



Research Brief

August 2008

Applied Research Unit

A New Measure of Staff, Parent, and Student Perceptions About the Degree to Which Schools Are Safe, Drug-free, and Conducive to Learning

Vasuki Rethinam, Ph.D. and Clare Von Secker, Ph.D.¹

Executive Summary

This research brief explores the use of multiple items from the Surveys of School Environment (SSE) to provide a more comprehensive measure of the strategic plan milestone that all students will be educated in learning environments that are safe, drug-free, and conducive to learning. Currently, this milestone is monitored using one item from each of the staff, parent, and student SSE administered in elementary, middle, and high school.

Factor analyses of these multiple items revealed a single robust construct, which is a more reliable measure than a single item measure for obtaining staff, parent, and student perceptions of school learning environments.

Three recommendations are:

1. Use a multi-item construct instead of a single item to measure school learning environment.
2. Integrate action plans for addressing the concerns revealed by staff and students through this analysis.
3. Conduct additional research to explore the extent to which concerns about the learning environment are associated with school-level differences in academic performance.

Background

One milestone of the Montgomery County Public Schools (MCPS) strategic plan, *Our Call to Action: Pursuit of Excellence* (MCPS, 2006) is that all students will be educated in learning environments that are safe, drug-free, and conducive to learning. Currently, this milestone is monitored using one item from each of the staff, parent, and student SSE administered in elementary, middle, and high school. Although a single item is a valid measure, one item does not measure the milestone as reliably as a collection of correlated items to capture different facets of school safety, drug use, and conduciveness

to learning (Cureton & D'Agostino, 1983). This research brief explores the use of multiple items from the SSE to provide a more comprehensive measure of this strategic plan milestone.

Methodology

The current measure of perceptions about whether schools are safe, drug-free, and conducive to learning uses these items: a) "This school is a safe place to work" (staff); b) "My child feels safe at school" (parents); and c) "I feel safe at school" (students). This analysis examined the explanatory potential of additional items from the SSE of staff, parents, and students (Table A1). Items were eligible for consideration in a factor analysis if they had correlations of 0.2 or higher with the item used as the current measure (Table A2).

Two items from the elementary school student SSE, namely a) "In this school, drug use is not a problem," and b) "In this school, alcohol use is not a problem," had correlations of less than 0.2 with the current measure. These two items were removed from the factor analysis of the elementary school student data because they did not help to explain differences in students' perceptions of their learning environments.

The SSE uses a 4-point Likert scale (Strongly Disagree to Strongly Agree) to capture respondents' perceptions of the learning environment. To facilitate interpretation of the multi-item measure, the item responses were coded with values ranging from -2 (Strongly Disagree) to +2 (Strongly Agree). Missing data were assigned values of zero.

Nine separate confirmatory factor analyses were used to calculate weighted composite measures of elementary, middle, and high school staff, parent, and student perceptions about the learning environments of their schools. Each factor analysis yielded a composite score (factor) that incorporated multiple items. Factor score values greater than zero were associated with positive perceptions of the learning environment.

Although the survey items included in the factor analysis were slightly different across the three groups (e.g., staff, parents, and students), the factor structures were quite similar. The findings from 2006–2007 SSE were validated using data from 2005–2006 SSE for staff, parents, and students.

Cronbach’s alpha, a statistical measure of how well a set of items are interrelated, was used to assess the reliability of the staff, parent, and student factors. Factors are considered reliable when the Cronbach’s alpha values are 0.7 or higher (Kline, 1999). The Cronbach’s alpha values were between 0.72 and 0.89 for factors produced in each school year (Table A3).

Results

In 2006–2007, more than 75% elementary, middle, and high school staff, parents and students expressed positive perceptions about school safety when one item was used to measure the milestone. A less positive picture emerged when multiple items were used to measure whether schools are safe, drug-free, and conducive to learning. The patterns of differences in perceptions reported below for 2006–2007 also were observed in 2005–2006 (Table A4).

