	Always	60.5	73.6	70.5	63.0	50.3	40.7	
2. Problem behaviors (failure to meet expected student behaviors) are defined clearly	Not at all	0.1	0.0	0.0	0.1	0.1	0.0	z=−8.45***
	Rarely	0.5	0.0	0.0	0.0	0.7	2.5	
	Sometimes	5.1	3.1	3.7	4.3	6.7	8.1	
	Often	38.7	33.4	35.2	36.8	44.0	44.9	
	Always	55.7	63.4	61.0	58.7	48.5	44.4	
3. Expected student behaviors are acknowledged regularly (positively reinforced)	Not at all	0.2	0.0	0.0	0.1	0.3	0.8	$z=-13.95$***
	Rarely	0.1	0.0	0.0	0.0	0.3	0.5	
	Sometimes	5.1	1.2	1.4	3.1	8.4	13.9	
	Often	41.5	27.6	38.0	44.2	47.9	47.2	
	Always	53.1	71.2	60.7	52.5	43.2	37.6	
4. Consequences for problem behaviors are defined clearly	Not at all	0.2	0.0	0.0	0.3	0.6	0.0	$z=-9.68$***
	Rarely	1.1	0.0	0.6	0.0	1.7	4.0	
	Sometimes	10.8	7.7	6.2	10.9	14.2	16.7	
	Often	38.8	32.2	40.1	35.9	43.5	39.6	
	Always	49.1	60.0	53.1	52.8	40.1	39.6	
5. Problem behaviors receive consistent consequences	Not at all	0.3	0.2	0.1	0.3	0.4	0.8	$z=-7.67$***
	Rarely	2.0	1.2	0.6	1.3	3.2	4.8	
	Sometimes	11.8	9.7	9.4	11.4	13.8	15.9	
	Often	43.0	35.1	44.2	43.6	46.8	40.9	
	Always	42.8	53.8	45.7	43.3	35.8	37.6	
6. Rewards are linked to expectations and rules	Not at all	1.9	1.0	0.7	1.0	3.1	4.3	$z=-12.48$***
	Rarely	2.8	1.2	1.4	1.9	4.6	5.8	
	Sometimes	14.2	12.6	9.0	9.9	18.9	25.3	
	Often	40.7	34.6	40.2	43.6	42.9	39.1	
	Always	40.4	50.6	48.7	43.5	30.5	25.5	
7. A variety of methods are used to reward students	Not at all	1.2	0.5	0.5	0.4	2.1	2.8	$z=-14.17$***
	Rarely	2.9	0.7	1.4	1.8	4.2	7.6	
	Sometimes	15.5	8.7	10.0	15.2	21.6	23.2	
	Often	41.4	38.0	40.1	39.9	45.5	42.9	
	Always	39.0	52.1	48.1	42.6	26.6	23.5	
8. Rewards are varied to maintain student interest	Not at all	2.0	1.0	1.1	1.2	2.8	4.5	$z=-11.77$***
	Rarely	4.7	3.1	2.0	3.1	7.1	9.8	
	Sometimes	22.8	17.4	17.4	21.7	28.4	31.1	
	Often	40.0	39.5	43.7	38.8	40.3	34.8	
	Always	30.6	39.0	35.8	35.2	21.4	19.7	

[a] z values for trend analysis examining each item by increasing grade levels

***$p<0.001$

student behaviors are acknowledged regularly (positively reinforced)" (#3) was the item that had the greatest percentage drop across grades at the "always" frequency level, i.e., from 71.2% reported by kindergarten teachers to 37.6% reported by grade 10–12 teachers. The smallest drop across grades at the "always" levels was for the variable "problem behaviors receive consistent consequences" (#5).

The majority of teachers reported "daily" employing the EIBHQ item "Provided social rewards, such as praise, encouragement, and affection, to promote desired behaviors"

Table 3 Summary of the extent of teacher endorsement of evidence-informed behavior health questionnaire (EIBHQ) items by grade level taught

