ED School Climate Surveys (EDSCLS) Psychometric Benchmarking Technical Report

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1. Introduction

The ED School Climate Surveys (EDSCLS) are a suite of survey instruments developed for schools, districts, and states by the U.S. Department of Education's (ED) National Center for Education Statistics (NCES). Through the EDSCLS, schools nationwide have access to survey instruments and a survey platform that allow for the collection and reporting of school climate data at the local level. The surveys can be used to produce school-, district-, and state-level scores on various indicators of school climate from the perspectives of students, teachers, noninstructional staff and principals, and parents and guardians.

The development of the EDSCLS survey instruments started in 2013 with a review of the existing school climate literature and survey items. A Technical Review Panel (TRP) meeting was held in early 2014 to recommend items to be included in the EDSCLS. Then the EDSCLS draft survey items were created, building on existing items and recommendations from the TRP. In the summer of 2014, cognitive interviews were conducted on the new and revised items in one-on-one settings with 78 individual participants: students, parents, teachers, principals, and noninstructional staff from the District of Columbia, Texas, and California. In addition to cognitive interviews, usability testing of the survey platform was performed with 32 individual participants: students, parents, teachers, principals, and noninstructional staff from the District of Columbia, Maryland, and Virginia. Changes to both the survey items and platform were made based on these interviews and testing.

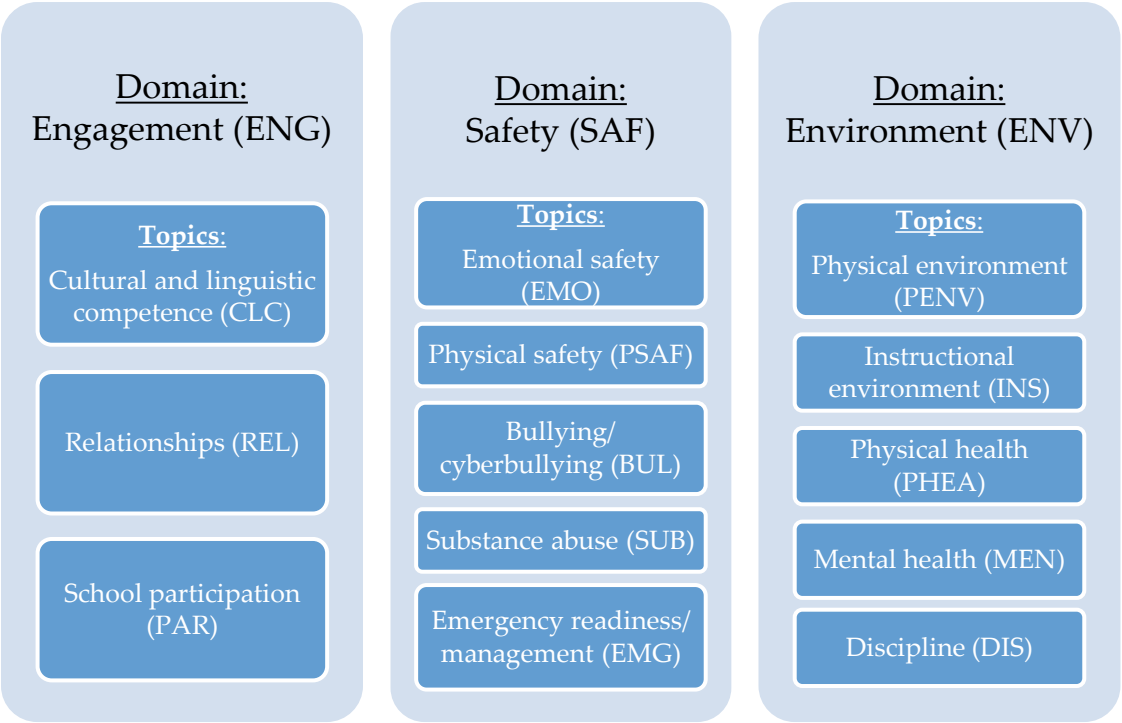
The pilot test of the EDSCLS took place in 2015. The administration was conducted under "live" conditions of all components of the survey system (i.e., the survey instruments and the data collection, processing, and reporting tools). A convenience sample of 50 public schools that varied across key characteristics (region, locale, and racial composition) participated in the pilot test. The EDSCLS platform was tested at the state level (containing multiple districts in one platform), the district level (containing multiple schools in one platform), and the school level (containing only one school in the platform). All survey questionnaires were administered online through the EDSCLS platform. The data from the pilot test were used to refine the EDSCLS survey items and about one-third of the items were dropped after the pilot test. The final EDSCLS instruments have 74 items for students, 83 items for instructional staff and noninstructional staff (with 21 additional principal-only items[1]), and 40 items for parents.

Based on the pilot data, school climate scales were created for 12 of the 13 topics[2] and three domains covered by the EDSCLS for students,[3] instructional staff, and noninstructional staff/principals (see appendix tables A1-A3 for a complete list of scaled items[4] in each survey). Because most of the pilot schools did not administer the parent survey and those that did experienced low response rates, school

[1] Principal-only items are not included in the noninstructional staff scales.
[2] A scale is not planned for the emergency readiness/management topic.
[3] Items for the physical health topic are not included in the student survey due to poor item performance in the pilot study.
[4] Domains or topics may also include stand-alone items that are not part of any scales.

climate scales were not created for the parent survey. Figure 1 shows the EDSCLS domains and topics, with their abbreviations in parentheses.

Figure 1. EDSCLS model of school climate



The EDSCLS platform allows the comparison of scale scores among schools within districts if a data collection is hosted at the district level and among districts within a state when a collection is at the state level. Schools, districts, and states can also compare their scores with those of other EDSCLS school, district, and state users. To further enhance the utility of the scale scores, an effort was also made to provide comparisons to performance standards, or national benchmarks, based on psychometric modeling. The psychometric method uses item parameters based on a Rasch model to set the standards.

Before the psychometric method was selected, both a norm-based method and a criterion-based method (Cizek 2012) were considered. The norm-based method establishes reference points from a normative sample, enabling one school's ratings to be compared to those of other schools. This approach was attempted using a nationally representative data collection of eligible schools in 2016 and 2017. However, the participation of schools in this data collection was voluntary, and it was cancelled due to a low participation rate. The criterion-based method uses expert judges to set arbitrary standards based on the content. However, unlike the use of criterion-based benchmarks in achievement tests (where there are often established measures of content proficiency), the school climate measures are not as well established and it would be difficult for school climate experts to determine standards for schools.

This technical report describes the datasets used in the psychometric benchmarking analysis; provides details for the methodology used to create benchmarks for EDSCLS scales; presents the results of item calibration, benchmark selection, and evaluation; and provides general guidelines for interpretation of the EDSCLS scale scores and benchmarks.

2. Analysis Data

The psychometric benchmarking uses all data collected by the EDSCLS, which includes completed student, instructional staff, and noninstructional staff data collections from 47 schools in 2015, 20 schools in 2016, and 25 schools in 2017. Although parameter estimation is sample-independent in the Rasch model (i.e., the data used in the model need not be a representative sample of the reference population), a bigger sample of participating schools increases the precision of the estimates and provides a more powerful fit analysis. A bigger sample can also mitigate the distortion of the estimates due to accidental errors. Therefore, item parameters calibrated using the 2015 pilot data were recalibrated in 2017 using data from all three survey years. The distribution of the schools by participation year and by various school characteristics are shown in table 1. The total number of student, instructional staff, and noninstructional staff respondents are 27,485, 1,659, and 472, respectively (table 2).

Table 1. Number and percentage of schools in the EDSCLS sample, by participation year and various school characteristics

	2015		2016		2017		Total	
School characteristic	n	%	n	%	n	%	n	%
School level								
Primary school	14	29.8	2	10.0	5	20.0	21	22.8
Middle school	17	36.2	6	30.0	13	52.0	36	39.1
High school	15	31.9	11	55.0	5	20.0	31	33.7
Other school	1	2.1	1	5.0	2	8.0	4	4.3
Free/reduced-price lunch eligibility								
90 percent or more students eligible	2	4.3	1	5.0	2	8.0	5	5.4
50 percent or more but less than 90 percent students eligible	37	78.7	7	35.0	12	48.0	56	60.9
Less than 50 percent students eligible	8	17.0	11	55.0	10	40.0	29	31.5
Missing	0	0.0	1	5.0	1	4.0	2	2.2
Locale								
City	25	53.2	2	10.0	3	12.0	30	32.6
Suburb	4	8.5	6	30.0	7	28.0	17	18.5
Town	12	25.5	4	20.0	0	0.0	16	17.4
Rural	6	12.8	8	40.0	15	60.0	29	31.5
Primary race/ethnicity at school								
White	19	40.4	16	80.0	22	88.0	57	62.0
Black	26	55.3	2	10.0	3	12.0	31	33.7
Hispanic or Latino	2	4.3	2	10.0	0	0.0	4	4.3

SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017; U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), 2014–15.

Table 2. Number and percentage of respondents in the EDSCLS sample, by participation year and respondent type

	2015		2016		2017		Total	
Respondent type	n	%	n	%	n	%	n	%
Student	17,630	64.1	5,106	18.6	4,749	17.3	27,485	100
Instructional staff	993	59.9	303	18.3	363	21.9	1,659	100
Noninstructional staff	230	48.7	101	21.4	141	29.9	472	100

SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

3. Psychometric Benchmarking Methodology

The school climate items in the EDSCLS use a 4-point Likert response option scale. Instead of using the average value of the responses within a school climate topic as the topic's score, Rasch-based

methodologies statistically adjust and convert original responses onto a common scale that accounts for differences in item difficulty.[5]

In a Rasch model, the item difficulty and the person ability (or a person's other latent traits, such as perception of school climate) are placed on a common scale, and the item difficulty is defined as the point at which people with the same level of perception of school climate have a 0.5 probability of selecting a specific response category instead of its lower category.

3.1 Item Calibration

The Rasch partial credit model (PCM) (Masters 1982) was used instead of the Rasch rating scale model (RSM) (Andrich 1978) for item calibration because PCM does not assume equal category thresholds across items. To be consistent with the **coding** in the mathematical calculations, from this point on, the four response categories used for the EDSCLS school climate items are referred to as category 0, category 1, category 2, and category 3 (most negative to most positive, taking into consideration the item valence). The PCM provides a mathematical function to describe the relationship between a person's perception of school climate and the difficulty of items in a scale as defined below:

$$P_{jk} = \frac{exp \sum_{t=0}^{k}(\theta - b_{jt})}{\sum_{r=0}^{3} exp \sum_{t=0}^{r}(\theta - b_{jt})}, \qquad k \in \{0,1,2,3\} \qquad (1)$$

where P_{jk} is the probability of selecting response *k* to item *j*, θ is the person's perception of school climate (ability), and b_{jk} is the difficulty threshold of category *k* for item *j*. The computer software Winsteps was used to estimate the parameters of the mathematical function.