2006–2007 Elementary School SSE

More than 90% of elementary school (ES) staff and parents agreed that schools were safe, drug-free, and conducive to learning regardless of whether the milestone was measured using a single item or a multi-item factor (Figure 1). ES students’ perceptions of their learning environments differed by nearly 18 percentage points when the milestone was measured using one item (85.7%) or a multi-item factor (67.7%).

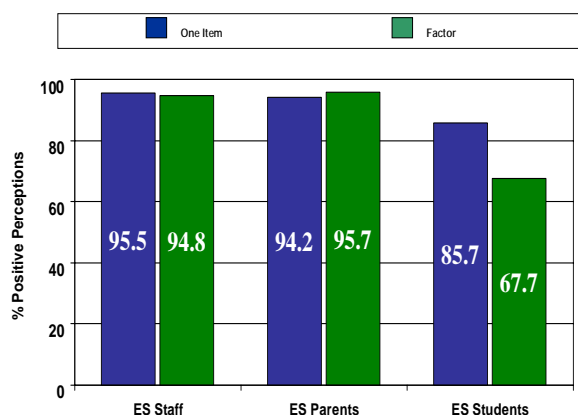


Figure 1. Perceptions of elementary school (ES) staff, parents, and students about their learning environments by type of satisfaction measure (one item versus factor).

Although 85.7% of ES students agreed that they felt safe personally at school, only 70.6% agreed that their things were safe (Table 1). About one half of ES students (54.8%) agreed that other students in their schools were well-behaved and that they could work in the classroom without being bothered by other students (55.4%). Only about one third (35.3%) of ES students agreed that students teasing other students in a hurtful way was not a problem in their school.

Table 1
Percentage of Elementary School Students Who Agree That Their Schools are Safe, Drug-Free, and Conducive to Learning by Factor Item

| SSE elementary school student item | % Positive perception |
|--|-----------------------|
| I feel safe at school. | 85.7 |
| My things are safe in this school. | 70.6 |
| Students in this school are well-behaved. | 54.8 |
| I can work in my classroom without being bothered by other students. | 55.4 |
| Students teasing other students in a hurtful way is <u>not</u> a problem in this school. | 35.3 |

Note. The factor is a weighted composite of these items. Items about drug and alcohol use are not included in the factor used to evaluate elementary student perceptions.

2006–2007 Middle School SSE

About 90% of middle school (MS) parents agreed that schools were safe, drug-free, and conducive to learning regardless of whether the milestone was measured using a single item or a multi-item factor (Figure 2). Fewer MS staff (-16.3 percentage points) and students (-19.4 percentage points) reported positive perceptions of their learning environments when the milestone was measured using a multi-item factor rather than one item.

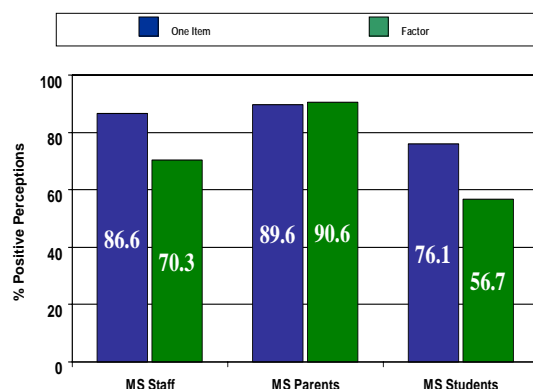


Figure 2. Perceptions of middle school (MS) staff, parents, and students about their learning environments by type of satisfaction measure (one item versus factor).

Middle school staff. Although 86.6% of MS staff agreed that their schools were safe places to work, only 72.8% agreed that their belongings were safe at school (Table 2). About one half of MS staff (56.6%) agreed that other students in their schools behave in an orderly manner and that school staff members consistently enforce school rules (52.2%).

