

Job Demands Experienced by South Carolina Teachers in 2023

JANUARY 2024

+ TECHNICAL APPENDIX

This appendix details the analyses conducted for the Job Demands Experienced by South Carolina Teachers in 2023 report, including all relevant statistical methods, qualitative procedures, and results. The Rasch analyses were conducted to examine the quality of the South Carolina Teacher Working Conditions Survey (SCTWCS), including the functioning of categories, category usage by participants, endorsability (i.e., difficulty to agree) of the items, and spread of items along the tested demand continuum. Qualitative procedures were used to group items into demand areas and subareas, focusing on matching statements to the objective items included in the SCTWCS and matching statements to the understanding of demands that emerged through the thematic analyses.

+ APPENDIX A: RASCH RATING SCALE ANALYSES

Sample

This study was part of a broader research project to examine teachers' perceptions of their working conditions (Starrett et al., 2023). We used the data collected from 15,428 teachers across 44 school districts in South Carolina in the spring of 2023 as part of the SCTWCS. Table A1 provides descriptive information about participants completing the SCTWCS. The highest numbers of South Carolina teachers completing the survey were from elementary schools, moderate-poverty level schools, and schools located in suburban areas.

Table A1. Teacher Characteristics Across School-Level Variables for the Spring 2023 SCTWCS (N = 15,428)

School-level variables	Levels	Number	Percentage
School organizational level	Elementary school	6,138	43.7%
	Middle school	2,991	21.3%
	High school	3,696	26.3%
	Other	1,221	8.7%
School poverty	Low	4,725	33.8%
	Moderate	6,618	47.4%
	High	2,618	18.8%
School location	City	2,716	19.4%
	Suburbs	5,929	42.3%
	Town	954	6.8%
	Rural	4,430	31.6%

Note. "Other" in school organizational level includes preschools and schools of combined levels.

The South Carolina Department of Education (SCDE) classifies a child as living in poverty if the student is enrolled in Medicaid, Temporary Assistance for Needy Families (TANF), and/or enrolled in the Supplemental Nutrition Assistance Program (SNAP) or the foster system. Using these markers, the SCDE identified the percentage of pupils-in-poverty (PIP) at the school level. Using the SCDE PIP designation, all schools in South Carolina were then ranked, and quartiles were obtained to create a poverty designation. Teachers in the upper 25% of South Carolina schools in terms of PIP were categorized as teaching in high-poverty schools, and teachers in the lowest 25% of PIP were categorized as teaching in low-poverty schools. Teachers at schools in the middle (25–75% of PIP rankings) were categorized as teaching at moderate-poverty schools. For the geographic location, schools were categorized according to census-defined geographic designations (city, suburb, town, or rural) assigned by the National Center for Educational Statistics (NCES) (NCES, 2006).

Instrumentation

This study included four “demands” scales from the SCTWCS (i.e., *amount of paperwork and routine duties*, *student engagement*, *student behavior*, *student safety and health*). Each scale consisted of four to five items, for a total of 19 demand items. *Amount of paperwork and routine duties* assesses teachers’ perceptions of the amount of paperwork and routine duties they have (e.g., “You have enough time to complete the required administrative work/forms”). *Student engagement* (e.g., “In your classroom, your students show interest in completing schoolwork”), *student behavior* (e.g., “Student tardiness frequently interferes with your teaching”), and *student safety and health* (e.g., “You feel prepared to recognize students exhibiting early warning signs of violent behavior”) measure teachers’ perceptions of *student engagement*, *student behavior*, and *student safety and health*, respectively. All four scales are rated with a 5-point Likert scale with anchors of 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, and 5 = Strongly agree. Higher item scores demonstrate that an aspect is less of a demand upon teachers’ workdays.

Analysis

This study aimed to examine the validity and reliability of the four demand scales with the Rasch model. The Rasch model locates the person’s performance and the item difficulty on the same latent construct, allowing the direct comparison of the two parameters (Andrich & Marais, 2019). Specifically, we used the Rasch rating scale model designed for Likert-scale items and considered response categories constant across all the items.

All analyses were conducted with Winsteps Rasch measurement software version 5.6. (Linacre, 2022). First, as the Rasch analysis was constructed under the unidimensional framework, we examined the unidimensionality of each scale. The unidimensionality was examined with principal component analysis (PCA) of the residuals, which may be indicative of the effect of another substantial latent construct (Linacre, 2011). The percentage of variance explained by the Rasch model should account for a minimum of 50% of the total variance to indicate the unidimensionality of each demand scale. Eigenvalues of the unexplained variances in the first contrast (i.e., the first PCA component) should be less than 2.0 to meet the unidimensionality assumption (Linacre, 2023).

Second, the Rasch measurement model provides infit and outfit mean square (MNSQ) statistics to evaluate whether items of an instrument measure one trait and if responses of individuals are adequate for accurate computation and communication of a teacher’s true score measure along a single trait (Linacre, 2011). We note that the traits in question are the latent levels for each of the four demand areas, where each area is considered separately. The infit and outfit MNSQ between 0.6 and 1.4 indicates an acceptable fit between the item and model (Linacre, 2022).

Third, item polarity was investigated by the point-measure correlation (i.e., the correlation of the item with the overall measure of the underlying construct). A high correlation value indicates that an item can distinguish between teachers’ (true) perspectives relative to the tested demand. All items should have positive item-total correlation values, as positive values indicate that items contribute to the measurement of the relevant construct (Linacre, 2003). The correlation coefficients may be evaluated using criteria of low ($r \leq 0.35$), medium ($0.36 \leq r \leq 0.67$), and strong ($0.68 \leq r \leq 1.00$) (Linacre, 2003).

Fourth, we examined the person-item relationships with the person-item map (Wright map). The map places individuals and items on locations of the latent construct (i.e., a given demand area) and the item difficulty hierarchy to examine whether the range of item difficulty levels matches the range of respondents' abilities (Bond & Fox, 2007; Boone & Noltemeyer, 2017).

Fifth, we examined the stability of person and item ordering with different reliability and separation indices. Person reliability (i.e., a scale's sensitivity to the nuances in demand trait levels of the individuals) and item reliability (i.e., the replicability of item replacement along a construct) ranged from 0 to 1. Person reliability greater than 0.5 and item reliability greater than 0.9 is acceptable (Linacre, 2002). The person separation index (i.e., how well a set of items separates persons measured) and item separation (i.e., how well a sample of people can separate items) ranged from 0 to infinity, with higher values indicating better separation. Item separation indices of 3 or greater are desirable (Linacre, 2012). A person separation index greater than 1.5 is acceptable, 2.0 is good, and 3.0 is excellent (Duncan et al., 2003).

Sixth, we examined the category functioning from different perspectives. Category fit was examined with infit and outfit measures for each category. Values between 0.6 and 1.4 are adequate to show that a person's use of categories is appropriate (Linacre, 2022). Step measures (i.e., the intersections of response category functions) should increase with category levels indicated by the Andrich threshold. Andrich thresholds refer to the levels at which the likelihood of being observed in a given response category is less than in the next higher category (Bond & Fox, 2007). The Andrich threshold difference between the adjacent categories should be greater than 1.2 logits and smaller than 5.0 logits (Linacre, 2022) to show sufficient distinction between categories. The distribution patterns of average responses to the items were examined. Each category should have at least 10% of responses (Smith et al., 2002). We also examined the functioning of the scale using probability curve plots, which provide information to suggest whether one or more of the categories is subsumed by another and whether the logit measures of the item categories are ordered as expected (i.e., higher scores represent a higher level of the construct).

+ RESULTS

Each demand construct on the SCTWCS was considered as a separate scale. Results are presented by area.

Amount of Paperwork and Routine Duties

SCALE UNIDIMENSIONALITY

The raw variance explained by the measure dimension (i.e., teacher's true scores) was strong (70.4% with an Eigenvalue of 9.53). The unexplained variance in the first contrast (Eigenvalue = 1.51, 11.1%) and the following contrasts was low, indicating that the scale measures one dimension.

FIT INDICATORS

As presented in Table A2, the infit MNSQ is 0.90–1.23, and the outfit MNSQ is 0.82–1.18. All these values fell within the recommended range of 0.60 to 1.40, indicating a good fit of the data to the Rasch model.

ITEM POLARITY

As displayed in Table A2, all point-measure correlations were positive and ranged from 0.87 to 0.89. This suggests that all the items from this scale function similarly well in differentiating between teachers of low or high perceptions related to their *amount of paperwork and routine duties*.

ITEM-PERSON (WRIGHT) MAP

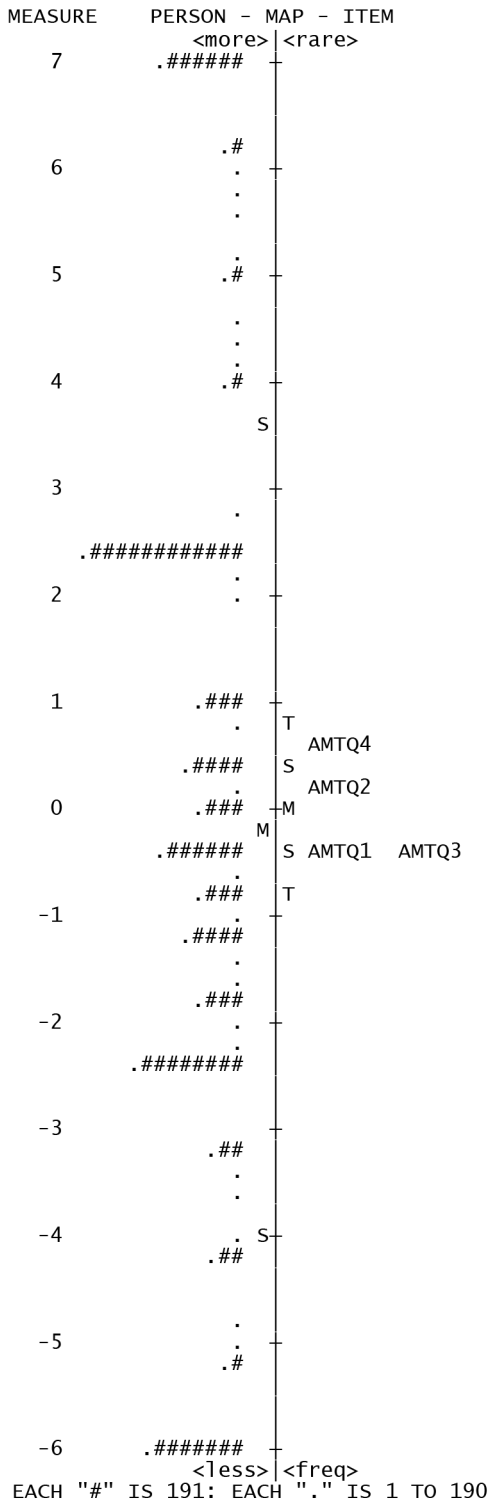
The item-person (Wright) map (Figure A1) shows the distribution of the item difficulties and person abilities across the construct of *amount of paperwork and routine duties*. The vertical line separates item measures and person measures. Person measures are denoted by “#” and placed on the left side of the vertical line. The M, S, and T on the left side of the vertical line represent the mean, one standard deviation from the mean, and two standard deviations from the mean for persons and items, respectively.