EIBHQ items	Frequency	Total $n=2801$ (%)	JK/SK $n=383$ (%)	G1–3 $n=746$ (%)	G4–6 $n=622$ (%)	G7–9 $n=679$ (%)	G10–12 $n=371$ (%)	Trend test[a]
1. Provided social rewards, such as praise, encouragement, and affection, to promote desired behaviors	Never	0.9	0.0	0.0	0.6	1.6	3.0	$z=-19.67$***
	1–2 times	3.9	0.8	0.4	2.6	6.2	12.1	
	Weekly	11.5	3.7	5.4	11.1	16.9	22.9	
	2–3×/week	12.5	4.4	7.4	10.1	19.3	22.9	
	Daily	71.1	91.1	86.9	75.6	56.0	39.1	
2. Administered rewards and/or praise to reinforce the student's behavior	Never	3.0	0.5	0.4	1.6	4.9	10.0	$z=-22.46$***
	1–2 times	11.7	2.6	4.0	9.5	21.4	22.6	
	Weekly	21.2	9.1	16.2	22.5	27.1	31.0	
	2–3×/week	18.4	15.1	16.8	19.9	20.8	18.1	
	Daily	45.6	72.6	62.6	46.5	25.9	18.3	
3. Modeled a desired behavior to promote the students imitation and subsequent performance of that behavior	Never	2.8	0.0	0.5	2.1	4.1	9.2	$z=-9.55$***
	1–2 times	13.2	5.5	11.9	14.3	15.6	17.8	
	Weekly	21.7	14.9	22.0	23.8	25.0	18.3	
	2–3×/week	19.2	20.1	21.7	19.6	19.0	12.9	
	Daily	43.1	59.5	43.8	40.2	36.2	41.8	
4. Selectively ignored mildly inappropriate behaviors and attended to alternative behaviors	Never	4.9	2.9	3.2	5.1	5.9	8.1	$z=-11.54$***
	1–2 times	16.3	10.2	13.9	16.6	18.0	24.0	
	Weekly	18.6	12.0	17.2	15.6	22.1	27.2	
	2–3×/week	20.6	22.2	14.7	23.5	23.6	20.2	
	Daily	39.6	52.7	50.9	39.2	30.5	20.5	
5. Taught the student social skills with the goal of improving interpersonal functioning	Never	4.5	0.3	1.5	1.8	5.3	18.3	$z=-21.09$***
	1–2 times	13.7	3.4	8.3	11.4	20.0	27.5	
	Weekly	24.3	11.7	22.5	27.2	31.5	23.2	
	2–3×/week	25.0	23.2	27.2	28.1	24.7	17.3	
	Daily	32.5	61.4	40.5	31.5	18.4	13.7	
6. Practiced specific activities with the intention of building skills	Never	2.8	0.3	1.7	2.3	3.7	7.0	$z=-5.75$***
	1–2 times	14.0	7.0	13.8	15.8	16.3	14.0	
	Weekly	26.7	20.4	31.0	30.1	23.9	24.3	
	2–3×/week	27.0	27.4	25.9	26.2	29.9	24.5	
	Daily	29.6	44.9	27.6	25.7	26.2	30.2	
7. Provided tangible rewards, such as tokens, points, and charts, as reinforcement for desired behaviors	Never	28.0	15.7	11.0	19.1	44.9	58.5	$z=-22.80$***
	1–2 times	17.7	15.9	11.5	16.2	23.3	24.5	
	Weekly	14.9	14.4	18.4	15.9	13.5	9.2	
	2–3×/week	10.2	14.6	13.7	10.6	6.8	4.0	
	Daily	29.2	39.4	45.4	38.1	11.5	3.8	
8. Taught the student to solve problems by outlining steps, such as identifying the problem, generating multiple solutions, and selecting the best alternative	Never	3.8	1.0	1.3	2.6	5.4	10.5	$z=-13.79$***
	1–2 times	21.2	6.8	17.4	21.7	29.6	27.5	
	Weekly	24.8	17.2	25.6	30.2	23.9	24.0	
	2–3×/week	25.3	29.5	28.7	25.2	23.1	18.6	
	Daily	24.8	45.4	26.9	20.3	18.0	19.4	

[a] z values for trend analysis examining each item by increasing grade levels

***$p<0.001$

(#1) (Table 3). The item with the lowest percentage of teachers reporting daily use was: "Taught the student to solve problems by outlining steps, such as identifying the problem, generating multiple solutions, and selecting the best alternative" (#8). The frequency of endorsement of each of the eight practices fell significantly as a function of increasing grade level group (all $p<0.001$). "Administered rewards and/or praise to reinforce the student's behavior" (#2) was the item that demonstrated the largest percentage drop across the lowest to highest grade level groups at the daily frequency level,

dropping from 72.6% for kindergarten teachers to 18.3% for grade 10–12 teachers. The smallest drop at this level was for the variable "practiced specific activities with the intention of building skills" (#6).

Discussion

This study found significant decline in teacher reported use of classroom management and behavioral health strategies with increasing grade level in a large representative sample across junior kindergarten to grade 12. Despite this general decline across grades, some potentially important variations are noted across the two instruments. While all the PBSQ items were endorsed less frequently with increasing grade, five of the eight items were still endorsed at the "often" or "always" levels by > 75% of high school teachers (grade 10–12), and < 5% of this same subgroup reported using any single PBSQ item at the "not at all" level. This may imply that the majority of teachers at higher grades perceive at least some usefulness of PBS practices or, perhaps, that PBS practices should be endorsed as used. In contrast, > 5% of the high school group reported "never" using seven of the eight EIBHQ practices, including 58.5% indicating they never "provided tangible rewards, such as tokens, points and charts, as reinforcement for desired behaviors." However, caution is needed with these cross-instrument comparisons given item wording differences and different response metrics.