Table 2
Percentage of Middle School Staff Who Agree That Their Schools are Safe, Drug-Free, and Conducive to Learning by Factor Item

| SSE middle school staff item | % Positive perception |
|--|-----------------------|
| This school is a safe place to work. | 86.6 |
| My personal belongings are safe in this school. | 72.8 |
| Students in this school behave in an orderly manner. | 56.6 |
| School staff members consistently enforce school rules. | 52.2 |
| Students teasing other students in a hurtful way is <u>not</u> a problem in this school. | 28.9 |
| In this school, student drug use is <u>not</u> a problem. | 68.7 |
| In this school, student alcohol use is <u>not</u> a problem. | 73.7 |

About two thirds of MS staff agreed that drug use (68.7%) and alcohol use (73.7%) were not problems in their schools. Only about one in four staff members (28.9%) agreed that students teasing other students in a hurtful way was not a problem in their schools.

Middle school students. Although 76.1% of MS students agreed that they felt safe personally at school, only 52.7% agreed that their belongings were safe at school (Table 3). About one half of MS students (49.8%) agreed that they could work in the classroom without being bothered by other students.

Table 3
Percentage of Middle School Students Who Agree That Their Schools are Safe, Drug-Free, and Conducive to Learning by Factor Item

| SSE middle school student item | % Positive perception |
|--|-----------------------|
| I feel safe at school. | 76.1 |
| My belongings are safe in this school. | 52.7 |
| Students in this school are well-behaved. | 34.2 |
| I can work in my classroom without being bothered by other students. | 49.8 |
| Students teasing other students in a hurtful way is <u>not</u> a problem in this school. | 33.1 |
| In this school, drug use is <u>not</u> a problem. | 70.0 |
| In this school, alcohol is <u>not</u> a problem. | 74.6 |

About one third of MS students agreed that students in their schools were well-behaved (34.2%) and that students' teasing other students in a hurtful way was not a problem in their school (33.1%). Nearly three fourths of MS students agreed that drug use (70.0%) and alcohol use (74.6%) were not problems in their schools.

2006–2007 High School SSE

About 90% of high school (HS) parents agreed that schools were safe, drug-free, and conducive to learning regardless of whether the milestone was measured using a single item or a multi-item factor (Figure 3). Fewer HS staff (-34.7 percentage points) and students (-28.5 percentage points) reported positive perceptions of their learning environments when the milestone was measured using a multi-item factor rather than one item.

As was observed in MS, the decreases in positive perceptions about school climate among HS staff and students were related to concerns about student behavior and drug and alcohol use. These aspects of the learning environment were not considered when the milestone was measured using a single item.

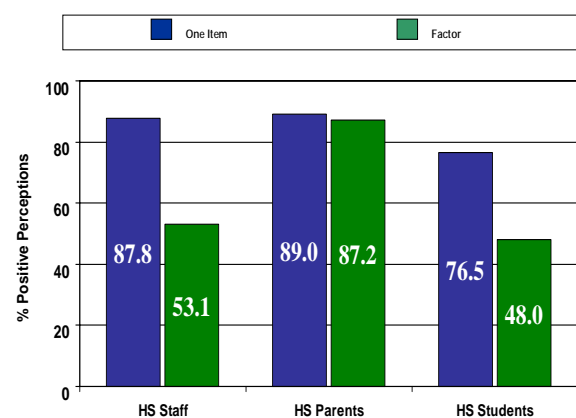


Figure 3. Perceptions of high school (HS) staff, parents, and students about their learning environments by type of satisfaction measure (one item versus factor).

High school staff. Although 87.8% of HS staff agreed that their schools were safe places to work, only 69.3% agreed that their belongings were safe at school (Table 4). About two thirds of HS staff (64.5%) agreed that other students in their schools behave in an orderly manner but less than one half agreed that school staff members consistently enforce school rules (42.7%).

Less than one half of HS staff (42.0%) agreed that students teasing other students in a hurtful way was not a problem in their schools. Only about one fourth

of HS staff agreed that drug use (25.3%) and alcohol use (27.3%) were not problems in their schools.