As stated in section 2, the parameter estimation used all data collected by the EDSCLS between 2015 and 2017 to recalibrate the item parameters. The new step values for each scaled item are presented in figures 2-4 below, along with the step values from the 2015 calibration (the lists of step values by survey for the two calibrations can be found in appendix tables A4-A6). As shown in the figures, the step values for the 2017 recalibration and the 2015 calibration are very similar. The step values for the 2017 recalibration and the 2015 calibration for the student survey items are almost the same. The step values for the staff survey items show a little more variation, presumably as a result of almost doubled sample sizes.

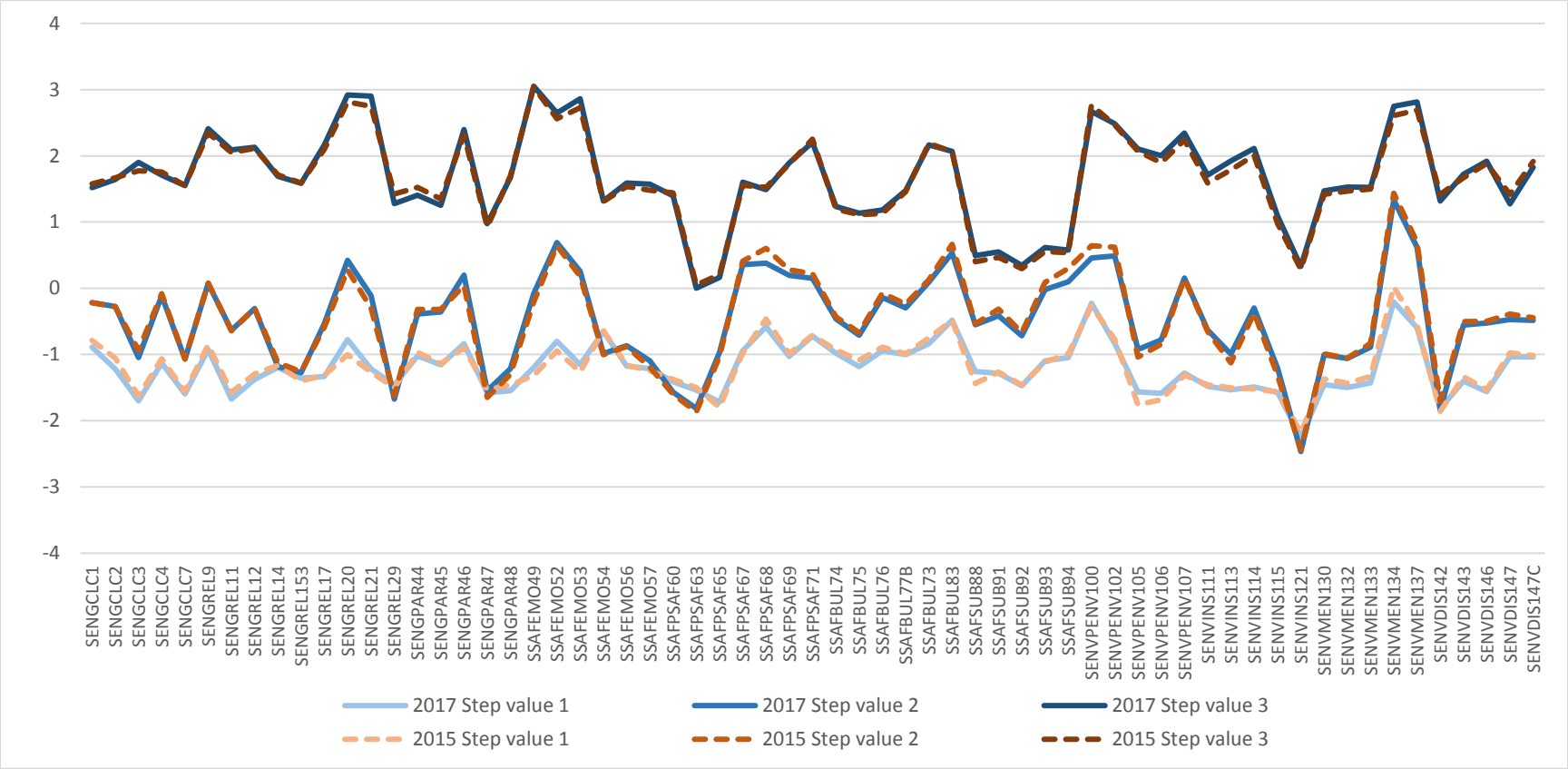
Based on the recalibration results, one item was dropped from the environment (domain) and the instructional environment (topic) scales in the noninstructional staff survey (NENVINS141: Staff at this school expect students to do their best all the time) because no respondents provided a "Strongly

[5] Item difficulty refers to how easy or difficult it is for respondents to provide a positive response (e.g., "I feel socially accepted" is an easier item than "I feel loved and wanted"). If an item has negative valence, it refers to how easy or difficult it is for respondents to provide a negative response (e.g., "Students at this school think it is okay to try drugs" is an easier item than "Students at this school think it is okay to get drunk").

Disagree" response.[6] The survey has a similar item in terms of wording and the response distribution (NENVINS140: Staff at this school feel that it is a part of their job to prepare students to succeed in college. The distributions of the responses to the two items are shown in table 3. Dropping this item from the environment and the instructional environment scales did not affect the step values of other items in the scales (see figure 5),[7] and the reliability (Cronbach's alpha) of the environment and the instructional environment scales showed only a slight decrease (from 0.948 to 0.946 and from 0.804 to 0.771, respectively). See table 4 for Cronbach's alpha for each scale in each survey.[8] All of the results presented in the remainder of the report focus only on those items included in the scales (and thus exclude item NENVINS141).

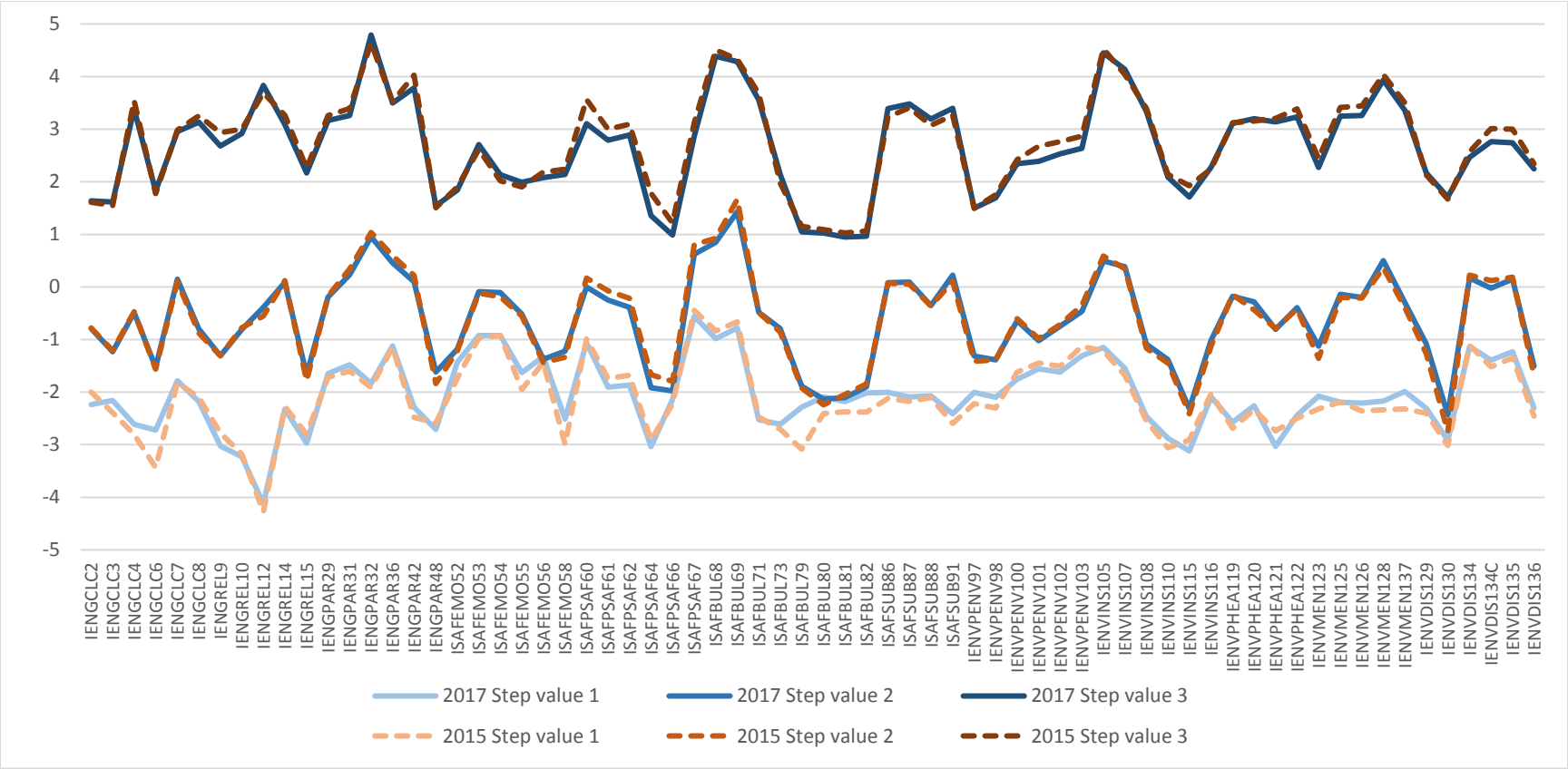
[6] Low response selection was one of the criteria for dropping an item after the pilot study. However, due to the small sample size obtained for the noninstructional staff survey in the pilot study, we were more conservative with this survey and primarily removed items that are parallel to the items dropped from the instructional staff survey.
[7] Items in the same domain are calibrated together and the topics within the domain use the step values for their items from the same calibration.
[8] Item NENVINS141 was dropped from the environment domain and the instructional environment topic of the noninstructional staff survey.