The item-person (Wright) map showed that teacher *amount of paperwork and routine duties* latent scores ranged from -6.0 to 7.0 logits, with most teachers’ true scores falling within ± 1 logits. The results showed high variability in person measures, meaning there was a lot of variability in teachers’ perceptions of *amount of paperwork and routine duties*. The item measure ranged from -0.39 to 0.57 logits, suggesting that items catered to teachers in the middle range of the scale. Item 2 (“You have enough time to create lesson plans”) was the easiest item for teachers to endorse at -0.39 logits (i.e., more teachers chose “Agree” or “Strongly agree” as responses to this item). Item 4 (“You have enough time to complete most of your job-related work at school”) was the hardest for teachers to endorse at 0.57 logits (i.e., more teachers chose “Disagree” or “Strongly disagree” as responses to this item).

Two items overlapped at the same measure of difficulty: Item 1 (“You have enough time to complete required administrative work/forms”) and Item 3 (“You have enough time to create lesson plans”). The results showed that these two items did not add unique information to the measurement of teachers’ perceptions of *amount of paperwork and routine duties*. We might consider removing one of the items from the scale in future administrations of the SCTWCS.

The Wright map indicated possible improvement in this *amount of paperwork and routine duties* scale. Items were situated in the middle of the scale. However, respondents were spread across this demand area, with estimated true scores from -6.0 to 7.0 logits. In other words, teachers had a much larger spread across the latent dimension than the item pool for the *amount of paperwork and routine duties* scale. This demand scale functioned well in assessing the perceptions of teachers whose measures (i.e., true scores) were roughly one standard deviation from the mean. However, many teacher measures were well above or below the range. Items that are more difficult or easier to endorse should be added to the scale to identify teachers with higher or lower perceptions of this demand.

Figure A1. Person-Item Map of the Amount of Paperwork and Routine Duties Scale



RELIABILITY AND SEPARATION INDICES

As displayed in Table A3, the person separation index (non-extreme) was 1.90, and the person reliability index was 0.78. The results suggested that the scale functions adequately in differentiating respondents. The item separation index of 26.02 and the item reliability index of 1.00 showed that the sample was large enough to confirm the hierarchy of the item endorsability (i.e., difficulty).

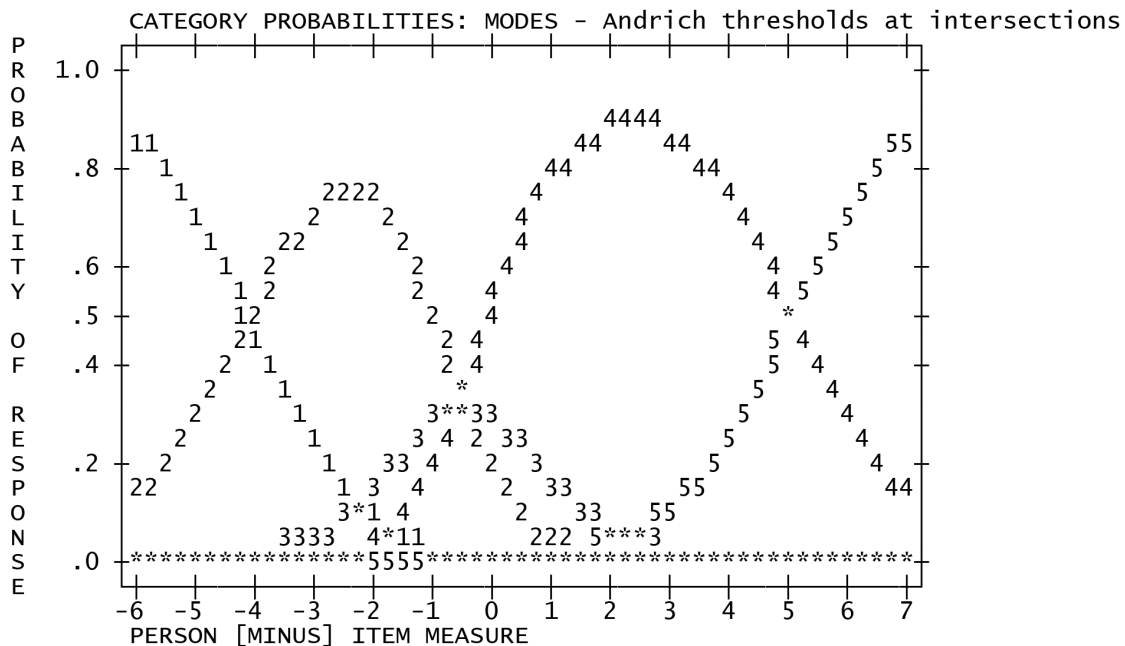
CATEGORY FUNCTION

As presented in Table A4, infit MNSQ values (0.79–1.45) and outfit MNSQ values (0.65–1.06) for each response category indicated that the observed average for each response category was similar to the sample expectations. The average measure by category showed a monotonical advance up the rating scale (-5.21, -2.39, -0.47, 2.31, 6.17), indicating that higher rating categories mean higher perceptions of the construct *amount of paperwork and routine duties*.

The step measure results in Table A4 showed that the 5-level Likert scale did not function well. Specifically, the Andrich threshold difference between category 3 (Andrich threshold = -0.40) and category 4 (Andrich threshold = -0.58) was smaller than the suggested cutoff value of 1.20. The results suggest that these two categories of the Likert scale (3 = Neither disagree nor agree and 4 = Agree) were not mutually exclusive, and the scale could be improved by collapsing them.

The probability curve (Figure A2) showed that the curve for the different categories follows the expected order in terms of difficulty. However, category 3 (“Neither disagree nor agree”) did not have a distinct “point” on the graph to show that a score of 3 (undecided/neutral) was the most probable for some respondents along the trait continuum. Results suggest that this category (i.e., 3) may not be needed.

Figure A2. Response Category Probability Curve for Amount of Paperwork and Routine Duties Scale



Note. Categories: 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree.

While examining the category frequency of each item from this scale (Table A5), the outfit MNSQ values for each category fell within the recommended range. Categories of each item progressed monotonically. The item response distribution showed that more than 10% of responses were reported for all levels of all items except Item 4 (i.e., “You have enough time to complete most of your job-related work [e.g., grading] at school”). Only 9% of teachers chose category 3 (“Neither disagree nor agree”) as the response to Item 4. The results suggest that a 4-point Likert scale may yield better measurement than the existing 5-point scale.

Student Engagement

UNIDIMENSIONALITY OF THE SCALE

The variance explained by the measured construct (i.e., variance attributed to teachers’ perceptions of demands) was high (Eigenvalue = 14.08, 73.8%). The unexplained variance in the first contrast (Eigenvalue = 1.42; 7.4%) and in subsequent contrasts was low, indicating no evidence of another significant latent construct affecting the likelihood of endorsing engagement items.

FIT INDICATORS

As displayed in Table A2, the infit MNSQ (0.80–1.31) and outfit MNSQ (0.72–1.19) indices fell within the recommended range of 0.60–1.40, indicating a good fit between the items and Rasch rating scale model. The results provided evidence that all the items from the scale were sensitive to participants whose perceptions varied substantially in the endorsability (i.e., difficulty) level of each item regarding *student engagement*.

ITEM POLARITY

All point-measure correlations were positive and ranged from 0.85 to 0.88 (Table 2), suggesting the adequate discriminating ability of the items to differentiate teachers with low perceptions of *student engagement* from those with high perceptions.

ITEM-PERSON (WRIGHT) MAP

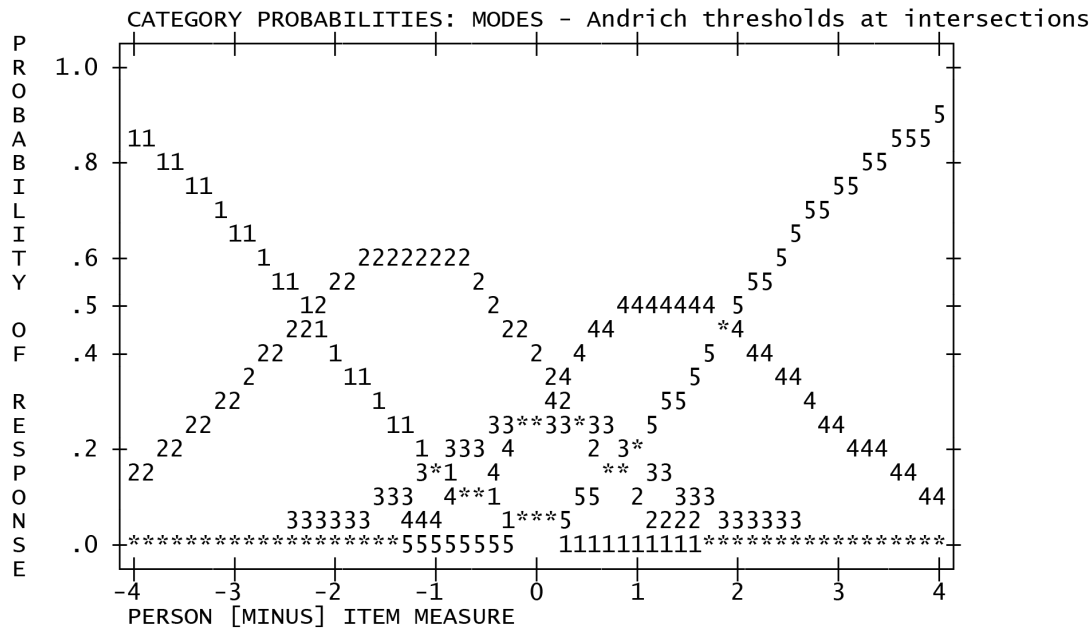
As shown in Figure A3, teachers at the bottom of the scale had lower perceptions of *student engagement*, while those at the top showed higher perceptions. Person trait scores on engagement ranged from -8.0 to 9.0 logits, with most of the person’s true scores falling within ± 2 logits. The Wright map indicated that the scale did not capture teachers with lower or higher perceptions of *student engagement* because no demand items aligned to these high (or low) perception values.

The items at the bottom of the item distribution were easier for teachers to agree with, while the items at the upper end were harder for teachers to agree with. The item measure ranged from -0.58 to 0.53 logits, suggesting that items catered to respondents in the middle range of the scale. For example, Item 3 (“In your classroom, your students persist once they meet a challenge”) was the most difficult item to endorse at 0.53 logits (i.e., more teachers chose “Strongly disagree” or “Disagree” as responses to this item). The results indicated that teachers perceived that students did not persist when they met a challenge. Item 1 (“In your classroom, your students demonstrate a positive attitude toward learning”) was the easiest to endorse at -0.58 logits (i.e., more teachers chose “Agree” or “Strongly agree” as responses to this item). The range of item difficulty levels (-0.58 to 0.53 logits) was narrow, indicating that this scale’s construct validity might be improved by including more items at lower and higher difficulty levels.

In addition, two items overlapped at the same measure of endorsability: Item 3 (“In your classroom, your students persist once they meet a challenge”) and Item 5 (“In your classroom, your students come to school prepared to learn”). This indicates that Item 3 and Item 5 measured a similar level of demand for teachers. In other words, these two items showed some redundancy, and one item could be removed so that all items provide unique information to measuring *student engagement*.