Table 4
Percentage of High School Staff Who Agree That Their Schools are Safe, Drug-Free, and Conducive to Learning by Factor Item

| SSE high school staff item | % Positive perception |
|--|-----------------------|
| This school is a safe place to work. | 87.8 |
| My personal belongings are safe in this school. | 69.3 |
| Students in this school behave in an orderly manner. | 64.5 |
| School staff members consistently enforce school rules. | 42.7 |
| Students teasing other students in a hurtful way is <u>not</u> a problem in this school. | 42.0 |
| In this school, student drug use is <u>not</u> a problem. | 25.3 |
| In this school, student alcohol use is <u>not</u> a problem. | 27.3 |

High school students. Although 76.5% of HS students agreed that they felt safe personally at school, only 38.8% agreed that their belongings were safe at school (Table 5). Nearly two thirds of HS students (60.5%) agreed that they could work in the classroom without being bothered by other students.

Table 5
Percentage of High School Students Who Agree That Their Schools are Safe, Drug-Free, and Conducive to Learning by Factor Item

| SSE high school student item | % Positive perception |
|--|-----------------------|
| I feel safe at school. | 76.5 |
| My belongings are safe in this school. | 38.8 |
| Students in this school are well-behaved. | 43.9 |
| I can work in my classroom without being bothered by other students. | 60.5 |
| Students teasing other students in a hurtful way is <u>not</u> a problem in this school. | 42.8 |
| In this school, drug use is <u>not</u> a problem. | 43.9 |
| In this school, alcohol is <u>not</u> a problem. | 48.9 |

Less than one half of HS students agreed that students in their schools were well-behaved (43.9%) and that students teasing other students in a hurtful way was not a problem in their school (42.8%). Less than one half of HS students agreed that drug use (43.9%) and alcohol use (48.9%) were not problems in their schools.

Conclusions

Analysis of perceptions of the learning environment obtained using a factor score reveal three opportunities for improvement that were not evident when one item was used to evaluate whether schools were safe, drug-free, and conducive to learning. Those opportunities are to address concerns about a) the safety of personal belongings; b) drug and alcohol use, particularly in high school; and c) student behavior inside and outside the classroom, particularly student behaviors associated with students teasing other students in a hurtful way.

Comparison of perceptions of staff, parents, and students at each level (elementary, middle, and high school) suggests that there are opportunities to increase parent awareness of some of the factors that may challenge schools to be safe, drug-free and conducive to learning. Although MCPS should be encouraged that parents' perceptions of learning environments are overwhelmingly positive, parents' perceptions of their children's schools are not aligned with the perceptions of staff and students.

Recommendations

Consider using a multi-item construct rather than a single item to measure the strategic plan milestone. Elementary, middle, and high school staff, parents and students express high levels of agreement about school safety. However, a multi-item measure of whether schools are not only safe, but also drug-free and conducive to learning, reveals opportunities for improving learning environments at all levels.

Two items, a) "In this school, drug use is not a problem;" and b) "In this school, alcohol use is not a problem," were removed from the factor analysis of the elementary school student data because they did not help to explain differences in students' perceptions of their learning environments. This could be due to the negative wording of the two items. Therefore, the two items should be reworded in the elementary school student survey to increase response rate.

It is recommended that schools integrate action steps into the school improvement program for addressing concerns revealed through this analysis, namely concerns about a) the safety of personal belongings; b) drug and alcohol use; and c) student behavior inside and outside the classroom, particularly student behaviors that may interfere with learning. These action steps should include processes for increasing

parent awareness of concerns raised by staff and students.

Further research is recommended to explore the extent to which concerns about the learning environment are associated with school-level differences in academic performance. Such analysis could provide empirical evidence to support theoretical beliefs about the importance of creating learning environments that are safe, drug-free, and conducive to learning.

References

Cureton, E. E., & D'Agostino, R. B. (1983). *Factor Analysis: An applied approach*. Lawrence Erlbaum Associates, Inc.

Kline, P. (1999). *The handbook of psychological testing* (2nd ed). London: Routledge.