Direct comparison of frequencies with other self-report studies is not possible given the different item content and response options used across studies. Nevertheless, it may be informative to consider some patterns. For example, one of the US studies previously referenced found that a high percentage of teachers endorsed regular promotion of classroom rules and use of praise, while fewer endorsed routine use of more explicit behavior modification strategies (Hart et al., 2017). Similar patterns are seen in this study such that two of the most endorsed practices on the PBSQ related to promotion of classroom rules (#1 and 2, i.e., "expected student behaviors and routines are taught directly"; "problem behaviors are defined clearly"), while practices related to explicit use of rewards for reinforcement were endorsed less frequently. On further inspection, however, it is noted that there is substantial variation across different items related to use of rewards. For example, whereas general concepts such as captured by the items "expected student behaviors are acknowledged regularly" (PBSQ, #3) and "provided social rewards … to promote desired behaviors" (EIBHQ, #1) were frequently endorsed, more specific behavioral techniques such as "rewards are varied…" (PBSQ, #8) and "provided tangible rewards…" (EIBHQ, #7) were some of the least frequently endorsed practices. It is possible that teachers may be more apt to endorse drawing from behavioral approaches in a general way but not frequently employing specific behavioral techniques. However, it is also possible that some of this variability may be a function of wording for some of the items, particularly for the longer and more complex EIBHQ items. For example, item #4 for the EIBHQ includes a double-barreled question asking simultaneously about ignoring behavior and attending to alternative behavior. In addition, some items include a frequency indicator in the strategy, which could complicate the decision about choosing a frequency response option. For example, item #5 on the PBSQ requires rating the frequency of applying *consistent* consequences. However, it is not obvious that response patterns to this complexity would create systematic differences across grades.

The finding that reported practices decreased as a function of increasing grade level is similar to some previous studies (Hart et al., 2017; Reddy et al., 2013; White, 1975). However, while not completely comparable, the Hart et al. (2017) study found that planned ignoring was one of the few practices that did not show a reduction across the grade levels considered, whereas in this study, a similar item, "Selectively ignored mildly inappropriate behaviors and attended to alternative behaviors" (EIBHQ, #4), significantly dropped by grade level. The Rosen et al. (1990) study found most practices did not vary across grade levels considered, in contrast, all considered items in this study decreased significantly. It should be emphasized that the previous referenced US studies mostly focused on elementary grades and therefore did not have the opportunity to examine variation across a full range of grades. This study therefore extends information on teacher practice patterns across all grades and within a large representative sample.

Previous authors have proposed ideas to explain the reduction in at least some practices as a function of grade level. For example, Brophy & Good (1986) argued that students at younger grades need more instruction in routines and procedures, although these same authors proposed that there is still a need for teachers to express clear expectations and accountability in higher grades. These authors also identified that practices such as giving praise and symbolic rewards are expected at lower grades, but noted that demonstrating interest and respect for students' contributions are still required for older students (Brophy & Good, 1986). Owens et al. (2018) suggested that the reduction in use of some strategies by grade may be a function of younger children still in the process of learning social and behavioral control and teachers for these students may use strategies such as praise more frequently, and that for older grades praise may be reserved for higher standards of behavior and potentially used more sparingly to enhance potency. Perhaps this explains why the following two items demonstrated the largest drop across grades in this study: "Expected

student behaviors are acknowledged regularly (positively reinforced)" (PBSQ, #3) and "Administered rewards and/or praise to reinforce the student's behavior" (EIBHQ, #2). However, White (1975) raised concerns that older students may not receive sufficient feedback and that the feedback they do receive may have a greater ratio favoring negative versus positive feedback (at least for managerial responses). The more limited drop across grades for the variable "problem behaviors receive consistent consequences" (PBSQ, #5) may support the notion that the ratio of negative feedback may increase across grade levels.

It is unknown whether the decline in use of these reported teacher strategies with increasing grade has an adverse impact on student and classroom behaviors. However, in one large high school study, explanation or modeling of expected behavior was not related to classroom level of behavior, with the authors speculating that "teachers' explicit explanation of expectations at the high school level may not result in noticeable behavior changes because students are typically well versed in the social milieu of the classroom by this time" (p. 145) (Pas et al., 2015). Determining the relationship between these teacher strategies and student and classroom behaviors as a function of grade would be an important next step. If these strategies are positively related to student and classroom behaviors at older grades, there may need to be strategic targeting of teachers of higher grades to increase the use of these strategies. Alternatively, if such strategies have diminishing positive impact with increasing grade level, then the finding of decreased use of these strategies across grades may be an appropriate direction for such practices. Furthermore, there is a need to explore patterns and impact of use of strategies across grades that are thought more salient with increasing grade such as providing opportunities for more student autonomy. This variable along with other elements derived from self-determination theory (Núñez & León, 2015) may be one source of items to complement the more detailed examination of PBS strategies to date.

