Table S1. Collection of demographics, emotion well-being, environment, risk behavior, facial, and acoustic data

Construct	Measures	Assessment	Participants	Description
General Information Profile	Demographics, household Composition, and School Performance	Age, sex, Ethnicity, Household Composition, School Performance	Student	-
Self-Rating Questionnaires	Emotional and Behavior Problems	Depression, Anxiety, and Stress Scales-21 (DASS-21)	Student	A self-rating scale comprising 21 questions was administered, with these questions categorized into three subscales encompassing seven items each to assess depression, anxiety, and stress. Participants employed a four-point Likert scale, spanning from 0 to 3, to express the presence and intensity of these symptoms within the preceding week. In a study conducted in China, Cronbach's alpha coefficients for depression, anxiety, and stress were 0.83, 0.80, and 0.82, respectively[20].
		Strengths and Difficulties Questionnaire (SDQ)	Student Caregiver Teacher	A self-assessment tool designed for evaluating emotional and behavioral problems in children and adolescents. The scale comprises 25 items that assess five distinct factors: emotional symptoms, conduct problems, hyperactivity, peer interaction problems, and pro-social behavior, accompanied by an additional 6 questions. The Cronbach's coefficient for the Chinese version of this scale is approximately 0.60[21].
	Sleepiness	Insomnia Severity Index (ISI)	Student	A self-assessment scale is designed for screening insomnia and evaluating responses to insomnia treatment. It comprises seven questions, each scored on a 5-point scale ranging from "0" (none) to "4" (very severe). In a Chinese study, the Cronbach's alpha coefficient for the total scale of the questionnaire was reported as 0.83[22]. Participants exhibiting symptoms of insomnia were defined as those with a score of ≥ 9 on the current scale.

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Continued Table S1. Collection of demographics, emotion well-being, environment, risk behavior, facial, and acoustic data

Construct	Measures	Assessment	Participants	Description
Self-Rating Questionnaires	Family Environment	Family Environment Scale (FES)	Student Caregiver	This scale evaluates family environment characteristics and has demonstrated strong reliability and validity in Chinese samples, excluding the emotional expression, independence, and moral-religious orientation subscales[23]. For our study, these subscales were excluded, resulting in the utilization of a total of seven subscales, comprising 63 yes-no questions, all of which exhibited good reliability and validity.
	Childhood Trauma	Childhood Trauma Questionnaire-28 Item Short Form (CTQ-SF)	Student	This scale is designed to assess five types of childhood trauma, comprising 28 self-report items rated on a five-point Likert scale, ranging from "never true" (one point) to "very often true" (five points). In our study, the sexual abuse subscale was omitted, and we utilized only the four subscales: emotional abuse (EA), emotional neglect (EN), physical abuse (PA), and physical neglect (PN). Participants with childhood trauma were defined as those who had experienced at least one type of childhood trauma, based on cutoff scores as follows: EA ≥ 13, PA ≥ 10, EN ≥ 15, and PN ≥ 10. The Chinese version of the CTQ has demonstrated good reliability and validity[24].
	Self-injury behavior	Questions from Ottawa Self-Injury Inventory (OSI)	Student	The OSI consists of a total of 28 items. For this study, we utilized five questions from the first five items to assess the presence of nonsuicidal self-injury (NSSI), suicidal ideation, suicide attempt, and the frequency of NSSI over various time periods (past month, past 6 months, past year), two questions to evaluate the concealment of self-injurious behavior, and seven questions to assess the reasons behind self-injurious behavior. In previous Chinese research, the Cronbach's coefficient for this scale was reported as 0.95[25].

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Construct	Measures	Assessment	Participants	Description
Self-Rating Questionnaires	School Bullying	Olweus Bully/Victim Questionnaire (OVQ)	Student	The scale assesses the frequency of school bullying experienced by students since enrolling in school and comprises 17 items. Notably, the first item, "I am bullied at this school", is excluded from the total score calculation. The scale encompasses four subscales: physical bullying (4 items), relational bullying (4 items), verbal bullying (4 items), and cyberbullying (4 items). Responses are recorded on a six-point Likert scale, ranging from "1" (Never) to "6" (Every day), reflecting the frequency of experiences. Higher total scores on the scale indicate a greater degree of bullying[26].
	Physical Activity	Questions from International Physical Activity Questionnaire Short Form (IPAQ-SF)	Student	The scale consists of a set of four generic items, offering standardized instruments for capturing information regarding physical activities, including walking, moderate, and vigorous activities, as well as estimating the time spent sitting per week. Data from the IPAQ-SF were utilized to calculate total weekly physical activity. This was achieved by weighting the reported weekly minutes for each activity category with a corresponding MET energy expenditure estimate assigned to that category of activity[27].
	Screen Time	Screen Time (ST)	Student	Screen time was assessed reference to previous studies[28]: "How many hours per day do you spend on computer, including internet use, watching TV/video programs and playing games on a usual weekday and weekend day, respectively?". An average of hours of ST (weekdays and weekend days) was calculated to obtain an overall average ST.

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Construct	Measures	Assessment	Participants	Description
Self-Rating Questionnaires	Smartphone Addiction	Smartphone Addiction Inventory (SAI)	Student	The scale evaluates the tendency toward Internet addiction through a total of 26 questions, categorized into 5 subscales with good internal consistencies (all Cronbach α's > 0.70)[29]: 'Compulsive surfing' (5 questions), 'Tolerance to Internet addiction' (4 questions), 'Withdrawal reactions to Internet addiction' (5 questions), 'Time management problems' (5 questions), and 'Interpersonal and health problems' (7 questions). Responses are recorded on a four-point Likert-type scale. A higher total score indicates a higher degree of Internet addiction.
	Food Addiction	Questions from the Yale Food Addiction Scale Version 2.0 (mYFAS 2.0)	Student	The scale used 13 questions from mYFAS 2.0, including 11 items to assess food addiction symptoms and 2 items to measure diet-related impairment and distress. Responses are rated on an 8-point scale, ranging from 0 (never) to 7 (daily)[30].
	Smoking and Drinking	Questions about start time, frequency of smoking and drinking behaviors	Student	The self-administered questionnaire consists of four questions, inquiring whether participants engage in smoking and alcohol consumption, as well as the frequency of these behaviors within a month. Responses were collected using a 6-point Likert scale, ranging from 1 ("I am not drinking alcohol/smoking in the past month") to 6 ("smoking >20 cigarettes per day" or "drinking >6 days per week").
Facial and Acoustic Characteristics	Face	Capturing facial features during question-answering sessions	Student	Including three open-ended questions and one standardized text.
	Voice	Recording acoustic features during question-answering sessions	Student	
Response Time Interval	Response Time	Collecting response time in answering computer-based scales	Student	It is designed to capture the response time interval between a participant transitioning to a new question and selecting an answer for that question.