Overall, the Wright map indicated possible improvements to be made with future SCTWCS administrations. Items were aligned to the middle of the scale, while respondents were spread across the demand scale from -8.0 to 9.0 logits. The scale functioned well in assessing the perceptions of teachers whose measures were about one standard deviation from the mean. However, many teacher measures were well above or below the range. This indicates that more items that are either more difficult or easier to endorse are needed to identify teachers who report higher or lower perceptions currently outside the scale range.

Figure A3. *Wright Map of the Student Engagement Scale*



RELIABILITY AND SEPARATION INDICES

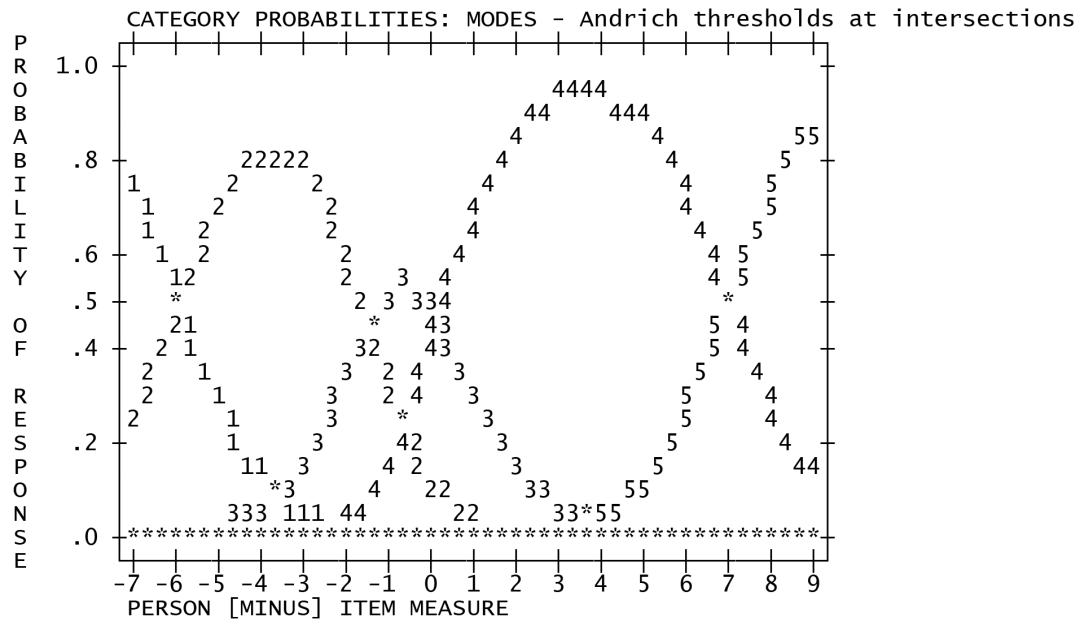
Table A3 shows the separation and reliability indices for the *student engagement* scale. The scale showed strong item separation (24.42) and item reliability (1.00), suggesting a sufficient sample to reveal the hierarchy and spacing of items across different samples of respondents. The person separation (2.39) and person reliability (0.85) indicated that the scale has sufficient sensitivity to differentiate between respondents.

CATEGORY FUNCTION

In Table A4, infit MNSQ values for each response category ranged between 0.88 and 1.19, and outfit values were between 0.64 and 1.10, indicating that all categories functioned appropriately. The average measures by category progressed monotonically (-6.96, -3.65, -0.60, 3.64, 8.16), suggesting that higher rating scale categories (e.g., “Strongly agree”) meant a higher agreement for *student engagement*. The step measure results in Table 4 showed that the five scales were well-defined. The Andrich threshold differences between categories exceeded the suggested cutoff value of 1.20, indicating that the five categories were sufficiently distinct.

The probability curve (Figure A4) suggested that the scale categories followed the expected order in terms of difficulty: Level 4 was more difficult than level 3, which in turn was more difficult than level 2, and so forth. The unique peak of each response category indicated that a specific category was the most likely rating for a teacher’s perception of *student engagement* for at least a portion of the teachers in the sample. For example, teachers with higher perceptions of *student engagement* were more likely to strongly agree with the items (i.e., select a rating of 5), whereas teachers with lower perceptions of *student engagement* were more likely to choose category 1 (“Strongly disagree”). Overall, the student engagement scale demonstrated acceptable functioning for all response categories.

Figure A4. Response Category Probability Curve for Student Engagement Scale



Note. Categories: 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree.

Table A5 showed that outfit MNSQ values for each category level of each item were within the recommended range. Categories of each item advanced monotonically across the levels of the rating scale. The item response distribution in Table A5 showed that less than 10% of the item responses were reported for category 1 (“Strongly disagree”) for all five items from the scale, indicating that a small portion of teachers chose “Strongly disagree” as the response for all the items (4–6%). In addition, only 9% of teachers chose category 5 (“Strongly agree”) for Item 3 (“In your classroom, your students persist once they meet a challenge”) and Item 5 (“In your classroom, your students come to school prepared to learn”). Results suggest that collapsing these category levels is necessary.

Student Behavior

Demands items related to *student behavior* are negatively worded relative to the other items on the demand section of the SCTWCS. These items were not recoded prior to analyses of the items as they functioned for teachers in South Carolina. However, when interpreting information from this scale, it may be better to consider these items as measuring “misbehavior,” as teachers are stating their level of agreement towards negative classroom behaviors.

UNIDIMENSIONALITY OF THE SCALE

The raw variance explained by the measure (i.e., teachers’ ratings of misbehavior) accounted for 52.2%, higher than the recommended cut-off value of 50%. The PCA of standardized residuals showed that the Eigenvalue of the first contrast (Eigenvalue = 2.05) was close to the recommended value of 2, indicating that *student behavior* measured one construct. Therefore, the assumption of unidimensionality was tenable.

FIT INDICATORS

As presented in Table A2, the infit MNSQ (0.91–1.18) and outfit MNSQ (0.91–1.17) indices fell within the recommended range of 0.60–1.40, indicating a good item fit to the Rasch model.

ITEM POLARITY

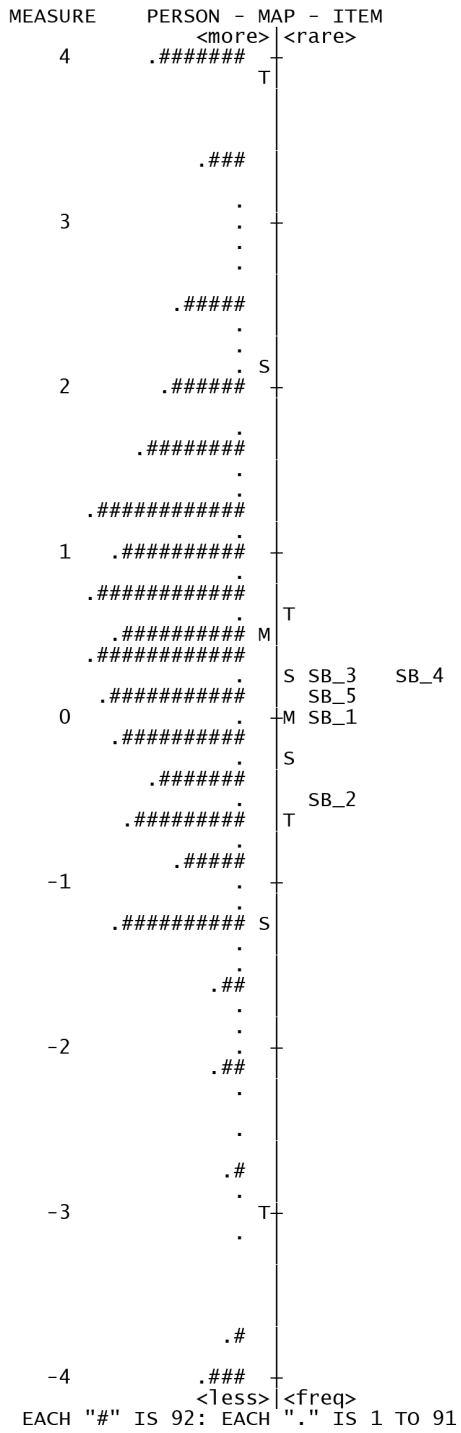
As shown in Table A2, all item-to-total correlations were positive and ranged from 0.71 to 0.75, suggesting the good discriminating ability of the set items to differentiate teachers with low perceptions of *student behavior* from those with high perceptions.

ITEM-PERSON (WRIGHT) MAP

As displayed in Figure A5, the left side of the Wright map showed that person abilities ranged from -4.0 to 4.0 logits, with most of the person abilities ranging between -2.0 and 2.0 logits. The right side of the map showed that items had a narrow range of endorsability (i.e., difficulty) levels (-0.55–0.21 logits), with most values centered around the mean value of 0. Specifically, Item 2 (“Student absenteeism frequently interferes with your teaching”) was the easiest item to agree with, indicating that most teachers agreed that student absenteeism interfered with their teaching. Item 3 (“Students enrolling and/or disenrolling between schools during the academic year frequently interferes with your teaching”) was more difficult for teachers to agree with. Two items were at the same endorsability level: Item 3 (“Students enrolling and/or disenrolling between schools during the academic year frequently interferes with your teaching”) and Item 4 (“Student misbehavior [e.g., noise, horseplay, or fighting] in your classroom frequently interferes with your teaching”). This indicates that the items may not provide unique information to the measurement of *student behavior*.

In general, comparing item and person measures revealed that the items function better in measuring teachers with medium levels of perceptions of *student behavior*. However, they were not adequate for measuring teachers with very low or high perceptions of *student behavior*.

Figure A5. Wright Map of the Student Behavior Scale



RELIABILITY AND SEPARATION INDICES

Table A3 showed that the *student behavior* scale had strong item separation (27.81) and item reliability (1.00), suggesting that the current sample was sufficient to reveal the hierarchy and spacing of items across the broader population of respondents. The person separation (1.56) and person reliability (0.71) indicated that the scale was sensitive enough to differentiate between respondents.

CATEGORY FUNCTION

As presented in Table A4, infit MNSQ values (0.92–1.16) and outfit MNSQ values (0.94–1.11) for each response were within the recommended range. The average measures by category progressed monotonically (-3.41, -1.20, 0.12, 1.26, 3.11), indicating that higher rating scale categories (e.g., “Strongly agree”) meant teachers perceived students as having more behavioral problems.

The step measure results in Table A4 suggested that the five categories were not well defined. The Andrich threshold differences between category 3 (Andrich threshold = 0.12) and category 4 (Andrich threshold = 1.26) were smaller than the suggested cutoff value, indicating that these two categories (“Neither disagree nor agree” and “Agree”) could not be sufficiently distinguished.

Figure A6 shows the probability curve for the *student behavior* scale. The figure showed that Category 3 (“Neither disagree nor agree”) did not have a unique peak, and it overlapped with Category 4 (“Agree”), indicating that these two categories were not distinct.