Montgomery County Public Schools. (2006). *Our Call to Action: Pursuit of Excellence*. Rockville, MD: Author.

ⁱ The authors thank Dr. Carol Schatz for her insight on methodology.

THIS PAGE WAS LEFT BLANK INTENTIONALLY

A New Measure of Staff, Parent, and Student Perceptions about the Degree to Which Schools Are Safe, Drug-free, and Conducive to Learning

Appendix

Table A1
Survey of School Environment Items Used to Form a Single Construct for Elementary, Middle, and High School Staff, Parents, and Students

| Items | Staff | Parent | Student |
|---|-------|--------|---------|
| My child feels safe at school. | | • | |
| I feel welcomed at this school. | | • | |
| There is an atmosphere of open communication in my child's school. | | • | |
| This school does a good job getting important school information to parents. | | • | |
| I feel safe in this school. | | | • |
| I can work in my classroom without being bothered by other students. | | | • |
| This school is a safe place to work. | • | | |
| School staff members consistently enforce school rules. | • | | |
| My personal belongings are safe in this school. ⁺ | • | | • |
| Students in this school behave in an orderly manner. | • | | • |
| Students teasing other students in a hurtful way is not a problem in this school. | • | | • |
| In this school, student drug use is not a problem.* | • | • | • |
| In this school, student alcohol use is not a problem.* | • | • | • |

* Item excluded from factor analysis for elementary school student data but included for all other groups.

+ Item reworded as "My things are safe in this school" for elementary school students.

Table A2
Correlation Between Key Item and Other Safe-School Items for the Survey of School Environment

| Survey items used to form composite (Survey of School Environment) | Correlations between key items and other safe-school items | | | | | |
|---|--|------|------|-----------|------|------|
| | 2006–2007 | | | 2005–2006 | | |
| | ES | MS | HS | ES | MS | HS |
| Staff survey items | | | | | | |
| This school is a safe place to work. | | | | | | |
| My personal belongings are safe in this school. | 0.62 | 0.70 | 0.63 | 0.64 | 0.69 | 0.69 |
| Students in this school behave in an orderly manner. | 0.45 | 0.63 | 0.55 | 0.45 | 0.61 | 0.62 |
| School staff members consistently enforce school rules. | 0.40 | 0.43 | 0.41 | 0.41 | 0.42 | 0.39 |
| Students teasing other students in a hurtful way is not a problem in this school. | 0.31 | 0.45 | 0.41 | 0.34 | 0.45 | 0.48 |
| In this school, student drug use is not a problem. | 0.44 | 0.46 | 0.35 | 0.44 | 0.43 | 0.41 |
| In this school, student alcohol use is not a problem. | 0.43 | 0.41 | 0.34 | 0.44 | 0.38 | 0.34 |
| Parent survey items | | | | | | |
| My child feels safe at school. | | | | | | |
| I feel welcomed at this school. | 0.42 | 0.42 | 0.43 | 0.45 | 0.43 | 0.42 |
| There is an atmosphere of open communication in my child's school. | 0.47 | 0.46 | 0.45 | 0.46 | 0.43 | 0.46 |
| This school does a good job getting important school information to parents. | 0.44 | 0.43 | 0.42 | 0.45 | 0.40 | 0.43 |
| In this school, student drug use is not a problem. | 0.32 | 0.41 | 0.38 | 0.31 | 0.37 | 0.42 |
| In this school, student alcohol use is not a problem. | 0.31 | 0.37 | 0.33 | 0.30 | 0.35 | 0.38 |
| Student survey items | | | | | | |
| I feel safe at school. | | | | | | |
| My things/belongings are safe in this school. | 0.47 | 0.55 | 0.48 | 0.47 | 0.57 | 0.52 |
| Students in this school are well-behaved. | 0.41 | 0.46 | 0.48 | 0.38 | 0.46 | 0.51 |
| I can work in my classroom without being bothered by other students. | 0.33 | 0.43 | 0.45 | 0.32 | 0.44 | 0.47 |
| Students teasing other students in a hurtful way is not a problem in this school. | 0.22 | 0.34 | 0.40 | 0.19 | 0.34 | 0.42 |
| In this school, drug use is not a problem. | 0.10 | 0.36 | 0.33 | 0.11 | 0.36 | 0.34 |
| In this school, alcohol is not a problem. | 0.09 | 0.33 | 0.30 | 0.10 | 0.34 | 0.31 |