Figure 2. Step values for each scaled item from the 2015 calibration and the 2017 recalibration: Student survey



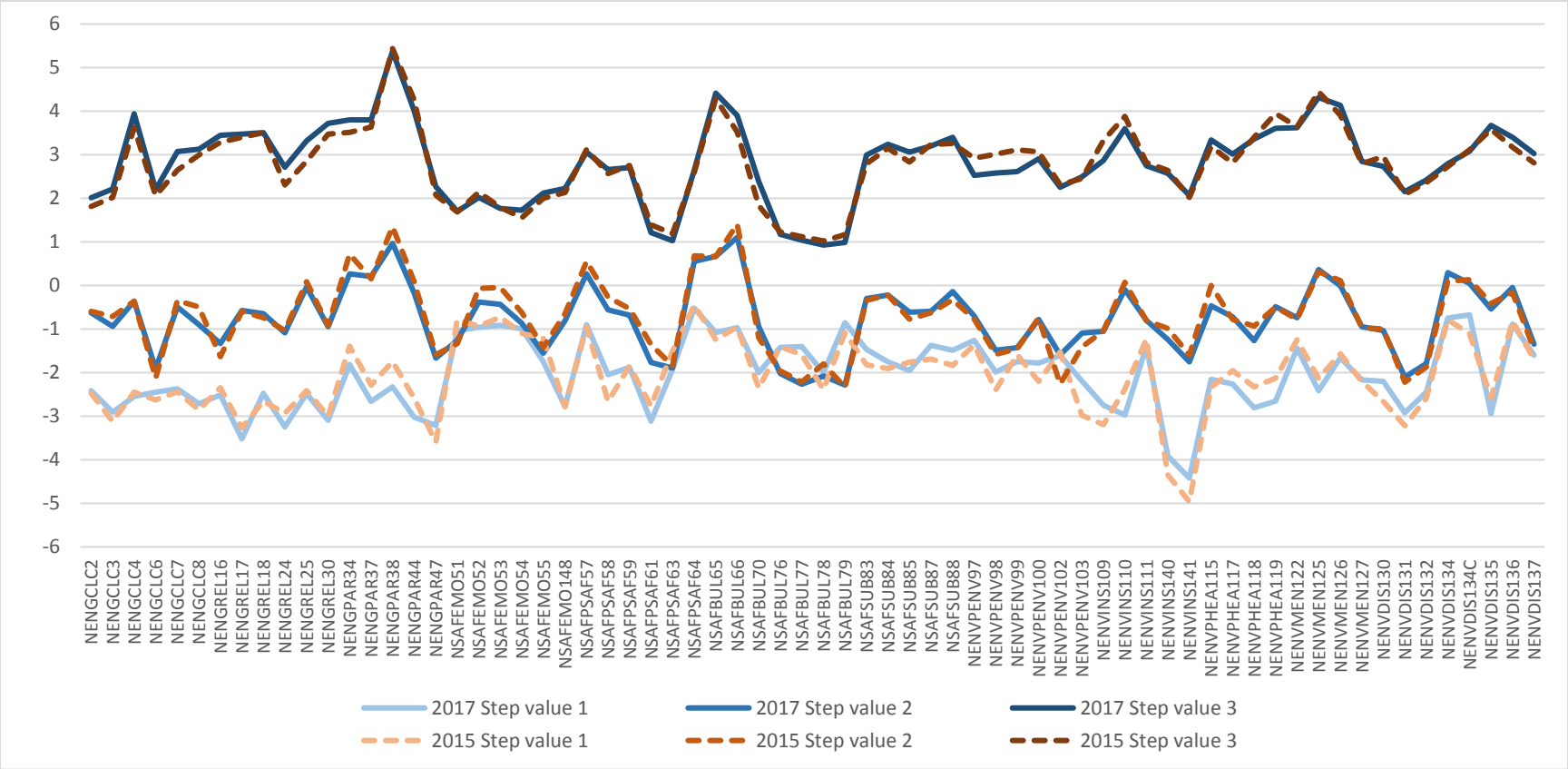
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Figure 3. Step values for each scaled item from the 2015 calibration and the 2017 recalibration: Instructional staff survey



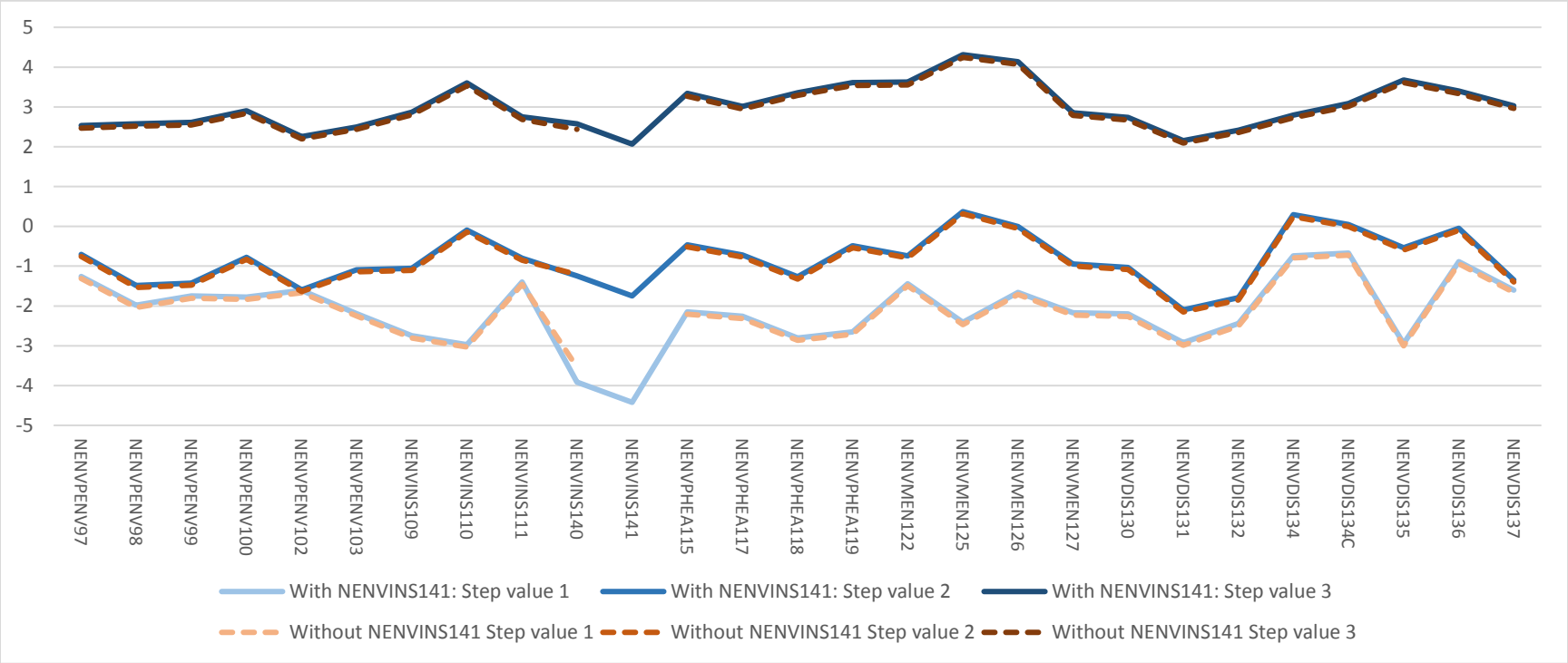
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Figure 4. Step values for each scaled item from the 2015 calibration and the 2017 recalibration: Noninstructional staff survey



SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Figure 5. Step values (2017 recalibration) for each scaled item in the environment domain with and without item NENVINS141: Noninstructional staff survey



SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table 3. Distribution of responses to item NENVINS141 and item NENVINS140: Noninstructional staff survey

NENVINS141	Frequency	Percent	NENVINS140	Frequency	Percent
Strongly Disagree	0	0	Strongly Disagree	3	0.7
Disagree	27	6.28	Disagree	46	10.8
Agree	241	56.05	Agree	242	56.81
Strong agree	162	37.67	Strong agree	135	31.69

SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table 4. Cronbach's alpha, by scale and survey

	Student		Instructional staff		Noninstructional staff	
Scale	Alpha	Number of items	Alpha	Number of items	Alpha	Number of items
ENG	0.893	19	0.914	17	0.928	17
CLC	0.721	5	0.804	6	0.830	6
REL	0.861	9	0.797	5	0.851	6
PAR	0.691	5	0.861	6	0.836	5
SAF	0.924	24	0.916	24	0.911	24
EMO	0.808	6	0.870	6	0.870	6
PSAF	0.827	7	0.851	6	0.844	6
BUL	0.857	6	0.840	8	0.826	7
SUB	0.891	5	0.854	4	0.910	5
ENV	0.909	20	0.947	27	0.946	26
PENV	0.763	5	0.814	6	0.814	6
INS	0.754	5	0.783	6	0.771	4
PHEA	†	†	0.863	4	0.852	4
MEN	0.770	5	0.912	5	0.877	4
DIS	0.783	5	0.898	6	0.918	8

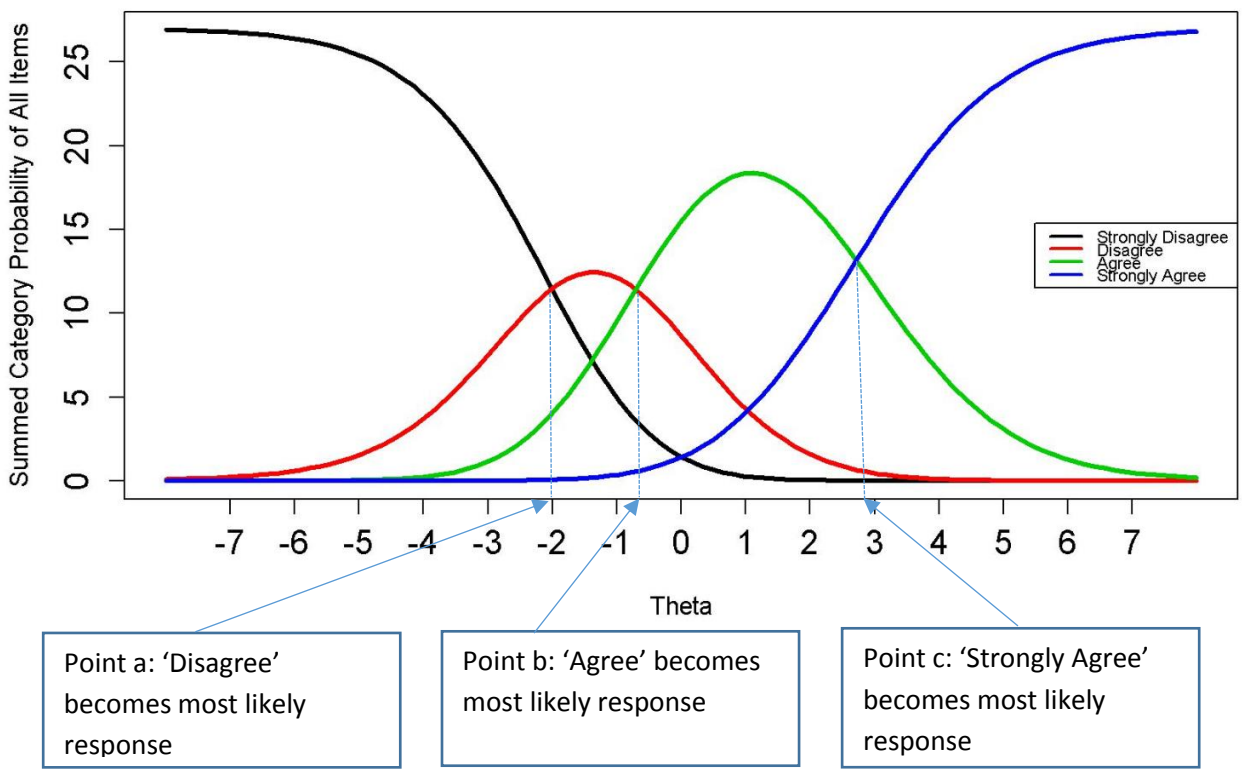
† The student survey does not include the physical health scale.
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

3.2 Category Response Functions and Performance Level Cut Points

In equation 1, b_{jk} is the point on the latent scale θ where the probability of selecting either category *k* or category *k*-1 is equal, that is, when $\theta = b_{jk}$, $P_{jk}(\theta) = P_{j(k-1)}(\theta)$. A person with a greater theta would have a greater probability of selecting category *k* than of selecting category *k*-1 in a positively valenced item.