Figure A6. Response Category Probability Curve for Student Behavior Scale

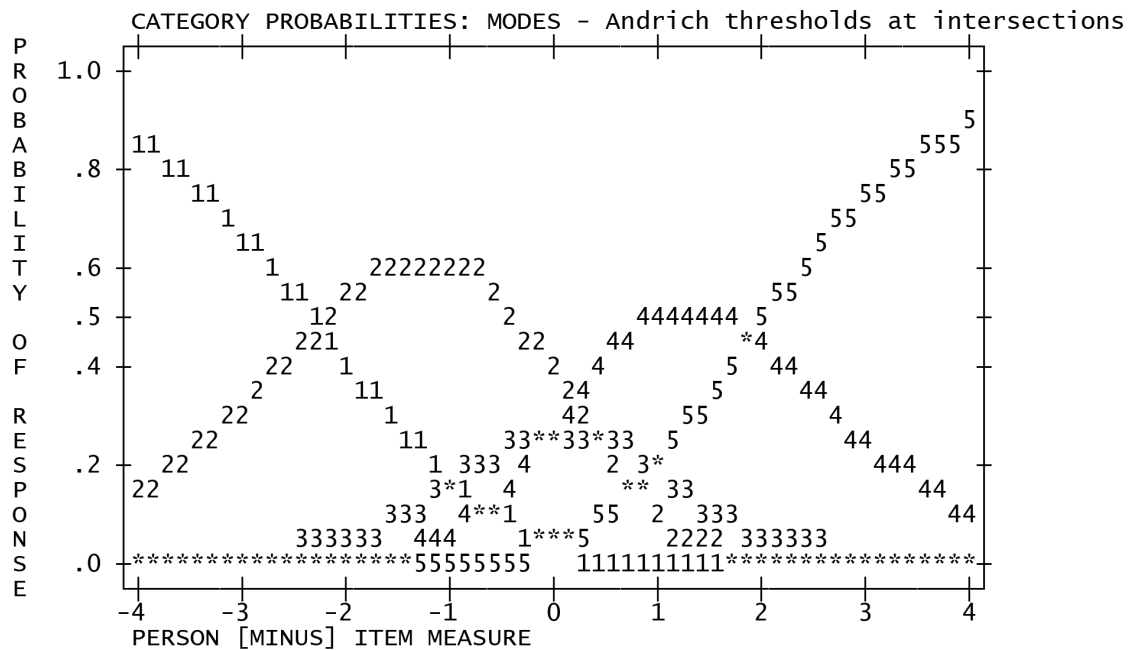


Table A5 showed that outfit MNSQ values for all the categories of each item were within the recommended range. Categories of each item advanced monotonically. The item response distribution showed that most items yielded at least 10% of responses for each category level. Item 1 (“Student tardiness frequently interferes with your teaching”; 8%) and Item 2 (“Student absenteeism frequently interferes with your teaching”; 5%) had a smaller percentage of responses for category 1 (“Strongly disagree”), indicating that most teachers did not select this response as their answer to these two items.

Student Safety and Health

UNIDIMENSIONALITY OF THE SCALE

The raw variance explained by teachers' latent scores was high (Eigenvalue = 10.47, 67.7%), with low unexplained variance attributed to other sources. The results indicated that the five items adequately measure one trait: *student safety and health*.

FIT INDICATORS

As presented in Table A2, the response to the *student safety and health* questions fit the Rasch model well, with the infit (0.88–1.06) and outfit MNSQ values (0.75–0.92) falling within the recommended range.

ITEM POLARITY

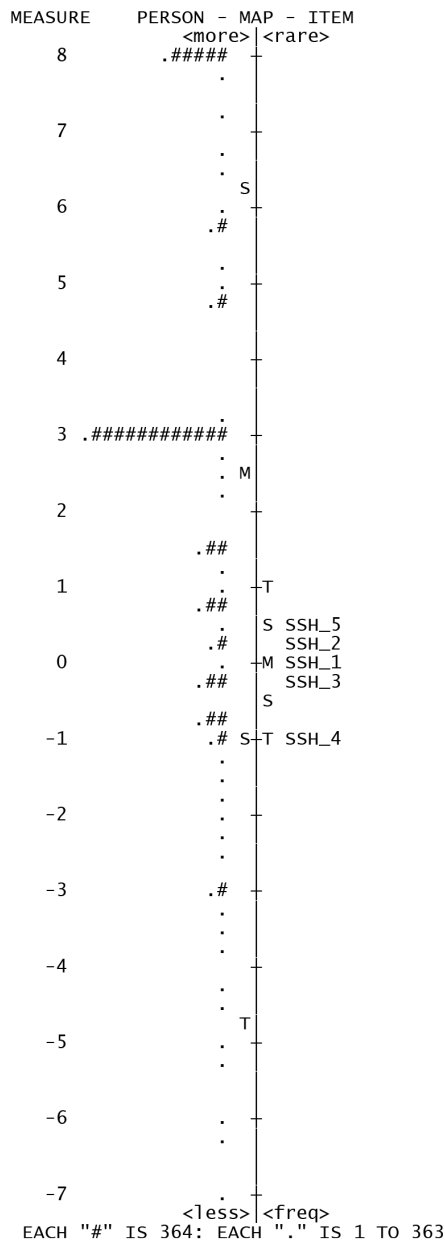
All point-measure correlations were positive and ranged from 0.82 to 0.87 (Table 2), suggesting that all the items from this scale function similarly well in differentiating teachers with low perceptions from those with high perceptions of *student safety and health*.

ITEM-PERSON (WRIGHT) MAP

As the Wright map (Figure A7) presented, there was a wide variability at the person level (-7.0 to 8.0 logits); however, most person abilities fell within ± 3 logits. Item 4 (“You feel prepared to recognize students exhibiting physical, social, and verbal bullying behaviors”) was the easiest to endorse at -0.89 logits, indicating that teachers were more likely to choose category 4 (“Agree”) or category 5 (“Strongly agree”) for this item. Item 5 (“You feel prepared to recognize students exhibiting use of alcohol and/or drugs”) was the most difficult item to endorse at 0.60 logits. That meant teachers tended to disagree, choosing categories 1 (“Strongly disagree”) or 2 (“Disagree”) for this item.

Overall, the items captured only a small range (± 1 logits) along the *student safety and health* latent trait. More items are needed to assess teachers with higher or lower perceptions of *student safety and health*.

Figure A7. *Wright Map of the Student Safety and Health Scale*



RELIABILITY AND SEPARATION INDICES

As shown in Table A3, the person separation was 1.66, and the person reliability was 0.73, indicating that the items from the scale adequately separated persons measured. The item separation index was 27.78, and item reliability was 1.0, indicating excellent item separation.

CATEGORY FUNCTION

As presented in Table A4, infit MNSQ values for each response category were between 0.74 and 1.45, and outfit values were between 0.53 and 1.31. The average measures by category progressed monotonically (-6.01, -3.07, -0.67, 3.03, 7.35). In examining the Andrich threshold values, the differences in adjacent categories were all larger than 1.20, indicating that all the category levels provided unique information.

As shown in Figure A8, the five rating categories appeared to function well. For example, each response category was the most likely choice across some regions of a person’s scores. Overall, the 1–5 categories were well-defined and mutually exclusive.

Figure A8. Response Category Probability Curve for Student Safety and Health Scale

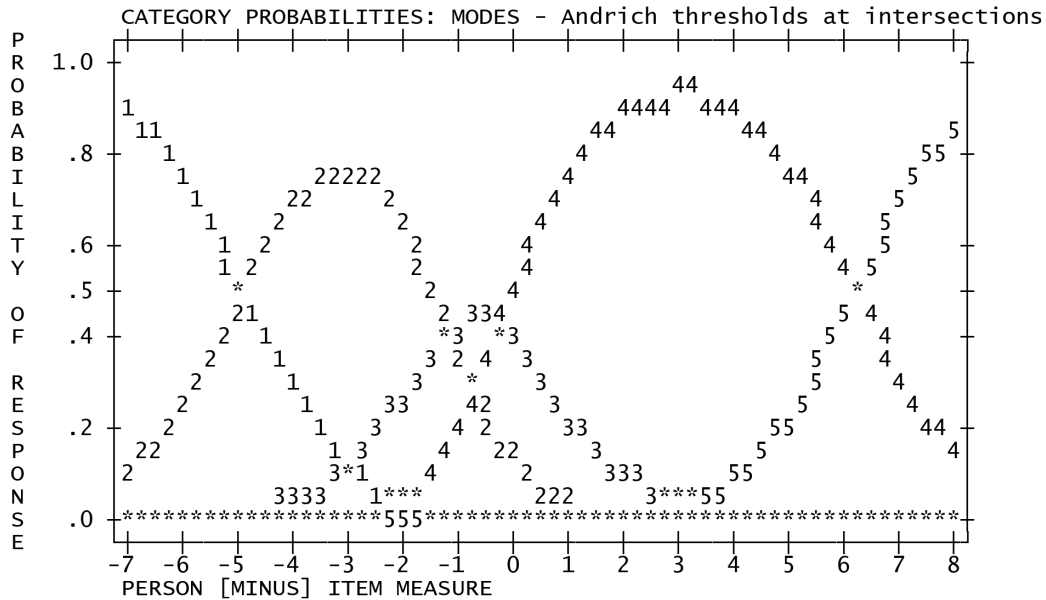


Table A5 showed that outfit MNSQ values for each category of all items except Item 5 were between 0.4 and 1.4. The outfit MNSQ value for category 1 (“Strongly disagree”) of Item 5 (“You feel prepared to recognize students exhibiting use of alcohol and/or drugs”) was 1.60, which was greater than the cutoff value of 1.4. We might need to remove this item from the scale. In general, item categories increased monotonically from 1 to 5 on the rating scale.

The item response distribution in Table A5 showed that less than 4% of teachers chose category 1 (“Strongly disagree”) for all items. A small percentage of teachers chose category 1 (“Strongly disagree”; 2%), category 2 (“Disagree”; 7%), or category 3 (“Neither disagree nor agree”; 9%) as their responses to Item 4 (“You feel prepared to recognize students exhibiting physical, social, and verbal bullying behaviors”). That means most teachers responded either “Agree” or “Strongly agree” to this item. As this item did not function well for assessing teachers of different perceptions, it could be more closely considered for removal in future administrations of the SCTWCS.

+ CONCLUSIONS

Using the Rasch rating scale model, this study aimed to provide reliability and validity evidence for the four demand scales (i.e., *amount of paperwork and routine duties*, *student engagement*, *student behavior*, and *student safety and health*). The results of the Rasch analysis suggested that the four constructs were well captured by the set of items. All scales met the assumption of unidimensionality and showed a good fit to the Rasch model. Item reliability and person reliability indices were high, indicating that the four scales are sufficiently reliable to compare item and individual teacher measures (i.e., respective scores on a latent dimension for teachers and/or demand items). Person separation for the four scales was adequate, indicating the instruments were sensitive enough to distinguish between teachers with low- and high-rated perceptions of demands. High item separation suggested that the person sample was large enough to confirm the item difficulty hierarchy of the four instruments.

The Wright maps showed that most items differ in their level of endorsability. However, one pair of items from *amount of paperwork and routine duties* (i.e., Item 1 and Item 3), *student engagement* (Item 3 and Item 5), and *student behavior* (Item 3 and Item 4) did not. Having the same level of endorsability, these pairs of items displayed redundancy and are not contributing unique information to the construct. Therefore, they can be investigated further and possibly removed in later administrations of the SCTWCS. For the set of demand items, most items could discriminate teachers with perceptions in the mid-range, but not those with extreme levels of (dis)agreement. Measurement of all four constructs could be improved by adding items spread across the scales based on their levels of endorsability to differentiate teachers with different perceptions.

