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Validity and reliability of the Modified Stressor Scale for College Student among medical and medical science students in a private university in Japan

Atsuhiko Ota, MD, PhD, MPH[1], Yuanying Li, PhD[1], Akari Masuda, MT[1], Ayako Yabashi, MT[1], Mamiko Morita, RN, PHN, MSN[2], Atsuko Minagawa, RN, PHN, MA[2], Hiroshi Yatsuya, MD, PhD[1]

[1]Department of Public Health, Fujita Health University School of Medicine, Toyoake, Aichi, Japan, [2]Faculty of Nursing, Fujita Health University School of Health Sciences, Toyoake, Aichi, Japan

Abstract

Objectives: To modify the Stressor Scale for College Student (SSCS) by including extracurricular activity-related stressors and to examine the validity and reliability of the Modified SSCS (M-SSCS) to evaluate psychosocial stressors in medical and medical science students.

Methods: Third-year medical students (n = 103) and fourth-year medical technology students (n = 95) completed a cross-sectional questionnaire survey. We examined the factorial structure of the M-SSCS using factor analysis. Concurrent validity was assessed by examining the associations of M-SSCS scores with self-rated health status, K6 scale scores, and State–Trait Anxiety Inventory (STAI) scores. Cronbach's alpha coefficient was calculated to evaluate the reliability of the M-SSCS.

Results: Factor analysis yielded seven factors. Stressors related to family, friends, part-time jobs, and extracurricular activity formed independent factors, but study- and fulfillment-related stressors were not distinct. High M-SSCS scores, indicating greater stressor levels, were significantly associated with poor self-rated health status (adjusted odds ratio [95% confidence intervals] = 2.80 [1.08, 7.25], p = 0.034), high K6 scale scores (2.99 [1.00, 8.96], p = 0.050), and high STAI state anxiety (3.32 [1.35, 8.20], p = 0.009) and trait anxiety scores (2.69 [1.31, 5.51], p = 0.007). Cronbach' s alpha coefficient was 0.916.

Conclusions: The M-SSCS showed good concurrent validity and internal consistency in assessing psychosocial stressors in medical and medical technology students. However, further studies are necessary to fully determine the validity of the M-SSCS.

Keywords: Psychosocial stressors, The Modified Stressor Scale for College Student (M-SSCS), Validity, Reliability, Medical and medical science students

Introduction

The evaluation of psychosocial stressors is valuable in ensuring effective implementation of stress management programs to support the health of medical, dental, and nursing students.[1-3] To a greater or lesser extent, university students are exposed to various psychosocial stressors related to their family, friends, study, fulfillment, part-time jobs, and extracurricular activities. Psychosocial stressors could have adverse effects on physical and mental health.[2,4-9] Several scales have been developed internationally to assess psychosocial stressors in university students, such as the Student-Life Stress Inventory,[10] the College Chronic Life Stress Survey,[11] and the Student Stress Survey.[12] In Japan, the Stress Self-Rating Scale for University Students[13] and the Stressor Scale for College Student (SSCS) (Appendix Table)[14] have been used for this purpose. However, to the best of our knowledge, none of these scales has become the standard measure of psychosocial stressors of medical and medical science students in Japan.

The SSCS[14] was developed to assess psychosocial stressors to which university students may be exposed. The 38-item scale consists of five subscales measuring stressors related to family, friends, study, fulfillment, and part-time jobs. Medical and medical science students are often exposed to these stressors. The validity and reliability of the SSCS have been investigated among students in four-year universities and two-year junior colleges,[14] but have not yet been demonstrated for medical and medical science students. Another weakness of the SSCS is that it does not include stressors related to extracurricular activities, such as athletic and cultural club activities on or outside the campus. In Japan, around 70% of private university students participate in extracurricular activities to enrich their friendships and to have fun.[15] Medical and medical science students tend to participate in extracurricular activities more frequently than students of other majors.[16,17] Evaluation of extracurricular activity-related psychosocial stressors may facilitate the planning of stress management programs for medical and medical science students.

The purpose of the present study was to modify the SSCS by including extracurricular activity-related stressors and to examine the validity and reliability of the Modified SSCS (M-SSCS) to evaluate psychosocial stressors to which medical and medical science students may be exposed.