Figure 6 presents example Category Probability Curves for a positively valenced item with the four response categories used in the EDSCLS: Strongly Disagree, Disagree, Agree, and Strongly Agree. The curves are a function of the item parameters b_{jk} and θ. The scale along the *x* axis of the graph represents the underlying latent construct θ. The *y* axis is the probability of selecting a response category conditional on θ. The most likely response for persons with a theta (θ) below point *a,* where category 0 and category 1 intersect on the *x* axis, is Strongly Disagree, as the category 0 curve is above the other three curves in this range. Between this intersection and point b, the most likely response is Disagree. Between points b and c, Agree, and above point c, Strongly Agree, are the most likely responses.

Figure 6. Example Category Probability Curves for an item with four response categories



The cut values for each scale were computed by first summing up the curves in a scale and then finding the intersections so that the value at point *a* was set as the cut value separating categories 0 (Strongly Disagree) and 1 (Disagree). Similarly, the value at point *b* was set as the cut value separating categories 1 (Disagree) and 2 (Agree), and the value at point *c* was set as the cut value separating categories 2 (Agree) and 3 (Strongly Agree). This analytical approach allows the EDSCLS to define the benchmarks in

direct relation to the response scale used in the survey questions, enhancing the ease of interpreting the benchmark categories.

The analysis results show that relatively small percentages of respondents, especially staff, would be classified into the lowest performance level (see table 5). Furthermore, as shown in figures 2 to 5, the distances between the lowest category and the second lowest category is relatively small and sometimes in the reversed direction which means the second lowest category does not provide additional measurement information that the lowest category has already provided. As a result, the psychometric benchmarking collapsed the two lowest performance levels of school climate, and the performance levels were defined as follows:

- Level 3 (Most Positive): The most likely answer to each positively valenced question in the scale is Strongly Agree. Likewise, the most likely answer to a negatively valenced question is Strongly Disagree.
- Level 2 (Positive): The most likely answer to each positively valenced question in the scale is Agree. Likewise, the most likely answer to a negatively valenced question is Disagree.
- Level 1 (Negative): The most likely answer to each positively valenced question in the scale is Disagree or Strongly Disagree. Likewise, the most likely answer to a negatively valenced question is Agree or Strongly Agree.

Table 5. Percentage of respondents mostly likely to select the lowest response category, by scale and survey

Scale	Student	Instructional staff	Noninstructional staff‡
ENG	4.5	0.2	0.7
CLC	8.0	0.7	1.1
REL	7.3	0.2	0.9
PAR	6.3	2.2	1.1
SAF	8.3	0.3	0.4
EMO	15.3	2.8	3.7
PSAF	11.2	1.8	1.6
BUL	19.3	0.6	2.7
SUB	13.1	2.4	4.2
ENV	7.9	0.8	0.7
PENV	12.3	2.1	1.4
INS	6.1	1.4	0.5
PHEA	†	2.0	1.7
MEN	16.0	5.0	3.5
DIS	10.3	4.2	3.5

† The student survey does not include the physical health scale.
‡ Includes principals as well as other noninstructional staff who provided responses to the items in the scale.
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Summing up the category response curves in a scale first and then finding the intersections as described above, the cut values and confidence intervals for each scale in each survey are shown in tables 6A, 6B,

and 6C. The standard error of measurement (SEM) for each cut value was calculated using the item step values of the items in the scale and the SEMs were then used to calculate the 95 percent confidence interval for the cut values. Specifically,

$$SEM = \sqrt{\frac{1}{I(\theta)}} = \sqrt{\frac{1}{\sum_{j=1}^{J} I_j(\theta)}}$$

and

$$I_j(\theta) = \left(\frac{\sum_{m=1}^{K_j} m^2 \mathrm{Exp}(\sum_{t=1}^{m}(\theta - b_{jt}))}{1 + \sum_{m=1}^{K_j} \mathrm{Exp}(\sum_{t=1}^{m}(\theta - b_{jt}))} - \left[\frac{\sum_{m=1}^{K_j} m \mathrm{Exp}(\sum_{t=1}^{m}(\theta - b_{jt}))}{1 + \sum_{m=1}^{K_j} \mathrm{Exp}(\sum_{t=1}^{m}(\theta - b_{jt}))} \right]^2 \right)$$

where θ is the cut value, j is the number of items in the scale, K_j is the *j*th item's maximum score (i.e., 3), b_{jt} are the item step values for the *j*th item. The confidence interval for the cut value θ is calculated as

$$(\theta - 1.96 \times SEM, \theta + 1.96 \times SEM).$$

Table 6A. Cut values and confidence intervals, by scale: Student survey

		95% confidence interval			95% confidence interval	
Scale	Cut value 1	Lower	Upper	Cut value 2	Lower	Upper
ENG	-0.638	-1.212	-0.063	1.828	1.054	2.602
CLC	-0.576	-1.682	0.530	1.665	0.224	3.107
REL	-0.627	-1.477	0.224	2.112	0.947	3.276
PAR	-0.728	-1.824	0.367	1.510	0.073	2.946
SAF	-0.336	-0.821	0.150	1.330	0.714	1.946
EMO	-0.380	-1.401	0.640	2.141	0.726	3.556
PSAF	-0.487	-1.423	0.449	1.196	0.089	2.304
BUL	-0.184	-1.141	0.774	1.515	0.305	2.724
SUB	-0.324	-1.292	0.644	0.510	-0.564	1.584
ENV	-0.668	-1.246	-0.091	1.810	1.072	2.549
PENV	-0.181	-1.364	1.003	2.313	0.829	3.796
INS	-1.141	-2.264	-0.018	1.424	-0.116	2.963
PHEA	†	†	†	†	†	†
MEN	-0.453	-1.633	0.727	1.932	0.516	3.348
DIS	-0.797	-1.902	0.308	1.609	0.130	3.088

† The student survey does not include the physical health scale.
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table 6B. Cut values and confidence intervals, by scale: Instructional survey

		95% confidence interval			95% confidence interval	
Scale	Cut value 1	Lower	Upper	Cut value 2	Lower	Upper
ENG	-0.561	-1.312	0.190	2.881	1.938	3.824
CLC	-0.805	-1.986	0.376	2.409	0.849	3.969
REL	-0.831	-2.319	0.658	2.930	1.213	4.646
PAR	0.039	-1.221	1.299	3.353	1.757	4.948
SAF	-0.732	-1.314	-0.150	2.394	1.619	3.169
EMO	-0.815	-1.866	0.235	2.143	0.707	3.580
PSAF	-0.776	-1.946	0.394	2.340	0.840	3.840
BUL	-1.244	-2.243	-0.245	2.000	0.630	3.370
SUB	0.013	-1.568	1.595	3.367	1.528	5.206
ENV	-0.705	-1.267	-0.142	2.713	1.977	3.448
PENV	-0.950	-2.003	0.103	2.181	0.686	3.676
INS	-0.983	-2.213	0.248	2.954	1.283	4.624
PHEA	-0.419	-2.012	1.174	3.170	1.311	5.030
MEN	-0.246	-1.639	1.148	3.216	1.523	4.909
DIS	-0.922	-2.102	0.257	2.342	0.891	3.793

† The student survey does not include the physical health scale.
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table 6C. Cut values and confidence intervals, by scale: Noninstructional staff survey

		95% confidence interval			95% confidence interval	
Scale	Cut value 1	Lower	Upper	Cut value 2	Lower	Upper
ENG	-0.625	-1.416	0.167	3.272	2.309	4.236
CLC	-0.869	-2.112	0.375	2.743	1.152	4.335
REL	-0.780	-2.102	0.542	3.367	1.802	4.933
PAR	-0.036	-1.590	1.519	3.845	2.026	5.663
SAF	-0.901	-1.444	-0.359	2.265	1.495	3.035
EMO	-0.920	-1.932	0.092	1.928	0.503	3.352
PSAF	-0.855	-2.008	0.298	2.216	0.741	3.691
BUL	-1.320	-2.272	-0.369	1.803	0.381	3.226
SUB	-0.376	-1.622	0.869	3.180	1.516	4.843
ENV	-0.912	-1.474	-0.350	2.946	2.192	3.700
PENV	-1.253	-2.295	-0.210	2.500	0.970	4.030
INS	-0.835	-2.354	0.684	2.857	0.960	4.753
PHEA	-0.793	-2.324	0.738	3.262	1.359	5.165
MEN	-0.385	-1.896	1.125	3.668	1.713	5.623
DIS	-1.050	-2.070	-0.030	2.842	1.511	4.173

† The student survey does not include the physical health scale.
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table 7 shows the percentage of respondents categorized at each performance level for each scale in each survey. The substance abuse scale in the student survey has the largest proportion in level 3, while all other scales in all surveys has the largest proportion in level 2. This suggests students were very positive on school's performance on the substance abuse scale.

Table 7. Percentage of respondents classified at each performance level, by scale and survey

	Student survey			Instructional staff survey			Noninstructional staff survey		
Scale	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
ENG	14.8	76.5	8.7	7.6	71.8	20.6	7.8	73.2	19.0
CLC	20.1	67.5	12.5	8.1	60.2	31.7	7.7	57.9	34.3
REL	18.6	71.4	10.0	10.7	67.4	21.9	9.8	64.6	25.7
PAR	16.4	62.6	21.0	19.8	61.4	18.8	20.6	62.6	16.8
SAF	27.5	58.9	13.6	5.6	76.1	18.3	3.8	78.4	17.8
EMO	27.9	64.0	8.1	8.4	61.1	30.4	6.2	61.1	32.7
PSAF	27.4	54.6	18.0	8.9	64.1	27.0	10.0	64.0	26.0
BUL	36.4	47.3	16.3	5.1	65.4	29.4	2.7	58.8	39.4
SUB	32.8	27.0	40.1	22.1	62.4	15.5	15.9	69.9	14.2
ENV	21.8	70.5	7.7	10.7	73.8	15.5	5.3	76.4	18.3
PENV	38.2	57.1	4.7	8.2	66.5	25.3	3.6	67.4	28.9
INS	15.2	70.2	14.6	13.4	70.8	15.8	8.4	63.9	27.6
PHEA	†	†	†	20.0	61.9	18.0	10.7	67.1	22.2
MEN	34.3	55.7	10.0	27.6	57.9	14.5	16.4	64.4	19.2
DIS	22.9	64.6	12.6	12.8	62.3	24.8	7.7	68.1	24.1

† The student survey does not include the physical health scale. SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

3.3 Transforming Theta Estimates to Scale Scores

Theoretically, the measures estimated from the Rasch partial credit model are standardized with the mean at 0 and the standard deviation at 1. However, because many people do not find negative values and decimals convenient to use, the estimates are usually transformed to a range consisting only of positive integers. Furthermore, since each EDSCLS scale includes the same performance levels, it is desirable to anchor the cut scores at the same numbers across scales.