The category functioning of the four scales showed both strengths and weaknesses. For all four scales, the average measures increased across the rating scale, indicating that the higher the person measured, the higher the rating on the item. The step measure results showed that category 3 (“Neither disagree nor agree”) was not sufficiently different from category 4 (“Agree”) in *amount of paperwork and routine duties* and *student behavior*. Future revisions may examine collapsing categories from a 5-point to a 4-point Likert scale. Alternatively, different anchors may be examined to enhance measurement precision.

Regarding the response categories of each item, *amount of paperwork and routine duties* functioned better than the other constructs. More than 10% of teachers selected each category level as responses for all the items from *amount of paperwork and routine duties* except for Item 4 (“You have enough time to complete most of your job-related work [e.g., grading] at school”). Approximately 9% of teachers selected “Neither disagree nor agree” as the response to Item 4.

Fewer than 10% of teachers chose “Strongly disagree” as their response for all the items from *student engagement* and *student safety and health* and for two items (i.e., Item 1 and Item 2) from *student behavior*. Also, less than 10% of teachers selected “Strongly agree” as their response to two items from *student engagement* (Item 3 and Item 5). We may consider collapsing the relevant level into the adjacent level. In addition, a small percentage of teachers chose categories 1–3 as their response to Item 4 from *student safety and health*. We might consider removing this item.

Overall, the results of the Rasch analysis suggested that the four scales might be useful instruments to measure teachers’ perceptions of the relevant constructs.

Table A2. Scale Item Statistics

Scale	Items	Infit (MNSQ)	Outfit (MNSQ)	Point-measure correlation	Item measure (logit)
Amount of paperwork and routine duties	1. Complete required administrative work/forms	0.91	0.83	0.89	-0.37
	2. Take care of your classroom (e.g., cleaning the classroom, sanitizing materials)	1.23	1.18	0.87	0.19
	3. Create lesson plans	0.90	0.82	0.89	-0.39
	4. Complete most of your job-related work (e.g., grading) at school	0.94	0.86	0.89	0.57
Student engagement	1. Demonstrate a positive attitude toward learning	0.92	0.81	0.87	-0.58
	2. Show interest in completing schoolwork	0.84	0.72	0.88	-0.10
	3. Persist once they meet a challenge	1.31	1.19	0.85	0.53
	4. Put effort into doing their schoolwork	0.80	0.67	0.88	-0.31
	5. Come to school prepared to learn	1.09	1.02	0.86	0.46
Student behavior	1. Student tardiness frequently interferes with your teaching	0.94	0.95	0.74	-0.03
	2. Student absenteeism frequently interferes with your teaching	0.95	0.97	0.73	-0.55
	3. Students enrolling and/or disenrolling between schools during the academic year frequently interferes with your teaching	0.99	1.02	0.73	0.21
	4. Student misbehavior (e.g., noise, horseplay, or fighting) in your classroom frequently interferes with your teaching	1.18	1.17	0.71	0.20
	5. Student misbehavior (e.g., noise, horseplay, or fighting) at your school frequently interferes with your teaching	0.91	0.91	0.75	0.16
Student safety and health	1. Early warning signs of violent behavior	0.96	0.79	0.86	0.08
	2. Signs of self-harm or suicidal tendencies	0.88	0.75	0.87	0.36
	3. Pressing mental health issues (e.g., depression, mood disorders, ADHD) that may affect learning	1.06	0.87	0.84	-0.14
	4. Physical, social, and verbal bullying behaviors	1.03	0.86	0.82	-0.89
	5. Use of alcohol and/or drugs	1.03	0.92	0.86	0.60

Table A3. Reliability and Separation Indices for the Scales

Scale	Separation		Reliability	
	Persons	Items	Persons	Items
Amount of paperwork and routine duties	1.90	26.02	0.78	1.00
Student engagement	2.39	24.42	0.85	1.00
Student behavior	1.56	27.81	0.71	1.00
Student safety and health	1.66	27.78	0.73	1.00

Table A4. Category Response Statistics for Scales

Scale	Category	Total count (%)	Infit (MNSQ)	Outfit (MNSQ)	Step measures	Average measure
Amount of paperwork and routine duties	1 = Strongly disagree	10,013 (17%)	1.12	1.05	None	-5.21
	2 = Disagree	15,410 (26%)	0.93	0.97	-4.09	-2.39
	3 = Neither disagree nor agree	6,912 (12%)	0.79	0.65	-0.40	-0.47
	4 = Agree	19,183 (33%)	1.01	1.06	-0.58	2.31
	5 = Strongly agree	7,095 (12%)	1.45	0.85	5.07	6.17
Student engagement	1 = Strongly disagree	3,921 (5%)	1.28	1.10	None	-6.96
	2 = Disagree	14,832 (20%)	0.99	1.07	-5.85	-3.65
	3 = Neither disagree nor agree	14,903 (20%)	0.81	0.64	-1.42	-0.60
	4 = Agree	32,134 (44%)	1.02	1.07	0.20	3.64
	5 = Strongly agree	7,612 (10%)	1.18	0.73	6.06	8.16
Student behavior	1 = Strongly disagree	6,497 (9%)	1.16	1.11	None	-3.41
	2 = Disagree	18,838 (26%)	0.92	0.94	-2.26	-1.20
	3 = Neither disagree nor agree	12,068 (17%)	0.92	0.94	0.35	0.12
	4 = Agree	20,950 (29%)	0.98	1.01	0.00	1.26
	5 = Strongly agree	14,374 (20%)	1.04	1.05	1.91	3.11
Student safety and health	1 = Strongly disagree	1,798 (2%)	1.45	1.31	None	-6.01
	2 = Disagree	8,063 (11%)	0.98	1.15	-4.90	-3.07
	3 = Neither disagree nor agree	9,614 (13%)	0.74	0.53	-1.13	-0.67
	4 = Agree	38,586 (53%)	0.98	1.02	-0.23	3.03
	5 = Strongly agree	14,751 (20%)	1.24	0.76	6.25	7.35

Table A5. *Category Response Statistics for Items on the Scales*

Scale	Items	Item category	Count (%)	Outfit MNSQ	Category measure
Amount of paperwork and routine duties	1. Complete required administrative work/forms	1 = Strongly disagree	2,061 (14%)	0.90	-5.93
		2 = Disagree	3,549 (24%)	0.80	-2.25
		3 = Neither disagree nor agree	2,048 (14%)	0.70	-0.71
		4 = Agree	5,234 (36%)	1.00	0.38
		5 = Strongly agree	1,800 (12%)	0.70	6.52
	2. Take care of your classroom (e.g., cleaning the classroom, sanitizing materials)	1 = Strongly disagree	2,505 (17%)	1.30	-5.30
		2 = Disagree	4,077 (28%)	1.30	-1.79
		3 = Neither disagree nor agree	1,891 (13%)	0.80	-0.33
		4 = Agree	4,384 (30%)	1.40	1.37
		5 = Strongly agree	1,671 (12%)	1.00	6.61
	3. Create lesson plans	1 = Strongly disagree	2,210 (15%)	0.90	-5.81
		2 = Disagree	3,582 (24%)	0.80	-2.17
		3 = Neither disagree nor agree	1,624 (11%)	0.60	-0.69
		4 = Agree	5,299 (36%)	0.90	0.24
		5 = Strongly agree	1,942 (13%)	0.80	6.32
	4. Complete most of your job-related work (e.g., grading) at school	1 = Strongly disagree	3,237 (22%)	1.00	-4.83
		2 = Disagree	4,202 (29%)	0.80	-1.52
		3 = Neither disagree nor agree	1,349 (9.0%)	0.50	-0.13
		4 = Agree	4,266 (29%)	0.90	1.86
		5 = Strongly agree	1,683 (11%)	0.90	6.83

Student engagement	1. Demonstrate a positive attitude toward learning	1 = Strongly disagree	613 (4%)	1.00	-7.24
		2 = Disagree	2,442 (17%)	0.90	-3.14
		3 = Neither disagree nor agree	2,932 (20%)	0.80	-0.74
		4 = Agree	6,811 (46%)	1.00	2.30
		5 = Strongly agree	1,892 (13%)	1.10	7.82
	2. Show interest in completing schoolwork	1 = Strongly disagree	798 (5%)	0.90	-6.77
		2 = Disagree	2,885 (20%)	0.80	-2.72
		3 = Neither disagree nor agree	2,819 (19%)	0.50	-0.39
		4 = Agree	6,575 (45%)	0.90	2.61
		5 = Strongly agree	1,597 (11%)	0.60	8.38
	3. Persist once they meet a challenge	1 = Strongly disagree	934 (6%)	1.20	-5.96
		2 = Disagree	3,488 (24%)	1.50	-2.10
		3 = Neither disagree nor agree	3,093 (21%)	0.80	-0.03
		4 = Agree	5,884 (40%)	1.50	3.13
		5 = Strongly agree	1,283 (9%)	1.30	8.42
	4. Put effort into doing their schoolwork	1 = Strongly disagree	706 (5%)	0.90	-7.01
		2 = Disagree	2,636 (18%)	0.70	-2.96
		3 = Neither disagree nor agree	2,822 (19%)	0.50	-0.60
		4 = Agree	6,952 (47%)	0.90	2.50
		5 = Strongly agree	1,560 (11%)	0.50	8.49
5. Come to school prepared to learn	1 = Strongly disagree	870 (6%)	1.40	-6.12	
	2 = Disagree	3,381 (23%)	1.40	-2.30	
	3 = Neither disagree nor agree	3,237 (22%)	0.70	0.08	
	4 = Agree	5,912 (40%)	1.10	3.10	
	5 = Strongly agree	1,280 (9%)	0.70	8.77	

Student behavior	1. Student tardiness frequently interferes with your teaching	1 = Strongly disagree	1,103 (8%)	1.10	-2.54
		2 = Disagree	3,885 (27%)	0.90	-0.50
		3 = Neither disagree nor agree	2,297 (16%)	0.90	0.30
		4 = Agree	4,558 (31%)	1.00	0.87
		5 = Strongly agree	2,715 (19%)	1.00	2.39
	2. Student absenteeism frequently interferes with your teaching	1 = Strongly disagree	727 (5%)	1.10	-3.19
		2 = Disagree	2,629 (18%)	0.90	-0.83
		3 = Neither disagree nor agree	2,051 (14%)	1.00	0.03
		4 = Agree	5,418 (37%)	1.10	0.59
		5 = Strongly agree	3,771 (26%)	1.00	2.02
	3. Students enrolling and/or disenrolling between schools during the academic year frequently interferes with your teaching	1 = Strongly disagree	1,422 (10%)	1.10	-2.14
		2 = Disagree	3,792 (26%)	1.00	-0.37
		3 = Neither disagree nor agree	3,228 (22%)	1.10	0.39
		4 = Agree	3,907 (27%)	1.10	1.01
		5 = Strongly agree	2,114 (15%)	1.10	2.63
	4. Student misbehavior (e.g., noise, horseplay, or fighting) in your classroom frequently interferes with your teaching	1 = Strongly disagree	1,781 (12%)	1.30	-1.78
		2 = Disagree	4,268 (29%)	1.10	-0.29
		3 = Neither disagree nor agree	2,010 (14%)	0.90	0.37
		4 = Agree	3,550 (24%)	1.10	0.87
		5 = Strongly agree	2,928 (20%)	1.10	2.36
5. Student misbehavior (e.g., noise, horseplay, or fighting) at your school frequently interferes with your teaching	1 = Strongly disagree	1,464 (10%)	1.00	-2.18	
	2 = Disagree	4,264 (29%)	0.80	-0.39	
	3 = Neither disagree nor agree	2,482 (17%)	0.80	0.37	
	4 = Agree	3,517 (24%)	0.90	0.95	
	5 = Strongly agree	2,846 (20%)	1.00	2.44	