Note. Correlation is significant at the 0.01 level (2-tailed)

Table A3
Proposed Composite Factor for Measuring Strategic Plan Data Point “Schools that are Safe, Drug-Free, and Conducive to Learning”
for the Survey of School Environment

| Survey items used to form composite (Survey of School Environment) | Composite reliabilities (alpha) and item loadings | | | | | |
|---|--|----------------|----------------|----------------|----------------|----------------|
| | 2006–2007 | | | 2005–2006 | | |
| | ES | MS | HS | ES | MS | HS |
| Staff survey items | $\alpha = .85$ | $\alpha = .89$ | $\alpha = .88$ | $\alpha = .85$ | $\alpha = .89$ | $\alpha = .89$ |
| This school is a safe place to work. | 0.75 | 0.78 | 0.72 | 0.75 | 0.77 | 0.76 |
| My personal belongings are safe in this school. | 0.69 | 0.74 | 0.72 | 0.70 | 0.75 | 0.75 |
| Students in this school behave in an orderly manner. | 0.71 | 0.79 | 0.75 | 0.74 | 0.80 | 0.78 |
| School staff members consistently enforce school rules. | 0.64 | 0.67 | 0.68 | 0.67 | 0.67 | 0.66 |
| Students teasing other students in a hurtful way is not a problem in this school. | 0.63 | 0.75 | 0.73 | 0.65 | 0.73 | 0.77 |
| In this school, student drug use is not a problem. | 0.76 | 0.78 | 0.77 | 0.73 | 0.76 | 0.77 |
| In this school, student alcohol use is not a problem. | 0.75 | 0.74 | 0.75 | 0.73 | 0.71 | 0.73 |
| Parent survey items | $\alpha = .80$ | $\alpha = .82$ | $\alpha = .81$ | $\alpha = .81$ | $\alpha = .82$ | $\alpha = .83$ |
| My child feels safe at school. | 0.70 | 0.70 | 0.70 | 0.69 | 0.68 | 0.70 |
| I feel welcomed at this school. | 0.77 | 0.76 | 0.77 | 0.78 | 0.76 | 0.75 |
| There is an atmosphere of open communication in my child's school. | 0.79 | 0.78 | 0.81 | 0.80 | 0.80 | 0.80 |
| This school does a good job getting important school information to parents. | 0.74 | 0.72 | 0.71 | 0.75 | 0.71 | 0.73 |
| In this school, student drug use is not a problem. | 0.63 | 0.71 | 0.67 | 0.63 | 0.70 | 0.72 |
| In this school, student alcohol use is not a problem. | 0.63 | 0.68 | 0.64 | 0.63 | 0.69 | 0.69 |
| Student survey items | $\alpha = .72$ | $\alpha = .83$ | $\alpha = .85$ | $\alpha = .71$ | $\alpha = .83$ | $\alpha = .85$ |
| I feel safe at school. | 0.71 | 0.71 | 0.67 | 0.70 | 0.71 | 0.70 |
| My things/belongings are safe in this school. | 0.73 | 0.70 | 0.69 | 0.73 | 0.71 | 0.70 |
| Students in this school are well-behaved. | 0.76 | 0.74 | 0.78 | 0.75 | 0.74 | 0.78 |
| I can work in my classroom without being bothered by other students. | 0.70 | 0.70 | 0.71 | 0.70 | 0.71 | 0.71 |
| Students teasing other students in a hurtful way is not a problem in this school. | 0.55 | 0.69 | 0.75 | 0.52 | 0.67 | 0.75 |
| In this school, drug use is not a problem. | | 0.70 | 0.75 | | 0.71 | 0.74 |
| In this school, alcohol is not a problem. | | 0.67 | 0.72 | | 0.68 | 0.70 |

Note. Cronbach’s alpha (α) is a measure of how well a set of items consistently measures a single construct (reliability). The alpha value (α) is the average inter-item correlation (r) adjusted for the number of items used to construct factor [$\alpha = (N \text{ items} * r) / (1 + (N \text{ items} - 1) * r)$].