During the initial scaling in 2015, the EDSCLS scale scores were transformed into scale scores with a range of 100 to 500. The estimated measure ($\hat{\theta}$) was linearly transformed into an integer scale score (SS) using the following linear formula:

$$SS_i = A + B \times \hat{\theta}_i \qquad (2)$$

where SS_i is the scale score of person *i* in the survey for a specific scale and $\hat{\theta}_i$ is the estimated measure for person *i* in the survey for the scale. The scaling factors A and B were found by solving the following two equations simultaneously by setting the lowest scale score to 100 and the highest scale score to 500 for each domain in a survey:

$$\begin{cases} A + B \times \hat{\theta}_L = 100 \\ A + B \times \hat{\theta}_H = 500 \end{cases} \quad (3)$$

where $\hat{\theta}_L$ is the lowest school climate perception measure and $\hat{\theta}_H$ is the highest measure.

However, in the current psychometric benchmark analysis, it is preferable to set the cut score at a fixed value. Therefore, the cutoff scores were set to 300 and 400 for points *b* and *c*, respectively. These cutoff scale scores were used to find scaling factors A and B by solving the following two equations simultaneously for each scale:

$$\begin{cases} A + B \times \hat{\theta}_1 = 300 \\ A + B \times \hat{\theta}_2 = 400 \end{cases} \quad (4)$$

where $\hat{\theta}_1$ is the cut value between level 1 and level 2, and $\hat{\theta}_2$ is the cut value between level 2 and level 3.

The individual respondent scale scores are not restricted to the range of 100 to 500; however, in the EDSCLS reporting, school-level scale scores will be restricted to the range of 100 to 500 for consistency and ease of interpretation (i.e., if the score is below 100, it will be reported as 100; if the score is above 500, it will be reported as 500). The procedure does not affect schools' benchmarking categories. Using the EDSCLS data as an example, among the 92 schools included in the sample,[9] none have school scores that would be trimmed in the reporting for either the instructional or the noninstructional staff survey. For the student survey, 26 schools have one scale score, for substance abuse, which is higher than 500 and that would be capped at 500 in reporting, which still indicates the most positive level. Table 8 reports the scaling factors A and B for each scale in each survey.

[9] Each school receives up to a total of 44 scale scores for all domains and scales, if the student and two staff surveys are administered and the minimum reporting criterion (at least 10 respondents for a specific domain or scale) is met.

Table 8. Scaling factors, by scale and survey

	Student survey		Instructional staff survey		Noninstructional staff survey	
Scale	Factor A	Factor B	Factor A	Factor B	Factor A	Factor B
ENG	325.859	40.557	316.291	29.053	316.027	25.661
CLC	325.697	44.614	325.048	31.112	324.047	27.686
REL	322.890	36.517	322.095	26.592	318.803	24.114
PAR	332.549	44.683	298.823	30.178	300.916	25.772
SAF	320.161	60.027	323.415	31.995	328.465	31.578
EMO	315.079	39.663	327.561	33.799	332.304	35.115
PSAF	328.929	59.402	324.906	32.092	327.846	32.555
BUL	310.828	58.872	338.350	30.829	342.271	32.014
SUB	338.850	119.933	299.599	29.819	310.583	28.119
ENV	326.967	40.341	320.620	29.264	323.636	25.919
PENV	307.241	40.106	330.340	31.939	333.383	26.649
INS	344.491	38.992	324.968	25.403	322.626	27.086
PHEA	†	†	311.666	27.864	319.552	24.661
MEN	318.995	41.928	307.097	28.889	309.507	24.669
DIS	333.135	41.560	328.255	30.631	326.977	25.694

† The student survey does not include the physical health scale.
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

4. Evaluation of the Performance Level Classification

The Livingston and Lewis procedure (Livingston and Lewis 1995) was used to estimate the accuracy and reliability of the performance level classification based on the psychometric benchmarks. The evaluation was conducted on the categorization of different levels of performance, not on the characteristics of the survey items themselves. For more information about the survey item evaluation and selection, please see the EDSCLS pilot study report (U.S. Department of Education 2015). The benchmarking can be considered accurate if the performance level classification based on the psychometric benchmarks matches the classification based on true scores.

As with any measurements, the estimates produced from the EDSCLS data contain measurement error and, since the true scores are unknown, require the accuracy to be estimated. Similarly, the benchmarking would be considered reliable if the performance classification was consistent with that based on scale scores from a parallel survey (i.e., with the same content, time frame, respondents, and survey environment). Given that such a parallel survey does not exist, the consistency was estimated.

The Livingston and Lewis procedure is appropriate for a level classification with more than two classification categories based on polytomous items (Brennan 2004). The Livingston and Lewis procedure assumes that the proportional true score follows a four-parameter beta distribution and a binomial error model for two independent administrations (observed and reconstructed) and computes the true score distribution based on the first four moments of the observed score distribution.

To assess the classification accuracy, the Livingston and Lewis procedure compares the actual observed score distribution with the true score distribution predicted from the model. An accuracy index of 0.7 for a scale would be interpreted as meaning that among the respondents who would be placed in a certainty level based on their true scores, 70 percent would be expected to be placed in this level when the decision is based on their observed scores.

For the classification consistency, the Livingston and Lewis procedure compares the actual observed score distribution with a reconstructed alternate score distribution. A consistency index of 0.7 for a scale would be interpreted as meaning that among the respondents placed in a certain level based on their observed scores, 70 percent would be expected to be placed in this level again based on scores obtained in a replication administration using the exact same procedure. Based on the classifications from the Livingston and Lewis procedure, the proportions for false positives and false negatives are also computed.

Table 9 shows the results for each scale in each survey. The accuracy and consistency measures for the staff surveys are slightly lower than are those for the student survey, especially for the substance abuse topic. Overall, the accuracy measures are mostly above 0.8 (staff surveys) or close to 0.8 (student survey), and the consistency measures are all above 0.8. The accuracy and consistency measures are similar to the measures reported in some standard tests (e.g., the Massachusetts English Proficiency Assessment [Chester 2009]).

Table 9. Accuracy and consistency measures, by scale and survey

	Student survey		Instructional staff survey		Noninstructional staff survey	
Scale	Accuracy	Consistency	Accuracy	Consistency	Accuracy	Consistency
ENG	0.817	0.857	0.828	0.884	0.834	0.885
CLC	0.777	0.839	0.813	0.882	0.822	0.869
REL	0.801	0.851	0.798	0.868	0.815	0.865
PAR	0.774	0.835	0.782	0.842	0.813	0.866
SAF	0.773	0.839	0.870	0.921	0.903	0.950
EMO	0.800	0.855	0.802	0.873	0.842	0.896
PSAF	0.740	0.821	0.801	0.865	0.808	0.862
BUL	0.732	0.822	0.863	0.917	0.883	0.929
SUB	0.713	0.837	0.800	0.857	0.788	0.844
ENV	0.827	0.870	0.816	0.864	0.875	0.931
PENV	0.806	0.858	0.817	0.890	0.900	0.952
INS	0.776	0.836	0.827	0.888	0.815	0.866
PHEA	†	†	0.764	0.829	0.796	0.836
MEN	0.787	0.847	0.779	0.847	0.810	0.860
DIS	0.769	0.836	0.755	0.806	0.828	0.888

† The student survey does not include the physical health scale.
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

5. Interpretation of Scale Scores and Benchmarks

Scale scores are the primary metric used by the EDSCLS, as well as many other school climate surveys, to measure school climate. A scale score, which combines multiple survey items related to different aspects of a topic area, is a more robust measure than one that attempts to measure that topic using a single item. In the EDSCLS reporting, scale scores are produced for each scale by averaging all respondents in that group (e.g., school overall, male, White).

Note that before creating the benchmark scores, individuals' EDSCLS scale scores are centered at 300, within a range of 100 to 500, by trimming scores at the 4th or 5th standard deviation for the staff and student surveys, respectively. This psychometric benchmarking fixes the cut scores at 300 and 400 for the points separating performance levels 1 and 2, and performance levels 2 and 3, respectively. In order to maintain the full spectrum of the variation, the individual scores are not trimmed within the range of 100 to 500. However, for consistency and ease of understanding in the reporting, we recommend reporting the aggregate scale scores in the range of 100 to 500, as under Rasch modeling, extreme scores are measured with a much larger variance and thus differences between extreme scores are not that meaningful.

The aggregate scale scores are categorized into three performance levels based on this psychometric benchmarking. Performance level 1 indicates that respondents perceive the specific school climate aspect as negative because they are most likely selecting one of the two lowest response categories for the items in this scale. Performance level 2 indicates respondents perceive the specific school climate aspect as positive because they are most likely selecting the second highest response category for the items in this scale, and performance level 3 indicates respondents perceive the specific school climate aspect as most positive because they are most likely selecting the highest response category for all of the items in this scale.

Since the item parameters were recalibrated, scale scores calculated using the new item parameters should not be compared with those calculated using the previous item parameters. If a comparison is desired, the raw data from previous administrations need to be used to recalculate the scale scores using the new item parameters. The raw data can be imported to an updated EDSCLS platform to be released later this year to calculate the scale scores. An R program based on the new item parameters can be provided to calculate scale scores outside the platform.

Just as we would not compare students' mathematics scores with their reading scores, comparisons should not be made across domains based on scale scores, although comparisons can be made across different scales or across different subgroups within the same domain. However, using the psychometric benchmarking, users will be able to make comparisons across domains. For example, if a school is in performance level 1 for engagement and performance level 2 for safety based on the student survey results, it suggests that students in the school feel the school is not doing as well in engaging students as it is in providing safety to students.

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Table A1. Scaled school climate items in the EDSCLS student survey

Name	Question wording
SENGCLC1	All students are treated the same, regardless of whether their parents are rich or poor.
SENGCLC2	Boys and girls are treated equally well.
SENGCLC3	This school provides instructional materials (e.g., textbooks, handouts) that reflect my cultural background, ethnicity, and identity.
SENGCLC4	Adults working at this school treat all students respectfully.
SENGCLC7	People of different cultural backgrounds, races, or ethnicities get along well at this school.
SENGREL9	Teachers understand my problems.
SENGREL11	Teachers are available when I need to talk with them.
SENGREL12	It is easy to talk with teachers at this school.
SENGREL14	My teachers care about me.
SENGREL153	At this school, there is a teacher or some other adult who students can go to if they need help because of sexual assault or dating violence.
SENGREL17	My teachers make me feel good about myself.
SENGREL20	Students respect one another.
SENGREL21	Students like one another.
SENGREL29	If I am absent, there is a teacher or some other adult at school that will notice my absence.
SENGPAR44	I regularly attend school-sponsored events, such as school dances, sporting events, student performances, or other school activities.
SENGPAR45	I regularly participate in extra-curricular activities offered through this school, such as, school clubs or organizations, musical groups, sports teams, student government, or any other extra-curricular activities.
SENGPAR46	At this school, students have lots of chances to help decide things like class activities and rules.
SENGPAR47	There are lots of chances for students at this school to get involved in sports, clubs, and other school activities outside of class.
SENGPAR48	I have lots of chances to be part of class discussions or activities.
SSAFEMO49	Students at this school get along well with each other.
SSAFEMO52	At this school, students talk about the importance of understanding their own feelings and the feelings of others.