Student safety and health	1. Early warning signs of violent behavior	1 = Strongly disagree	383 (3%)	1.40	-5.27
		2 = Disagree	1,717 (12%)	1.20	-1.74
		3 = Neither disagree nor agree	1,884 (13%)	0.40	-0.13
		4 = Agree	7,728 (53%)	0.90	2.57
		5 = Strongly agree	2,969 (20%)	0.70	8.06
	2. Signs of self-harm or suicidal tendencies	1 = Strongly disagree	383 (3%)	1.00	-5.25
		2 = Disagree	1,852 (13%)	1.00	-1.65
		3 = Neither disagree nor agree	2,222 (15%)	0.50	0.10
		4 = Agree	7,414 (51%)	1.00	2.77
		5 = Strongly agree	2,707 (19%)	0.70	8.34
	3. Pressing mental health issues (e.g., depression, mood disorders, ADHD) that may affect learning	1 = Strongly disagree	343 (2%)	1.20	-5.45
		2 = Disagree	1,554 (11%)	1.20	-1.90
		3 = Neither disagree nor agree	1,770 (12%)	0.50	-0.20
		4 = Agree	7,957 (54%)	1.10	2.46
		5 = Strongly agree	3,080 (21%)	0.80	7.85
	4. Physical, social, and verbal bullying behaviors	1 = Strongly disagree	247 (2%)	1.20	-6.47
		2 = Disagree	1,048 (7%)	1.10	-2.49
		3 = Neither disagree nor agree	1,291 (9%)	0.70	-0.59
		4 = Agree	8,695 (59%)	1.10	2.05
		5 = Strongly agree	3,426 (23%)	0.80	7.51
5. Use of alcohol and/or drugs	1 = Strongly disagree	442 (3%)	1.60	-4.64	
	2 = Disagree	1,892 (13%)	1.30	-1.47	
	3 = Neither disagree nor agree	2,447 (17%)	0.60	0.34	
	4 = Agree	6,792 (48%)	1.00	2.88	
	5 = Strongly agree	2,569 (18%)	0.80	8.41	

+ APPENDIX B: DETAILED QUALITATIVE TECHNICAL ANALYSIS RESULTS

This appendix details the qualitative analysis procedure and the results related to the four demand constructs included in the SCTWCS.

The qualitative analysis involved an examination of the three open-ended items in the 2023 SCTWCS. The qualitative analysis was conducted separately from the quantitative analysis, which allowed both sets of analyses to be compared to determine areas of confirmation and areas of divergence in findings. The three open-ended questions were analyzed in MaxQDA software using a combined inductive and deductive approach. Codes related to seven resources and four demands derived from the job demands and resources (JD-R) model (Bakker & Demerouti, 2007; Skaalvik & Skaalvik, 2015) were applied across the three questions; however, qualitative researchers also made note of any additional subcodes and themes that naturally emerged (Schreier, 2012). The deductive codes relevant to this specific report are the four demands purposely embedded in the objective items: *amount of paperwork and routine duties*, *student behavior*, *student engagement*, and *student safety and health*.

The coding process was an iterative one. Initially, the research team met several times to discuss codes related to the demands the survey was designed to capture. Following these discussions, a small sample of the data was coded by four researchers who regularly engaged in conversations to refine the coding process and ensure that ratings were aligned. The researchers used the agreed-upon codes to develop a codebook that included descriptions and examples of the kinds of comments that would fit each code (Table B1). This codebook was then used as a guide as each researcher coded a subset of the data.

Table B1. *Qualitative Codebook for Demands Included in the 2023 SCTWCS*

Code	General definition	Example
Amount of paperwork and routine duties	Statements teachers make about the amount of time they have available to complete various tasks required in their work, as well as take care of personal needs (bathroom, lunch, etc.) (portrayals of the teachers' available time can be positive or negative)	"There are not enough hours in the day to accomplish everything we are asked to do.... We can't keep adding to our plates without extra time, resources, and support."
Student behavior	Statements teachers make about student behaviors, in general or regarding specific acts, that affect the teacher's ability to effectively teach (portrayals of student behavior can be positive or negative)	"I have numerous behavior issues in my room that do not allow me to teach and others to learn and do their best...."
Student engagement	Statements teachers make to describe students' attitudes and behaviors in relation to their learning and schoolwork (portrayals of students' engagement can be positive or negative)	"...I wish the students were more self-disciplined and had clearer expectations about who they want to become in the future."
Student safety and health	Statements teachers make about issues and concerns related to students' health and/or safety	"More support is needed in handling student issues, such as drugs, alcohol, vaping, tobacco, disrespect for others."

A total of 10,230 teachers responded to at least one open-ended question. Of those who responded, 6,947 (67.9%) discussed at least one of the four job demands: *amount of paperwork and routine duties*, *student behavior*, *student engagement*, and *student safety and health*. Among the four demands, the *student behavior* demand appeared in teachers' responses most frequently, followed by *amount of paperwork and routine duties*, *student engagement*, and *student safety and health*.

Table B2. *Frequencies for Demands Codes*

Code	Number of teachers whose responses included the code	Percent of teachers whose responses included the code ^a
Student behavior	4,133	40.4%
Amount of paperwork and routine duties	2,870	28.1%
Student engagement	1,762	17.2%
Student safety and health	610	6.0%
Demands	6,947 ^b	67.9%
Total (any qualitative code)	10,230	100.0%

Note. ^aPercentages for the individual demand codes were determined by dividing the number of teachers whose responses included the category by the total number of teachers who included an open-ended response (i.e., 10,230). ^bMany teachers mentioned multiple demands in their responses; each demand mentioned was noted as a unique occurrence. This value represents the number of respondents with an open-ended statement referencing one or more demands. The total qualitative code value counts the number of teachers responding, even if they discussed more than demand. This value will be lower than the number of unique demands mentioned in the set of open-ended responses.

Researchers met throughout the coding process to discuss any challenges or disagreements as a group until they arrived at a consensus (Creswell & Creswell, 2017). During these discussions, the researchers also identified other major demands (e.g., class size, caseload) emerging from teachers' responses that did not map onto the four embedded demands. These emergent themes were then included as major codes. Once the segments were assigned different major codes (i.e., the demands), the researchers went through all the assigned segments to ensure they were coded consistently and accurately. These coded segments were then placed into positively valenced and negatively valenced categories. From there, researchers discussed the data and the existing coding scheme and created more specific subcodes for the themes emerging from teachers' comments.

Positively valenced segments (e.g., "the students are well-behaved") about the various demands were relatively few, so where they existed, they were kept in a general positively valenced subcode for each of those demands. Therefore, only negatively valenced segments were subcoded further into themes, as the goal of the investigation was to gauge teachers' job demands.

The coding process and analysis revealed three main points. For one, teachers indicated some additional aspects of the four included demands that did not seem related to the included objective items. We also found evidence that teachers mentioned job demands that did not map well onto the four purposely included demands. Finally, the results indicated that teachers may be particularly concerned with the frequency with which they face certain demands.

Missing Aspects of Existing Demands

One finding from the evaluation of the qualitative data was that the four or five objective items targeted at each purposely included demand (i.e., *amount of paperwork and routine duties*, *student behavior*, *student engagement*, and *student safety and health*) largely matched major concerns expressed by teachers. However, the analysis also revealed there were related concerns not adequately captured by the objective items. Additionally, the relative prevalence of certain subcodes could be used to inform additional or revised objective items. This is especially true since the quantitative analysis of the current demand items indicated the lack of extreme responses in some cases. Below we discuss each of the four demand constructs in turn.

AMOUNT OF PAPERWORK AND ROUTINE DUTIES

Some subcoded themes for *amount of paperwork and routine duties* matched the objective items on the survey, while others did not (Table B3). For example, two items (i.e., “You have enough time to create lesson plans” and “You have enough time to complete most of your job-related work [e.g., grading] at school”) matched one of the teachers’ most frequently expressed concerns, the lack of adequate planning time. Another objective item asked whether teachers had “enough time to take care of your classroom (e.g., cleaning the classroom, sanitizing materials).” Teachers did mention cleaning in the open-ended responses but only in a small percentage of their comments (1.8%). Additionally, while some of these teachers mentioned lacking time to complete classroom cleaning, others focused on the belief that cleaning should not be the teacher’s responsibility in the first place. Some participants discussed having to clean other parts of the school (e.g., the bathrooms). We qualitatively coded all these responses as a cleaning subcode to ensure we fully captured teacher concerns.

The last objective item related to this demand asked teachers whether they had “enough time to complete required administrative work/forms.” This objective item did not map directly onto one qualitative subcode, though teachers mentioned paperwork and forms frequently. Concern about the lack of time to complete paperwork was prevalent, but, in many cases, it was part of a general statement about the lack of time to do many different tasks. Because these tasks were grouped together, segments like this were coded into the general/unspecified subcode. Some teachers did specifically acknowledge not having enough time during their planning period to complete necessary paperwork. These comments were coded into the lack of adequate planning time theme. Finally, many of the responding teachers focused on the excessive nature of the paperwork they had to complete. Though this abundance certainly affects the time required to complete the paperwork, these comments were coded as excessive paperwork to best capture the teachers’ directly expressed concerns. The fact that responses concerning paperwork ended up being captured by three different codes indicates that it might be beneficial to reorganize (i.e., combine, add to, or rephrase) some of the existing objective items.

Table B3. *Subcoded Themes for Amount of Paperwork and Routine Duties*

Subcode	Number of teachers whose responses included the code	Percent of teachers whose responses included the code	Corresponding objective items
Positively valenced	31	1.1%	All
Negatively valenced			
Not enough planning/prep time	1,595	55.6%	You have enough time to create lesson plans. You have enough time to complete most of your job-related work (e.g., grading) at school.
Working outside contract hours	746	26.0%	None
Excessive, unnecessary, or useless meetings (including professional development training)	576	20.1%	None
Duties (lunch, recess, parking)	331	11.5%	None
Excessive paperwork	249	8.7%	You have enough time to complete required administrative work/forms.
Coverage/subbing for absent teachers	197	6.9%	None
Extra activities (afterschool tutoring, club sponsorship)	56	2.0%	None
Too many preps/too many classes	54	1.9%	None
Cleaning classroom	52	1.8%	You have enough time to take care of your classroom (e.g., cleaning the classroom, sanitizing materials).
General/unspecified (lack of adequate time, needing breaks, needing workdays, too many roles, too many tasks)	1,458	50.8%	None
Total number of teachers whose responses included the code	2,870	100.0%	

Many of the comments in this category (50.8%) were not specific enough to code (e.g., “I never have enough time”; “I have too many responsibilities”) or were not abundant enough to warrant a separate code (e.g., “We need more workdays”). These comments were therefore placed in a general/unspecified subcode. Other comments revealed the prevalence of certain issues among responses. As noted above, the inadequacy of planning time was the most prevalent subcode in the category, with more than half (55.6%) of all related comments. However, there were several other concerns that were not related to any objective items. For one, more than 10% of the responses mentioned excessive or unnecessary meetings. This figure is conservative, as only comments explicitly stating that meetings were unwarranted or extreme in number were coded.