Table A4
Perception of Safe School, Drug-Free, and Conducive to Learning for the Survey of School Environment

| Items | Percentages of positive perceptions | | | | | |
|---|-------------------------------------|------|------|-----------|------|------|
| | 2006–2007 | | | 2005–2006 | | |
| | ES | MS | HS | ES | MS | HS |
| Staff | | | | | | |
| Composite factor score. | 94.8 | 70.3 | 53.1 | 93.4 | 69.8 | 46.3 |
| This school is a safe place to work. | 95.5 | 86.6 | 87.8 | 95.0 | 87.9 | 81.8 |
| My personal belongings are safe in this school. | 86.5 | 72.8 | 69.3 | 83.8 | 71.9 | 65.0 |
| Students in this school behave in an orderly manner. | 81.0 | 56.6 | 64.5 | 77.0 | 55.9 | 54.4 |
| School staff members consistently enforce school rules. | 81.1 | 52.2 | 42.7 | 77.4 | 53.3 | 38.5 |
| Students teasing other students in a hurtful way is not a problem in this school. | 55.7 | 28.9 | 42.0 | 53.9 | 28.3 | 38.5 |
| In this school, student drug use is not a problem. | 94.7 | 68.7 | 25.3 | 94.7 | 70.0 | 24.4 |
| In this school, student alcohol use is not a problem. | 95.1 | 73.7 | 27.3 | 94.7 | 74.1 | 26.4 |
| Parents | | | | | | |
| Composite factor score. | 95.7 | 90.6 | 87.2 | 95.8 | 90.8 | 84.8 |
| My child feels safe at school. | 94.2 | 89.6 | 89.0 | 94.5 | 86.9 | 86.1 |
| I feel welcomed at this school. | 92.4 | 87.8 | 86.7 | 92.7 | 88.7 | 86.4 |
| There is an atmosphere of open communication in my child's school. | 87.7 | 81.5 | 80.4 | 88.1 | 81.6 | 79.6 |
| This school does a good job getting important school information to parents. | 93.4 | 88.7 | 90.1 | 92.4 | 86.5 | 86.4 |
| In this school, student drug use is not a problem. | 76.2 | 57.8 | 32.8 | 80.5 | 56.8 | 32.2 |
| In this school, student alcohol use is not a problem. | 76.0 | 59.7 | 31.9 | 80.8 | 58.1 | 32.1 |
| Students | | | | | | |
| Composite factor score. | 67.7 | 56.7 | 47.8 | 69.4 | 53.7 | 42.4 |
| I feel safe at school. | 85.7 | 76.1 | 76.5 | 89.4 | 76.7 | 73.9 |
| My things/belongings are safe in this school. | 70.6 | 52.7 | 38.8 | 73.6 | 52.2 | 37.0 |
| Students in this school are well-behaved. | 54.8 | 34.2 | 43.9 | 54.5 | 32.5 | 38.5 |
| I can work in my classroom without being bothered by other students. | 55.4 | 49.8 | 60.5 | 54.2 | 46.8 | 57.3 |
| Students teasing other students in a hurtful way is not a problem in this school. | 35.3 | 33.1 | 42.8 | 34.4 | 29.5 | 38.0 |
| In this school, drug use is not a problem. | 74.2 | 70.0 | 43.9 | 75.0 | 66.8 | 37.9 |
| In this school, alcohol is not a problem. | 74.7 | 74.6 | 48.9 | 75.6 | 71.4 | 43.5 |