SSAFEMO53	At this school, students work on listening to others to understand what they are trying to say.
SSAFEMO54	I am happy to be at this school.
SSAFEMO56	I feel like I am part of this school.
SSAFEMO57	I feel socially accepted.
SSAFPSAF60	I feel safe going to and from this school.
SSAFPSAF63	I sometimes stay home because I don't feel safe at this school.[1]
SSAFPSAF65	Students at this school carry guns or knives to school.[1]
SSAFPSAF67	Students at this school threaten to hurt other students.[1]
SSAFPSAF68	Students at this school steal money, electronics, or other valuable things while at school.[1]
SSAFPSAF69	Students at this school damage or destroy other students' property.[1]
SSAFPSAF71	Students at this school fight a lot.[1]
SSAFBUL74	Students at this school are teased or picked on about their race or ethnicity.[1]
SSAFBUL75	Students at this school are teased or picked on about their cultural background or religion.[1]
SSAFBUL76	Students at this school are teased or picked on about their physical or mental disability.[1]
SSAFBUL77B	Students at this school are teased or picked on about their real or perceived sexual orientation.[1]
SSAFBUL73	Students at this school are often bullied.[1]
SSAFBUL83	Students often spread mean rumors or lies about others at this school on the internet (i.e., Facebook™, email, and instant message).[1]
SSAFSUB88	Students use/try alcohol or drugs while at school or school-sponsored events.[1]
SSAFSUB91	It is easy for students to use/try alcohol or drugs at school or school-sponsored events without getting caught.[1]
SSAFSUB92	Students at this school think it is okay to smoke one or more packs of cigarettes a day.[1]
SSAFSUB93	Students at this school think it is okay to get drunk.[1]
SSAFSUB94	Students at this school think it is okay to try drugs.[1]
SENVPENV100	The bathrooms in this school are clean.
SENVPENV102	The temperature in this school is comfortable all year round.
SENVPENV105	The school grounds are kept clean.
SENVPENV106	I think that students are proud of how this school looks on the outside.
SENVPENV107	Broken things at this school get fixed quickly.

SENVINS111	My teachers praise me when I work hard in school.
SENVINS113	My teachers give me individual attention when I need it.
SENVINS114	My teachers often connect what I am learning to life outside the classroom.
SENVINS115	The things I'm learning in school are important to me.
SENVINS121	My teachers expect me to do my best all the time.
SENVMEN130	My teachers really care about me.
SENVMEN132	I can talk to my teachers about problems I am having in class.
SENVMEN133	I can talk to a teacher or other adult at this school about something that is bothering me.
SENVMEN134	Students at this school stop and think before doing anything when they get angry.
SENVMEN137	Students at this school try to work out their disagreements with other students by talking to them.
SENVDIS142	My teachers make it clear to me when I have misbehaved in class.
SENVDIS143	Adults working at this school reward students for positive behavior.
SENVDIS146	Adults working at this school help students develop strategies to understand and control their feelings and actions.
SENVDIS147	School rules are applied equally to all students.
SENVDIS147C	Discipline is fair.

[1] Item is negatively valenced and needs to reverse-coded.

SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table A2. Scaled school climate items in the EDSCLS instructional staff survey

Name	Question wording
IENGCLC2	At this school, all students are treated equally, regardless of whether their parents are rich or poor.
IENGCLC3	This school encourages students to take challenging classes no matter their race, ethnicity, nationality, and/or cultural background (e.g., honor level courses, gifted courses, AP or IB courses).
IENGCLC4	This school provides instructional materials (e.g., textbooks, handouts) that reflect students' cultural background, ethnicity and identity.
IENGCLC6	This school emphasizes showing respect for all students' cultural beliefs and practices.
IENGCLC7	This school provides effective resources and training for teaching students with Individualized Education Programs (IEPs) across different languages and cultures.
IENGCLC8	This school provides effective supports for students needing alternative modes of communication (e.g., manual signs, communication boards, computer-based devices, picture exchange systems, Braille).
IENGREL9	Staff do a good job helping parents to support their children's learning at home.
IENGREL10	Staff do a good job helping parents understand when their child needs to learn social, emotional, and character skills.
IENGREL12	If a student has done something well or makes improvement, staff contact his/her parents.
IENGREL14	This school asks families to volunteer at the school.
IENGREL15	This school communicates with parents in a timely and ongoing basis.
IENGPAR29	My level of involvement in decision making at this school is fine with me.
IENGPAR31	Staff at this school have many informal opportunities to influence what happens within the school.
IENGPAR32	At this school, students are given the opportunity to take part in decision making.
IENGPAR36	Administrators involve staff in decision-making.
IENGPAR42	This school provides students with opportunities to take a lead role in organizing programs and activities.
IENGPAR48	Students are encouraged to get involved in extra-curricular activities.
ISAFEMO52	I feel like I belong.
ISAFEMO53	I feel satisfied with the recognition I get for doing a good job.
ISAFEMO54	I feel comfortable discussing feelings, worries, and frustrations with my supervisor.
ISAFEMO55	This school inspires me to do the very best at my job.
ISAFEMO56	People at this school care about me as a person.
ISAFEMO58	I can manage almost any student behavior problem.

ISAFPSAF60	The following types of problems occur at this school often: physical conflicts among students.[1]
ISAFPSAF61	The following types of problems occur at this school often: robbery or theft.[1]
ISAFPSAF62	The following types of problems occur at this school often: vandalism.[1]
ISAFPSAF64	The following types of problems occur at this school often: student possession of weapons.[1]
ISAFPSAF66	The following types of problems occur at this school often: physical abuse of teachers.[1]
ISAFPSAF67	The following types of problems occur at this school often: student verbal abuse of teachers.[1]
ISAFBUL68	I think that bullying is a frequent problem at this school.[1]
ISAFBUL69	I think that cyberbullying is a frequent problem among students at this school.[1]
ISAFBUL71	Students at this school would feel comfortable reporting a bullying incident to a teacher or other staff.
ISAFBUL73	Staff at this school always stop bullying when they see it.
ISAFBUL79	Staff at this school are teased or picked on about their race or ethnicity.[1]
ISAFBUL80	Staff at this school are teased or picked on about their cultural background or religion.[1]
ISAFBUL81	Staff at this school are teased or picked on about their physical or mental disability.[1]
ISAFBUL82	Staff at this school are teased or picked on about their sexuality.[1]
ISAFSUB86	This school collaborates well with community organizations to help address youth substance use problems.
ISAFSUB87	This school has adequate resources to address substance use prevention.
ISAFSUB88	This school provides effective confidential support and referral services for students needing help because of substance abuse (e.g., a Student Assistance Program).
ISAFSUB91	This school has programs that address substance use among students.
IENVPENV97	This school looks clean and pleasant.
IENVPENV98	This school is an inviting work environment.
IENVPENV100	My teaching is hindered by poor heating, cooling, and/or lighting systems at this school.[1]
IENVPENV101	My teaching is hindered by a lack of instructional space (e.g., classrooms) at this school.[1]
IENVPENV102	My teaching is hindered by a lack of textbooks and basic supplies at this school.[1]
IENVPENV103	My teaching is hindered by inadequate or outdated equipment or facilities at this school.[1]
IENVINS105	The students in my class(es) come to class prepared with the appropriate supplies and books.
IENVINS107	Once we start a new program at this school, we follow up to make sure that it's working.
IENVINS108	The programs and resources at this school are adequate to support students' learning.

IENVINS110	Teachers at this school feel responsible to help each other do their best.
IENVINS115	Teachers at this school feel that it is a part of their job to prepare students to succeed in college.
IENVINS116	The programs and resources at this school are adequate to support students with special needs or disabilities.
IENVPHEA119	This school provides the materials, resources, and training necessary for me to support students' physical health and nutrition.
IENVPHEA120	This school places a priority on making healthy food choices.
IENVPHEA121	This school places a priority on students' health needs.
IENVPHEA122	This school places a priority on students' physical activity.
IENVMEN123	This school provides quality counseling or other services to help students with social or emotional needs.
IENVMEN125	This school provides the materials, resources, and training necessary for me to support students' social or emotional needs.
IENVMEN126	This school places a priority on addressing students' mental health needs.
IENVMEN128	This school places a priority on teaching students strategies to manage their stress levels.
IENVMEN137	This school places a priority on helping students with their social, emotional, and behavioral problems.
IENVDIS129	Staff at this school are clearly informed about school policies and procedures.
IENVDIS130	Staff at this school recognize students for positive behavior.
IENVDIS134	School rules are applied equally to all students.
IENVDIS134C	Discipline is fair.
IENVDIS135	This school effectively handles student discipline and behavior problems.
IENVDIS136	Staff at this school work together to ensure an orderly environment.

[1] Item is negatively valenced and needs to reverse-coded.

SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table A3. Scaled school climate items in the EDSCLS noninstructional staff survey

Name	Question wording
NENGCLC2	At this school, all students are treated equally, regardless of whether their parents are rich or poor.
NENGCLC3	This school encourages students to take challenging classes no matter their race, ethnicity, nationality, and/or cultural background (e.g., honor level courses, gifted courses, AP or IB courses).
NENGCLC4	This school provides instructional materials (e.g., textbooks or handouts) that reflect students' cultural background, ethnicity and identity.
NENGCLC6	This school emphasizes showing respect for all students' cultural beliefs and practices.
NENGCLC7	This school provides effective resources and training for teaching students with Individualized Education Programs (IEPs) across different languages and cultures.
NENGCLC8	This school provides effective supports for students needing alternative modes of communication (e.g., manual signs, communication boards, computer-based devices, picture exchange systems, Braille).
NENGREL16	This school helps parents find community supports for their students who need them.
NENGREL17	Staff at this school do a good job helping parents to support their children's learning at home.
NENGREL18	Staff at this school do a good job helping parents understand when their child needs to learn social and emotional skills.
NENGREL24	At this school the staff get along well.
NENGREL25	At this school there is a feeling of trust among the staff.
NENGREL30	At this school students get along well with the staff.
NENGPAR34	Administrators ask staff to be involved in making decisions.
NENGPAR37	Staff at this school have many informal opportunities to influence what happens within the school.
NENGPAR38	At this school, students are given the opportunity to take part in decision making.
NENGPAR44	This school provides students with opportunities to take a lead role in organizing programs and activities.
NENGPAR47	Students are encouraged to get involved in extra-curricular activities.
NSAFEMO51	I feel like I belong.
NSAFEMO52	I feel satisfied with the recognition I get for doing a good job.
NSAFEMO53	I feel comfortable discussing feelings, worries, and frustrations with my supervisor.
NSAFEMO54	This school inspires me to do the very best at my job.
NSAFEMO55	People at this school care about me as a person.