A notable number of responses (26.0%) also focused on teachers needing to or being required to work outside of their contract hours. Other concerns expressed by teachers included having to complete duties like monitoring lunch and recess (11.5%) and having to cover classes for absent colleagues (6.9%). Many comments from respondents indicated that these issues were connected. For example, teachers noted how losing their planning period to meetings or covering classes then led to the necessity of working in the evenings and on weekends. Overall, it appears that the qualitative data indicates that some important aspects of a teachers’ workload were not measured by the objective items on the 2023 SCTWCS. These results can guide survey revisions by suggesting new objective items that might reveal extreme responses (e.g., the need for teachers to work outside of contract hours) and therefore improve the instrument’s performance.

STUDENT BEHAVIOR

Some of the subcodes in the *student behavior* demand matched the objective items on the survey. An emergent absence/tardies/truancy subcode mapped onto two objective items covering student absences and tardiness. Comments about students frequently transferring in and out of school were labeled with a student mobility subcode that mapped well onto a single corresponding objective item. It should be noted, however, that in their comments, teachers discussed absences/tardiness and student behavior as two distinct categories, rather than absences/tardiness as a specific issue of student behavior. While we included absences/tardiness as a subcode within the *student behavior* demand category, it could be argued from the qualitative data that absences and tardies should be considered and coded as a unique entity.

The disruptive behavior subcode emerging from teachers' responses was aligned with two objective items referring to disruptive behaviors observed in the classroom and at school. Our qualitative data subcode included comments that explicitly mentioned any interference with classroom instruction. In many instances, teachers' answers to the open-ended items did not provide any explanations for disruptive behaviors, so it is unclear if mentioned disruptions were occurring in the classroom or at school at large. If teachers specified the location, then the segments were coded either as disruptive (i.e., in the class) or as poor behavior outside of class. Some comments were assigned multiple subcodes. For example, disruption due to violent behavior was coded as both disruptive behavior and violent behavior.

Student absences/tardiness and disruptive behavior were the two most frequently discussed subcodes within the *student behavior* demand. On the one hand, this provides additional validation for the inclusion of the corresponding objective items in the survey. These stressors are certainly high on the teachers' agendas. On the other hand, this large number of subcodes may indicate that the corresponding survey objective items are likely to result in more similar responses. Therefore, they may not provide the most useful data for differentiating conditions among schools.

The teachers' discussion of *student behavior* was more nuanced than the information captured by the objective items on the survey. Emerging themes revealed the prevalence of behaviors not represented in survey items. For example, teachers distinguished between severe behaviors encountered in their classroom or at school, such as violence and fighting, bringing and using illegal substances, bullying other students, threatening other students, and bringing firearms and weapons to school premises. Responses revealed important distinctions that the existing objective item related to severe behavior, which only mentioned fighting, might have failed to capture. This objective item also included less severe behaviors (i.e., noise, horseplay), which may also be limiting its power to distinguish meaningful differences between teacher perceptions. Additionally, we coded instances of severe behavior towards teachers as a separate theme. This type of severe behavior was notably not captured in the objective items of the survey.

Other nonsevere student behaviors mentioned in the open-ended responses but missing from the objective items included the discussion of students showing disrespect to teachers and other students (12.3%), students being on their phones during the school day (7.3%), cheating (1.0%), dress code issues (1.0%), and students sleeping in class (1.0%). Clearly, the first two subcodes for student disrespect and use of phones were more prevalent compared to teachers' concerns about cheating, dress code, and sleep. These three relatively low frequency subcodes could be used to write additional items that could potentially generate more extreme responses among survey respondents.

Table B4. *Subcoded Themes for Student Behavior*

Subcode	Number of teachers whose responses included the code	Percent of teachers whose responses included the code	Corresponding objective items
Positively valenced	95	2.3%	None
Negatively valenced			
Absences, tardies, truancy	918	22.2%	Student tardiness frequently interferes with your teaching. Student absenteeism frequently interferes with your teaching.
Disruptive	849	20.5%	Student misbehavior (e.g., noise, horseplay, or fighting) in your classroom frequently interferes with your teaching. Student misbehavior (e.g., noise, horseplay, or fighting) at your school frequently interferes with your teaching.
Severe behavior not towards teacher(s)^a (subcoded further below)	508	12.3%	None
General severe behavior	241	5.8%	
Fighting/violence	217	5.3%	
Illegal substances	53	1.3%	
Bullying other students	30	0.7%	
Threats	23	0.6%	
Firearms/weapons	12	0.3%	
Disrespectful	509	12.3%	None
Phones	300	7.3%	None
Poor behavior outside of class (loud in hallways)	127	3.1%	Student misbehavior (e.g., noise, horseplay, or fighting) at your school frequently interferes with your teaching.
Severe behavior towards teacher(s) ^b	115	2.8%	None
Student mobility	68	1.7%	Students enrolling and/or disenrolling between schools during the academic year frequently interferes with your teaching.
Cheating	42	1.0%	None
Dress code issues	41	1.0%	None
Sleeping in class	40	1.0%	None
General misbehavior ^c	1,984	48.0%	None
Total coded segments	4,133	100.0%	

Note. ^aSevere behavior was further subcoded to capture different types of misbehavior, but whether the responses mentioned frequency was coded at the broader level of the severe behavior code. ^bSevere behavior towards the teacher was separated from behavior directed at other students or just severe actions in general. Severe behavior towards the teacher included offensive language directed toward them. ^cThe general misbehavior subcode included segments that were not specific (e.g., “students misbehave in class”), mentioned the need for student discipline, or did not fit any other subcodes.

STUDENT ENGAGEMENT

The coded segments for the *student engagement* demand were coded into a single positively valenced subcode and eight negatively valenced subcodes. Table B5 shows the number and percentage of segments in positively and negatively valenced subcodes. The positively valenced subcode included a relatively low number of segments and was not broken down into more specific codes. The coded segments within this subcode included discussions that corresponded to all five objective items in the survey.

Four negatively valenced subcodes mapped onto the objective items from the survey, but this alignment did not always represent a perfect one-to-one correspondence. Specifically, lack of interest/apathetic students, the subcode most frequently mentioned by survey respondents (50.5%), was aligned with the item about students showing interest in completing schoolwork. However, since teachers frequently used the words “apathy” and “apathetic” in their discussions, we included the phrase “apathetic students” in the subcode to reflect that. The lack of work ethic/not being prepared for class subcode mapped onto two objective items. In their discussion of *student engagement*, teachers discussed student effort and preparedness together, often referring to those collectively as work ethic. Therefore, preparedness and effort were grouped into a single subcode. Some comments focused on students quitting when faced with challenges (5.1%), which aligned with a single objective item asking about students’ persistence. The relatively low number of segments in this subcode could indicate that the corresponding objective item might elicit extreme responses from the survey respondents. Finally, we matched the negatively valenced general engagement subcode to the item “Your students demonstrate a positive attitude toward learning” because teachers in these responses talked about students having a bad attitude toward school and not engaging in general.

There were four emergent subcodes that did not map onto the objective items included in the current version of the SCTWCS. Potentially, they can be utilized to inform the writing of additional items. Teachers’ discussion of students’ struggles with focus and attention was one such subcode. Many of these comments were general and did not provide specific details about potential reasons for the lack of focus. These were therefore grouped together in one subcode. However, a notable number of responses included expressions of teachers’ concerns about technology’s (e.g., phones, Chromebooks) effect on students’ attention during instruction. These were numerous enough that they warranted a separate standalone subcode. The relatively high number of teachers discussing this theme (11.8%) suggests this aspect is an important component in teachers’ consideration of *student engagement* as a job demand. It should be noted that comments about cell phones, in general, were included in the *student behavior* demand coding. Discussions of technology were coded as *student engagement* only when teachers explicitly talked about the impacts of technology on students’ focus and attention or about technology serving as a distractor. Ultimately, technology-related comments across the two job demands, *student behavior* and *student engagement*, may speak to the need to examine this stressor in more depth.

Additionally, teachers hypothesized that some students were struggling to engage with classroom material and lessons because they were not academically prepared to do so. The underlying assumption in these coded segments is that students would most likely choose to engage in class if they were equipped with the necessary resources (i.e., prior knowledge, skills). Some of these comments made it clear that teachers believe this issue is connected to concerns about state standards or district policies regarding grading and promotion. Teachers expressed criticism about these standards and policies in general, as well, which may indicate a need to cover this topic as an additional demand in the future.

Finally, coding revealed that teachers used the phrase “no value for education” when talking about their students enough to warrant a separate subcode. This theme was not tremendously prevalent (3.9%) but was sufficiently present in the data and qualitatively different from other emergent themes. Due to its relatively low frequency and a uniform language (i.e., “no value for education”) across the segments, this subcode could potentially be used to inform the development of future objective items on the survey.

Table B5. *Subcoded Themes for Student Engagement*

Subcode	Number of teachers whose responses included the code	Percent of teachers whose responses included the code	Corresponding objective items
Positively valenced	138	7.8%	All
Negatively valenced			
Lack of interest/apathetic	890	50.5%	Your students show interest in completing schoolwork.
Lack of work ethic/not prepared for class	586	33.3%	Your students come to school prepared to learn. Your students put effort into doing their schoolwork.
Technology affects engagement (e.g., distracted by phones, cannot focus without technology)	207	11.8%	None
Struggle with focus and attention	179	10.2%	None
Quit when faced with challenge/lacking persistence	89	5.1%	Your students persist once they meet a challenge.
No value for education	69	3.9%	None
Behind or below grade-level and therefore struggling to engage	68	3.9%	None
General (students are not engaged)	220	12.5%	Your students demonstrate a positive attitude toward learning.
Total coded segments	1,762	100.0%	

STUDENT SAFETY AND HEALTH

Teacher comments about *student safety and health* deviated the most from the objective items included within the SCTWCS. Several of the topics of these objective items (e.g., student mental health, violent behavior) overlapped with the concerns expressed by teachers, but the phrasing of their responses did not map well onto the close-ended statements. These items asked teachers if they “feel prepared to recognize” various issues related to *student safety and health*, but few of the open-ended responses focused on the teachers’ abilities and training related to these issues. Instead, participants mainly discussed the prevalence or severity of these issues among their student populations. The concerns that emerged were used to create the subcodes found in Table B6.