Limitations

There are several limitations to this study. The first group of limitations relate to the instruments themselves. This includes the limited range of teacher strategies considered in this study which may have disproportionately emphasized items most relevant to younger students, particular items within the PBSQ measure. One large observational study of high school classrooms identified an association between a measure of teachers providing more opportunities to respond (OTRs) and classrooms where students more consistently met behavioral expectations (Pas et al., 2015); however, this construct was not captured in this study. This is not to suggest that OTRs are not also important at younger grades, but potentially they attain greater importance with student age than other strategies. Providing opportunities for autonomy, another variable not captured in this study, may be particularly salient for older students, at least for student engagement (Hafen et al., 2012). Clarity of wording for some items, as identified earlier, is a second instrument concern. A third instrument issue is related to the lack of reliability and validity data for the set of items used in this study. Although the items are drawn from previously used instruments that capture important PBS and behavioral health strategies, explicit reliability and validity data are not available for these original instruments. However, the items are presented individually (as opposed to scales to capture broader constructs) and do have at least some face validity. In addition, there is some evidence of internal consistency, construct validity, and criterion validity for the Effective Behavior Support Self-Assessment Survey (Solomon, Tobin, & Schutte, 2015), which has several items in its Classroom Systems section that overlap with the PBS items used in the PBSQ in this study. There is also some psychometric support (test–retest reliability and discriminative validity) for the Knowledge of Evidence Based Services Questionnaire (Stumpf et al., 2009) which was the source of items for the EIBHQ. Nevertheless, additional psychometric evaluation should be considered prior to more extensive use of this set of items.

A second area of concern is reliance on self-report measures in general without corroborating observational measures. Reliance on self-report measures may put this study at risk of social desirability bias such that the frequency of strategy use may be reported at higher rates than are actually occurring. Though not directly comparable, some observational studies suggest that some evidence-informed practices are not frequently employed. For example, one observational study found that recommended responses to challenging behaviors were relatively low (i.e., $<50\%$) across grades considered (kindergarten to grade five) (Owens et al., 2018). However, this may actually be consistent with a finding in this study such that the PBSQ item #8, "Rewards are varied to maintain student interest" was reported as "always" used by less than 40% of teachers, even at the youngest grade levels. There are, unfortunately, no observational data available from this current study that would allow the type of comparisons reported for the self-report and observational measures for the Classroom Strategies Scales (Reddy, Dudek, Fabiano, & Peters, 2015; Reddy, Dudek, Rualo, & Fabiano, 2016).

As a key aim of the study was to examine relative variation of responses as a function of grade, the social desirability bias may not impact on the comparison analysis if the extent of social desirability is evenly distributed by grade level. It is possible, however, that if some items are thought more relevant to younger grades, risk of social desirability may not be evenly distributed by grade. This concern may

be partially countered by the finding that all items dropped in frequency by grade level, even ones that might be considered on face value to be salient across grades (e.g., teaching problem solving steps).

Another limitation of our study was the lack of access to teacher characteristics for the full sample, other than grade level, that may have additionally explained practice variation. Teacher characteristics that may be important to examine in future studies include level of teacher training and years of teacher experience (Ritter & Hancock, 2007; Stormont, Reinke, & Herman, 2018; Ünal & Ünal, 2012). Finally, while self-report survey-type questions may be able to reasonably estimate frequency of use of different classroom strategies, they may not be as good at capturing quality of the given practices (Desimone et al., 2010).

Conclusions

Findings from this large representative sample with full grade range may fill information gaps on basic classroom practices [e.g., extent of use of praise in the classroom (Jenkins et al., 2015)]. A key next step should be examining the relationship between these reported practices and student behaviors across grades, along with the inclusion of a broader range of items that may be particularly salient with increased grade. Additional psychometric evaluation of the measurement instruments used in this study is also warranted, as well as examination of variation of scores as a function of teacher and school characteristics. Finally, a comparison between these items and corresponding observational measures would be informative. This additional work will help determine whether this set of items may be useful in examining variation in other settings and as an outcome tool for examining larger-scale interventions which may benefit from the inclusion of easily completed, low-cost measures.

Funding The School Mental Health Surveys (SMHS) study was supported by the Canadian Institutes of Health Research (Funding Reference No. MOP-136939). Dr. Georgiades holds the David R. (Dan) Offord Chair in Child studies. Dr. McLennan was supported by a Research Chair in Child and Adolescent Psychiatry at the Children's Hospital of Eastern Ontario—Research Institute.

Compliance with Ethical Standards

Conflict of interest All authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional ethics review board and with the 1964 Helsinki Declaration and its later amendments.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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