NSAFEMO148	I can manage almost any student behavior problem.
NSAFPSAF57	The following types of problems occur at this school often: Physical conflicts among students.[1]
NSAFPSAF58	The following types of problems occur at this school often: robbery or theft.[1]
NSAFPSAF59	The following types of problems occur at this school often: vandalism.[1]
NSAFPSAF61	The following types of problems occur at this school often: student possession of weapons.[1]
NSAFPSAF63	The following types of problems occur at this school often: physical abuse of teachers.[1]
NSAFPSAF64	The following types of problems occur at this school often: student verbal abuse of teachers.[1]
NSAFBUL65	I think that bullying is a frequent problem at this school.[1]
NSAFBUL66	I think that cyberbullying is a frequent problem among students at this school.[1]
NSAFBUL70	Staff at this school always stop bullying when they see it.
NSAFBUL76	Staff at this school are teased or picked on about their race or ethnicity.[1]
NSAFBUL77	Staff at this school are teased or picked on about their cultural background or religion.[1]
NSAFBUL78	Staff at this school are teased or picked on about their physical or mental disability.[1]
NSAFBUL79	Staff at this school are teased or picked on about their sexuality.[1]
NSAFSUB83	This school collaborates well with community organizations to help address youth substance use problems.
NSAFSUB84	This school has adequate resources to address substance use prevention.
NSAFSUB85	This school provides effective confidential support and referral services for students needing help because of substance abuse (e.g., a Student Assistance Program).
NSAFSUB87	This school has programs, resources, and/or policies to prevent substance abuse.
NSAFSUB88	This school has programs that address substance use among students.
NENVPENV97	My work is hindered by poor heating, cooling, and/or lighting systems at this school.[1]
NENVPENV98	My work is hindered by insufficient workspace at this school.[1]
NENVPENV99	My work is hindered by a lack of materials and basic supplies at this school.[1]
NENVPENV100	My work is hindered by inadequate or outdated equipment or facilities at this school.[1]
NENVPENV102	This school looks clean and pleasant.
NENVPENV103	This school is an inviting work environment.
NENVINS109	Staff at this school feel responsible to help each other do their best.
NENVINS110	Staff at this school feel responsible when students at this school fail.

NENVINS111	The programs and resources at this school are adequate to support students with special needs or disabilities.
NENVINS140	Staff at this school feel that it is a part of their job to prepare students to succeed in college.
NENVINS141	Staff at this school expect students to do their best all the time.
NENVPHEA115	This school provides the materials, resources, and training necessary for me to support students' physical health and nutrition.
NENVPHEA117	This school places a priority on making healthy food choices.
NENVPHEA118	This school places a priority on students' health needs.
NENVPHEA119	This school places a priority on students' physical activity.
NENVMEN122	This school places a priority on addressing students' mental health needs.
NENVMEN125	This school places a priority on teaching students strategies to manage their stress levels.
NENVMEN126	This school provides the materials, resources, and training necessary for me to support students' social or emotional needs.
NENVMEN127	This school provides quality counseling or other services to help students with social or emotional needs.
NENVDIS130	Staff at this school are clearly informed about school policies and procedures.
NENVDIS131	Staff at this school recognize students for positive behavior.
NENVDIS132	Staff at this school encourage students to think about how their actions affect others.
NENVDIS134	School rules are applied equally to all students.
NENVDIS134C	Discipline is fair.
NENVDIS135	Staff at this school help students develop strategies to understand and control their feelings and actions.
NENVDIS136	This school effectively handles student discipline and behavior problems.
NENVDIS137	Staff at this school work together to ensure an orderly environment.

[1] Item is negatively valenced and needs to reverse-coded.

SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table A4. Step values for scaled school climate items in the EDSCLS student survey

	2017 recalibration			2015 calibration		
Name	Step value 1	Step value 2	Step value 3	Step value 1	Step value 2	Step value 3
SENGCLC1	-0.888	-0.217	1.520	-0.789	-0.217	1.577
SENGCLC2	-1.217	-0.273	1.644	-1.055	-0.281	1.670
SENGCLC3	-1.702	-1.047	1.902	-1.624	-0.935	1.773
SENGCLC4	-1.131	-0.112	1.710	-1.063	-0.081	1.758
SENGCLC7	-1.594	-1.066	1.549	-1.558	-1.070	1.552
SENGREL9	-0.925	0.074	2.411	-0.852	0.081	2.344
SENGREL11	-1.676	-0.632	2.092	-1.566	-0.643	2.052
SENGREL12	-1.375	-0.304	2.130	-1.294	-0.303	2.114
SENGREL14	-1.194	-1.180	1.690	-1.163	-1.120	1.714
SENGREL153	-1.356	-1.273	1.585	-1.399	-1.261	1.589
SENGREL17	-1.330	-0.533	2.165	-1.316	-0.584	2.101
SENGREL20	-0.774	0.424	2.920	-1.001	0.279	2.815
SENGREL21	-1.216	-0.112	2.902	-1.266	-0.302	2.747
SENGREL29	-1.459	-1.675	1.279	-1.505	-1.625	1.424
SENGPAR44	-1.021	-0.389	1.405	-0.966	-0.316	1.526
SENGPAR45	-1.158	-0.356	1.254	-1.139	-0.316	1.348
SENGPAR46	-0.835	0.200	2.396	-0.902	0.043	2.315
SENGPAR47	-1.578	-1.545	0.977	-1.529	-1.649	0.927
SENGPAR48	-1.547	-1.214	1.672	-1.460	-1.299	1.700
SSAFEMO49	-1.197	-0.080	3.052	-1.319	-0.210	3.041
SSAFEMO52	-0.800	0.692	2.647	-0.944	0.643	2.558
SSAFEMO53	-1.153	0.257	2.862	-1.262	0.181	2.726
SSAFEMO54	-0.652	-0.983	1.317	-0.637	-1.001	1.308
SSAFEMO56	-1.175	-0.868	1.591	-1.160	-0.878	1.536
SSAFEMO57	-1.213	-1.095	1.572	-1.242	-1.191	1.478
SSAFPSAF60	-1.408	-1.567	1.398	-1.377	-1.601	1.441
SSAFPSAF63	-1.539	-1.813	0.002	-1.500	-1.867	0.049
SSAFPSAF65	-1.716	-0.969	0.166	-1.795	-1.029	0.206
SSAFPSAF67	-0.940	0.356	1.602	-0.974	0.409	1.554
SSAFPSAF68	-0.580	0.381	1.491	-0.463	0.602	1.523
SSAFPSAF69	-1.031	0.193	1.895	-0.983	0.279	1.875
SSAFPSAF71	-0.723	0.152	2.206	-0.710	0.223	2.252
SSAFBUL74	-0.981	-0.463	1.236	-0.933	-0.431	1.195
SSAFBUL75	-1.183	-0.711	1.136	-1.087	-0.668	1.113
SSAFBUL76	-0.942	-0.136	1.180	-0.887	-0.074	1.127
SSAFBUL77B	-1.004	-0.297	1.474	-0.991	-0.239	1.460
SSAFBUL73	-0.835	0.095	2.165	-0.750	0.128	2.186
SSAFBUL83	-0.480	0.532	2.069	-0.487	0.665	2.064
SSAFSUB88	-1.257	-0.552	0.494	-1.438	-0.536	0.401
SSAFSUB91	-1.284	-0.414	0.549	-1.265	-0.312	0.468
SSAFSUB92	-1.472	-0.719	0.343	-1.458	-0.671	0.296

SSAFSUB93	-1.092	-0.020	0.618	-1.113	0.092	0.557
SSAFSUB94	-1.048	0.097	0.577	-0.993	0.302	0.538
SENVPENV100	-0.226	0.460	2.670	-0.268	0.644	2.764
SENVPENV102	-0.830	0.488	2.484	-0.769	0.619	2.466
SENVPENV105	-1.563	-0.923	2.104	-1.756	-1.038	2.067
SENVPENV106	-1.587	-0.779	2.001	-1.682	-0.846	1.896
SENVPENV107	-1.280	0.156	2.345	-1.311	0.147	2.238
SENVINS111	-1.479	-0.629	1.709	-1.458	-0.652	1.588
SENVINS113	-1.532	-0.994	1.921	-1.503	-1.127	1.788
SENVINS114	-1.491	-0.297	2.112	-1.518	-0.373	2.006
SENVINS115	-1.572	-1.210	1.090	-1.566	-1.320	0.974
SENVINS121	-2.250	-2.465	0.329	-2.176	-2.440	0.287
SENVMEN130	-1.454	-1.002	1.470	-1.367	-0.990	1.420
SENVMEN132	-1.499	-1.061	1.528	-1.434	-1.057	1.467
SENVMEN133	-1.428	-0.888	1.523	-1.330	-0.833	1.497
SENVMEN134	-0.207	1.334	2.749	0.018	1.435	2.610
SENVMEN137	-0.593	0.620	2.812	-0.551	0.697	2.689
SENVDIS142	-1.820	-1.842	1.320	-1.856	-1.711	1.420
SENVDIS143	-1.400	-0.556	1.722	-1.337	-0.502	1.669
SENVDIS146	-1.560	-0.524	1.921	-1.530	-0.497	1.883
SENVDIS147	-1.032	-0.473	1.273	-0.977	-0.389	1.418
SENVDIS147C	-1.036	-0.484	1.827	-1.014	-0.445	1.916

SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table A5. Step values for scaled school climate items in the EDSCLS instructional staff survey