Another important point about responses in this area is that many of them mentioned issues that related to both *student behavior* and *student safety and health*. For example, if respondents focused on bullying in their school, that was coded as *student behavior*, as discussed above. If these participants also discussed the threat to safety that bullying posed to their students, then these statements were also coded as *student safety and health*. It could be argued that any mention of bullying should be coded as both *student behavior* and *student safety and health*, as the perpetrator is exhibiting misbehavior and the victim’s safety and health are being threatened. However, to be as clear as possible with the coding, we did not assign both codes to responses unless they overtly focused on both aspects of the actions. This decision also guided how issues of violent behavior and threats were coded.

Some respondents wrote general comments about their concerns for students' safety and health (e.g., "I am concerned about the health of my students"), and these were coded into a general/unspecified subcode. Analysis of the other coded responses revealed that several concerns matched objective items, even if they did not frequently discuss the teacher's level of preparedness or training. For example, one objective item focused on pressing mental health issues and related teachers' concerns were present in more than half of responses. Comments about violent behavior, which made up about 18% of responses, were also related to an objective item. Additionally, responses focused on the use of alcohol and drugs (6.1%), self-harm/suicide (3.6%), and bullying (1.5%), though fewer in number, did match aspects of objective items.

Teachers also expressed concerns about a few *student safety and health issues* that did not map onto existing objective items. Most frequent were concerns about students' social and emotional development and learning, which were present in about 26% of responses. Teachers also expressed concerns about students not getting their needs met outside of school (i.e., going hungry, being malnourished, being homeless) or potentially experiencing neglect or abuse, which we coded as issues at home/outside of school (11.3%). Students' safety and health risks associated with the threatening behaviors of other students, including bomb threats, were less frequent (4.4%) but still notable, as were concerns about students' physical well-being (2.1%).

Table B6. *Subcoded Themes for Student Safety and Health*

Subcode	Number of teachers whose responses included the code	Percent of teachers whose responses included the code	Corresponding objective items
Negatively valenced			
Pressing mental health issues/ medication concerns	309	50.7%	You feel prepared to recognize students exhibiting pressing mental health issues (e.g., depression, mood disorders, ADHD) that may affect learning.
Social and emotional concerns	160	26.2%	None
Violent behavior	108	17.7%	You feel prepared to recognize students exhibiting early warning signs of violent behavior.
Issues at home/outside of school (hungry, homeless)	69	11.3%	None
Use of alcohol, drugs, and/or tobaccos (including vaping)	37	6.1%	You feel prepared to recognize students exhibiting use of alcohol and/or drugs.
Threats/bomb threats	27	4.4%	None
Self-harm/suicide	22	3.6%	You feel prepared to recognize students exhibiting signs of self-harm or suicidal tendencies.
Physical health concerns	13	2.1%	None
Bullying	9	1.5%	You feel prepared to recognize students exhibiting physical, social, and verbal bullying behaviors.
General/not specified	49	8.0%	None
Total coded segments	610	100.0%	

Demands Not Included in the 2023 Survey

Throughout the iterative coding process, we also noticed that teachers were mentioning demands that did not fit well within the existing categories. Examination of the responses indicated that two specific issues, in particular, were emerging from the data. One major concern was class size, or caseload for special education teachers. Teachers also indicated they experienced loss of instructional time as a stressor. We identified this as an organizational demands code.

At this point, the full set of teacher responses to the open-ended questions of the 2023 SCTWCS have been analyzed regarding class size and caseload. There are 680 comments in the data related to these issues. Of these responses, 12 are positive comments. These positive comments mostly include teachers expressing gratitude that they have smaller classes than they have had in the past. The majority of the responses, though, indicate that teachers are concerned about the large size of their classes or caseloads.

Teachers commenting on the issue of class size and caseload have generally recognized a relation to other demands. For example, some educators have pointed out that managing student behavior becomes increasingly difficult with higher numbers of students. Similarly, some comments have mentioned that keeping students engaged is also more challenging with large numbers of pupils in the classroom. In both cases, a teacher's attention to individual students is likely to be reduced when dealing with more students. Many respondents also noted that higher numbers of students mean increased paperwork (e.g., grading, forms) and potentially more meetings (e.g., IEP meetings). This experience has also been emphasized by special education teachers concerned with large caseloads. Some special education teachers have also indicated that they cannot spend as much time with individual students in classrooms as they would like to because of the forms they are required to complete. Ultimately, class size and caseload concerns are related to other workplace demands but seem to be a distinct condition that should be considered an important aspect of teacher working conditions.

Organizational demands can also be a stressor for teachers. The full analysis of teacher responses related to organizational demands is ongoing, but the process is far enough along to warrant discussion of the demand. The comments coded as organizational demands relate to the loss of instructional time. Responses indicate that some teachers are finding it difficult to keep up with the necessary pace for their classes because their students are frequently in testing. Other educators are expressing concerns about instructional time lost to school events (e.g., assemblies) or individual students being pulled out of class for various reasons. Finally, some teacher responses indicate they are having to sacrifice instruction during class time to complete other tasks (e.g., administrative duties). All of these collectively can be considered organizational demands as they occur at the school level but interfere with primary instructional responsibilities of teachers.

Frequency Teachers Face Demands

During the qualitative data analysis, the researchers noticed that many of the comments about demands mentioned how frequently teachers experienced them (e.g., "Students misbehave *often*"; "I do two to three hours of work *every night* after school"). We determined that analyzing this frequency component was important as how often teachers experience certain demands could play a critical role in their perceptions of their specific working conditions. The research team, therefore, examined each coded segment related to the different original demands (i.e., *amount of paperwork and routine duties*, *student behavior*, *student engagement*, and *student safety and health*) and subcoded them if they contained an overt indication of frequency.

The number of segments and percentage of segments mentioning frequency regarding *amount of paperwork and routine duties* is shown in Table B7. Teachers commenting on aspects of this demand mentioned frequency a third of the time in comments coded as positive (e.g., "My daily planning time is protected"). Similarly, teachers discussing the need to work outside of contract hours mentioned frequency in about one third of the coded segments. Comments about the frequency of excessive meetings or training sessions and having to cover for absent colleagues made up 27% of all such responses. It is important to note, as well, that this coding was low inference and very conservative. Only those comments that mentioned words or phrases related to frequency (e.g., often, rarely, daily, every Monday) were coded this way. Comments like "I have no planning" were not coded in this manner to keep interpretation as clear as possible, though it is likely that some teachers responding in such a manner were implying a frequency. Overall, more than 30% of all comments coded as related to *amount of paperwork and routine duties* explicitly mentioned the frequency with which they experienced the demand.

Table B7. Subcoded Themes for Amount of Paperwork and Routine Duties Mentioning Frequency

Subcode	Number of teachers whose responses included the code	Number of teachers who used frequency words	Percent of teachers who used frequency words
Positively valenced	31	11	35.5%
Negatively valenced			
Working outside contract hours	746	255	34.2%
Excessive, unnecessary, or useless meetings (including professional development training)	576	156	27.1%
Coverage/subbing for absent teachers	197	53	26.9%
Not enough planning/prep time	1,595	285	17.9%
Duties (lunch, recess, parking)	331	45	13.6%
Cleaning classroom	52	7	13.5%
Excessive paperwork	249	13	5.2%
General/unspecified (lack of adequate time, needing breaks, needing workdays, too many roles, too many tasks)	1,458	41	2.8%
Too many preps/too many classes	54	1	1.9%
Extra activities (afterschool tutoring, club sponsorship)	56	0	0.0%
Total number of teachers whose responses included the code	2,870	867	30.2%

Teachers also indicated a concern with the frequency with which they experienced behavior issues (Table B8). Comments mentioning the frequency of positive behavior of students (e.g., “My students are usually well-behaved”) were present in about 7% of all responses subcoded for *student behavior*. Responses related to disruptive behavior mentioned the frequency of such actions slightly more than 27% of the time. Teachers also expressed concerns with how often students were absent, tardy, or truant, as almost 20% of the respondents explicitly mentioned frequency. Teachers also referenced frequency in a notable number of their comments about cell phone issues and poor student behavior outside of classrooms. Overall, 18% of teachers who discussed *student behavior* overtly mentioned how frequently they experienced these demands.

Table B8. Subcoded Themes for Student Behavior Mentioning Frequency

Subcode	Number of teachers whose responses included the code	Number of teachers who used frequency words	Percent of teachers who used frequency words
Positively valenced	95	7	7.4%
Negatively valenced			
Disruptive	849	231	27.2%
Absences, tardies, truancy	918	182	19.8%
Phones	300	52	16.6%
Poor behavior outside of class (loud in hallways)	127	21	16.5%
Severe behavior towards teacher(s)	115	16	13.9%
Sleeping in class	40	5	12.5%
Severe behavior (e.g., violence, threats)	508	62	12.2%
Student mobility	68	8	11.8%
Disrespectful	509	36	7.1%
General misbehavior	1,984	127	6.4%
Cheating	42	2	4.8%
Dress code issues	41	1	2.4%
Total coded segments	4,133	743	18.0%

Comments about *student engagement* did not feature as many explicit comments about frequency (Table B9) as those about *amount of paperwork and routine duties* and *student behavior*. The one subcode that had a high percentage of such responses (15.9%) related to students being distracted by technology (e.g., “They do not pay attention to the lesson because they are on their phones”) or engagement issues related to technology (e.g., “Students are so used to short videos that anything requiring sustained attention is too much for them”). Overall, comments coded as related to *student engagement* explicitly mentioned frequency slightly more than 5% of the time.

Table B9. *Subcoded Themes for Student Engagement Mentioning Frequency*

Subcode	Number of teachers whose responses included the code	Number of teachers who used frequency words	Percent of teachers who used frequency words
Positively valenced	138	2	1.5%
Negatively valenced			
Technology affects engagement (e.g., distracted by phones, cannot focus without technology)	207	33	15.9%
Struggle with focus and attention	179	9	5.0%
Lack of work ethic/not prepared for class	586	21	3.6%
General (students are not engaged)	220	7	3.2%
Lack of interest/apathetic	890	16	1.8%
Behind or below grade level and therefore struggling to engage	68	1	1.5%
Quit when faced with challenge/ lacking persistence	89	1	1.1%
No value for education	69	0	0%
Total coded segments	1,762	90	5.1%

Finally, several of the subcodes related to *student safety and health* mentioned frequency in large proportions of comments. Comments about bullying as a threat to student safety included frequency about half the time. More than 23% of the statements about students threatening others and violent behavior posing a safety risk included comments about frequency. Overall, statements explicitly mentioning frequency made up 17.5% of all responses concerning *student safety and health*.

Table B10. *Subcoded Themes for Student Safety and Health Mentioning Frequency*

Subcode	Number of teachers whose responses included the code	Number of teachers who used frequency words	Percent of teachers who used frequency words
Negatively valenced			
Bullying	9	4	44.4%
Violent behavior	108	25	23.2%
Threats/bomb threats	27	6	22.2%
Social and emotional concerns	160	28	17.5%
Physical health concerns	13	2	15.4%
Self-harm/suicide	22	4	18.2%
Issues at home/outside of school (hungry, homeless)	69	8	11.6%
Pressing mental health issues/ medication concerns	309	27	8.7%
General/not specified	49	2	4.1%
Use of alcohol, drugs, and/or tobaccos (including vaping)	37	1	2.7%
Total coded segments	610	107	17.5%

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