	2017 recalibration			2015 calibration		
Name	Step value 1	Step value 2	Step value 3	Step value 1	Step value 2	Step value 3
IENGCLC2	-2.239	-0.793	1.636	-1.998	-0.779	1.609
IENGCLC3	-2.157	-1.231	1.616	-2.391	-1.210	1.550
IENGCLC4	-2.610	-0.485	3.380	-2.807	-0.470	3.543
IENGCLC6	-2.724	-1.530	1.825	-3.434	-1.562	1.775
IENGCLC7	-1.785	0.149	2.955	-1.816	0.096	2.986
IENGCLC8	-2.183	-0.801	3.132	-2.104	-0.877	3.256
IENGREL9	-3.028	-1.312	2.680	-2.778	-1.310	2.937
IENGREL10	-3.227	-0.807	2.920	-3.181	-0.774	3.002
IENGREL12	-4.123	-0.386	3.833	-4.278	-0.550	3.693
IENGREL14	-2.325	0.086	3.092	-2.276	0.119	3.266
IENGREL15	-2.970	-1.670	2.166	-2.800	-1.785	2.260
IENGPAR29	-1.648	-0.187	3.168	-1.720	-0.174	3.259
IENGPAR31	-1.479	0.232	3.262	-1.603	0.343	3.390
IENGPAR32	-1.832	0.956	4.793	-1.909	1.037	4.642
IENGPAR36	-1.119	0.456	3.500	-1.150	0.594	3.527
IENGPAR42	-2.287	0.100	3.784	-2.479	0.217	4.029
IENGPAR48	-2.710	-1.619	1.545	-2.587	-1.840	1.508
ISAFEMO52	-1.428	-1.182	1.840	-1.732	-1.217	1.904
ISAFEMO53	-0.921	-0.087	2.710	-0.971	-0.115	2.616
ISAFEMO54	-0.924	-0.107	2.137	-0.921	-0.188	2.020
ISAFEMO55	-1.627	-0.512	1.989	-1.949	-0.552	1.902
ISAFEMO56	-1.325	-1.377	2.081	-1.437	-1.437	2.185
ISAFEMO58	-2.514	-1.223	2.140	-2.991	-1.337	2.239
ISAFPSAF60	-1.061	0.001	3.107	-0.989	0.169	3.562
ISAFPSAF61	-1.903	-0.252	2.790	-1.742	-0.071	2.999
ISAFPSAF62	-1.866	-0.388	2.892	-1.676	-0.214	3.095
ISAFPSAF64	-3.038	-1.918	1.355	-2.907	-1.667	1.784
ISAFPSAF66	-2.141	-1.977	0.984	-2.229	-1.793	1.218
ISAFPSAF67	-0.557	0.623	2.869	-0.444	0.805	3.125
ISAFBUL68	-0.983	0.846	4.387	-0.833	0.924	4.510
ISAFBUL69	-0.777	1.431	4.285	-0.661	1.665	4.332
ISAFBUL71	-2.524	-0.482	3.556	-2.476	-0.485	3.682
ISAFBUL73	-2.612	-0.790	2.142	-2.705	-0.857	1.975
ISAFBUL79	-2.286	-1.890	1.048	-3.087	-1.923	1.153
ISAFBUL80	-2.093	-2.129	1.024	-2.406	-2.242	1.094
ISAFBUL81	-2.179	-2.106	0.949	-2.374	-2.044	1.027
ISAFBUL82	-2.018	-1.899	0.966	-2.381	-1.847	1.063
ISAFSUB86	-2.005	0.084	3.393	-2.123	0.070	3.231
ISAFSUB87	-2.091	0.094	3.484	-2.177	0.055	3.408
ISAFSUB88	-2.070	-0.356	3.194	-2.106	-0.364	3.075
ISAFSUB91	-2.412	0.227	3.398	-2.593	0.108	3.267
IENVPENV97	-2.003	-1.312	1.500	-2.221	-1.416	1.495

IENVPENV98	-2.095	-1.389	1.692	-2.300	-1.384	1.752
IENVPENV100	-1.758	-0.641	2.345	-1.619	-0.600	2.420
IENVPENV101	-1.555	-1.024	2.386	-1.448	-0.985	2.674
IENVPENV102	-1.620	-0.747	2.532	-1.508	-0.714	2.766
IENVPENV103	-1.310	-0.464	2.637	-1.132	-0.346	2.870
IENVINS105	-1.148	0.493	4.450	-1.217	0.591	4.531
IENVINS107	-1.547	0.386	4.138	-1.676	0.348	4.038
IENVINS108	-2.461	-1.088	3.337	-2.543	-1.167	3.396
IENVINS110	-2.874	-1.382	2.092	-3.059	-1.446	2.140
IENVINS115	-3.119	-2.315	1.708	-2.910	-2.413	1.924
IENVINS116	-2.090	-1.010	2.276	-2.024	-1.123	2.243
IENVPHEA119	-2.575	-0.178	3.113	-2.689	-0.146	3.123
IENVPHEA120	-2.257	-0.284	3.197	-2.327	-0.436	3.154
IENVPHEA121	-3.029	-0.808	3.138	-2.741	-0.791	3.204
IENVPHEA122	-2.439	-0.394	3.232	-2.495	-0.419	3.386
IENVMEN123	-2.079	-1.127	2.272	-2.320	-1.358	2.445
IENVMEN125	-2.192	-0.137	3.248	-2.189	-0.202	3.414
IENVMEN126	-2.211	-0.198	3.260	-2.359	-0.213	3.442
IENVMEN128	-2.172	0.503	3.933	-2.337	0.365	4.040
IENVMEN137	-1.990	-0.291	3.361	-2.317	-0.386	3.500
IENVDIS129	-2.306	-1.082	2.169	-2.403	-1.272	2.128
IENVDIS130	-2.914	-2.431	1.707	-3.013	-2.748	1.673
IENVDIS134	-1.134	0.170	2.468	-1.109	0.228	2.573
IENVDIS134C	-1.393	-0.024	2.762	-1.521	0.120	3.012
IENVDIS135	-1.232	0.145	2.744	-1.349	0.186	3.004
IENVDIS136	-2.301	-1.508	2.244	-2.457	-1.682	2.344

SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.

Table A6. Step values for scaled school climate items in the EDSCLS noninstructional staff survey

	2017 recalibration			2015 calibration		
Name	Step value 1	Step value 2	Step value 3	Step value 1	Step value 2	Step value 3
NENGCLC2	-2.413	-0.628	2.016	-2.473	-0.592	1.813
NENGCLC3	-2.905	-0.939	2.215	-3.121	-0.712	2.019
NENGCLC4	-2.545	-0.359	3.944	-2.449	-0.358	3.620
NENGCLC6	-2.449	-1.914	2.200	-2.625	-2.129	2.062
NENGCLC7	-2.372	-0.496	3.073	-2.441	-0.345	2.645
NENGCLC8	-2.716	-0.902	3.125	-2.856	-0.496	2.992
NENGREL16	-2.516	-1.333	3.449	-2.344	-1.634	3.288
NENGREL17	-3.520	-0.572	3.473	-3.265	-0.593	3.400
NENGREL18	-2.474	-0.647	3.509	-2.652	-0.743	3.507
NENGREL24	-3.245	-1.088	2.715	-2.933	-1.034	2.310
NENGREL25	-2.483	-0.034	3.318	-2.412	0.086	2.855
NENGREL30	-3.093	-0.945	3.724	-3.001	-0.920	3.476
NENGPAR34	-1.812	0.265	3.800	-1.392	0.718	3.514
NENGPAR37	-2.662	0.208	3.803	-2.289	0.156	3.636
NENGPAR38	-2.328	0.966	5.377	-1.745	1.347	5.438
NENGPAR44	-3.021	-0.167	4.012	-2.582	0.091	4.271
NENGPAR47	-3.214	-1.668	2.269	-3.596	-1.584	2.072
NSAFEMO51	-1.032	-1.261	1.703	-0.788	-1.334	1.688
NSAFEMO52	-0.963	-0.380	2.020	-0.930	-0.067	2.139
NSAFEMO53	-0.915	-0.431	1.770	-0.728	-0.048	1.791
NSAFEMO54	-0.995	-0.867	1.730	-1.098	-0.622	1.557
NSAFEMO55	-1.746	-1.550	2.122	-1.216	-1.423	2.001
NSAFEMO148	-2.777	-0.805	2.225	-2.778	-0.648	2.137
NSAFPSAF57	-0.902	0.270	3.060	-0.948	0.552	3.122
NSAFPSAF58	-2.047	-0.557	2.661	-2.661	-0.268	2.567
NSAFPSAF59	-1.878	-0.677	2.709	-1.855	-0.532	2.754
NSAFPSAF61	-3.111	-1.769	1.212	-2.767	-1.352	1.391
NSAFPSAF63	-1.924	-1.896	1.026	-1.510	-1.849	1.190
NSAFPSAF64	-0.521	0.556	2.645	-0.452	0.678	2.604
NSAFBUL65	-1.081	0.665	4.414	-1.242	0.665	4.285
NSAFBUL66	-0.967	1.105	3.904	-0.952	1.406	3.522
NSAFBUL70	-1.997	-0.939	2.386	-2.355	-1.199	1.832
NSAFBUL76	-1.421	-2.018	1.173	-1.404	-1.957	1.230
NSAFBUL77	-1.398	-2.265	1.038	-1.585	-2.212	1.119
NSAFBUL78	-1.998	-2.082	0.928	-2.388	-1.800	1.022
NSAFBUL79	-0.856	-2.285	0.986	-1.086	-2.335	1.168
NSAFSUB83	-1.465	-0.301	2.994	-1.817	-0.338	2.793
NSAFSUB84	-1.750	-0.218	3.242	-1.909	-0.221	3.148
NSAFSUB85	-1.955	-0.616	3.062	-1.762	-0.774	2.834
NSAFSUB87	-1.374	-0.593	3.200	-1.685	-0.629	3.232
NSAFSUB88	-1.488	-0.141	3.403	-1.836	-0.329	3.260
NENVPENV97	-1.314	-0.753	2.467	-1.369	-0.774	2.919

NENVPENV98	-2.042	-1.535	2.516	-2.400	-1.583	3.014
NENVPENV99	-1.806	-1.475	2.549	-1.590	-1.455	3.116
NENVPENV100	-1.834	-0.831	2.842	-2.202	-0.746	3.068
NENVPENV102	-1.668	-1.642	2.197	-1.526	-2.257	2.316
NENVPENV103	-2.250	-1.145	2.434	-2.981	-1.412	2.453
NENVINS109	-2.805	-1.105	2.803	-3.195	-1.040	3.327
NENVINS110	-3.031	-0.146	3.533	-2.382	0.076	3.879
NENVINS111	-1.457	-0.852	2.687	-1.225	-0.807	2.823
NENVINS140	-3.539	-1.210	2.437	-4.347	-0.983	2.640
NENVINS141	†	†	†	-4.965	-1.601	2.023
NENVPHEA115	-2.207	-0.519	3.272	-2.334	0.001	3.185
NENVPHEA117	-2.316	-0.769	2.945	-1.954	-0.779	2.814
NENVPHEA118	-2.866	-1.323	3.292	-2.326	-0.934	3.401
NENVPHEA119	-2.710	-0.540	3.540	-2.129	-0.494	3.947
NENVMEN122	-1.493	-0.794	3.556	-1.244	-0.778	3.641
NENVMEN125	-2.468	0.315	4.244	-2.135	0.311	4.448
NENVMEN126	-1.714	-0.058	4.068	-1.564	0.113	3.905
NENVMEN127	-2.230	-0.996	2.787	-2.201	-0.964	2.791
NENVDIS130	-2.262	-1.083	2.674	-2.661	-0.998	2.959
NENVDIS131	-2.989	-2.151	2.092	-3.217	-2.218	2.095
NENVDIS132	-2.508	-1.847	2.355	-2.588	-1.875	2.361
NENVDIS134	-0.795	0.244	2.726	-0.787	0.095	2.727
NENVDIS134C	-0.724	-0.007	3.016	-1.108	0.135	3.112
NENVDIS135	-3.000	-0.592	3.610	-2.582	-0.410	3.581
NENVDIS136	-0.937	-0.100	3.332	-0.812	-0.167	3.174
NENVDIS137	-1.660	-1.399	2.962	-1.694	-1.467	2.812

† Item is excluded from the environment and the instructional environment scales.
SOURCE: ED School Climate Surveys (EDSCLS), 2015-2017.