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Corresponding author : Atsuhiko Ota, MD, PhD, MPH
Department of Public Health, Fujita Health University School of Medicine
1-98 Dengakugakubo, Kutsukake-cho, Toyoake-shi, Aichi 470-1192, Japan
E-mail: ohtaa@fujita-hu.ac.jp

Methods

The present study was approved by the Ethics Review Committees of Fujita Health University, Japan (No. 14-168). We explained the purpose and methods of the study to the eligible subjects before recruitment. All subjects gave their written consent to participate in the study.

Study design

A cross-sectional investigation was performed. All the data were obtained using a questionnaire survey conducted between July and October 2014.

Subjects

The subjects were third-year medical students (n = 103) and fourth-year medical technology students (n = 95) from Fujita Health University, a private university in Japan. Their characteristics are summarized in Table 1. The medical students contained a higher proportion of men and were older than the medical technology students. There were no significant differences between the two groups in the self-reported academic record and health characteristics, except for scores on the K6 scale, which was used to screen for mood or anxiety disorders.[18] The distributions of the K6 scores differed significantly between medical and medical technology students. Nevertheless, there was no significant difference in the proportion of those with a high K6 score (13 or greater, which would suggest the presence of a mood or anxiety disorder). The health characteristics measured are defined below.

Table 1. Characteristics of the subjects (n = 198)

	Medical students (n = 103)	Medical technology students (n = 95)	
	Frequency (%) / Mean (SD)		p-value[a]
Sex			
Male	62 (60%)	20 (21%)	<0.001
Female	41 (40%)	75 (79%)	
Age[b]	23.9 (3.3)	21.5 (0.5)	<0.001
Academic characteristics			
Self-reported academic record[b]			
Top tertile	36 (35%)	32 (34%)	0.727
Middle tertile	40 (39%)	34 (36%)	
Bottom tertile	26 (26%)	29 (31%)	
Health characteristics			
Self-rated health status[b]			
"Very healthy" or "healthy"	86 (84%)	87 (92%)	0.119
"Not very healthy" or "not healthy"	16 (16%)	8 (8%)	
K6 score[c]	4 (0–24)	5 (0–22)	0.023
High score: 13 or greater	8 (8%)	11 (12%)	0.363
STAI score[b]			
State anxiety	41.7 (9.7)	43.5 (11.5)	0.258
High score: 52 (male), 55 (female) or greater	14 (14%)	16 (17%)	0.562
Trait anxiety	45.2 (11.5)	48.1 (11.2)	0.075
High score: 53 (male), 50 (female) or greater	32 (32%)	39 (41%)	0.173

SD: standard deviation; STAI: State–Trait Anxiety Inventory Form JYZ.

[a]P-values were calculated using chi-square test or t-test, except for K6 scores.

[b]Missing responses on age, self-reported academic record, and self-rated health status from one subject and on STAI scores from two subjects.

[c]As K6 scores did not show a normal distribution, their median and range are presented instead. The difference in the score distributions between medical and medical technology students was tested using Mann–Whitney U test.

Variables

Development and scoring of the M-SSCS (Appendix Table)

As mentioned in the Introduction, Kikushima originally developed the SSCS, which consists of five subscales measuring stressors related to the following areas: family (items 1–10), friends (items 11–21), study (items 22–27), fulfillment (items 28–35), and part-time jobs (items 36–38).[14] We created a 41-item M-SSCS by adding three items (39–41) measuring extracurricular activity-related stressors. The authors constructed these items based on the three SSCS items measuring part-time job-related stressors (items 36–38). Items 1–38 of the M-SSCS were identical to the corresponding items on the SSCS. For each item, respondents first rated how frequently they had experienced the stressor during the last month. They chose one of the following three options: "I never experienced the stressor" (frequency score = 0), "I sometimes experienced the stressor" (1), or "I often experienced the stressor" (2). Those who chose the latter two options were asked to indicate how dissatisfied they felt about the stressor by choosing one of the following six options: "I did not care at all" (dissatisfaction score = 0), "I did not care" (1), "I did not care very much" (2), "I felt a little dissatisfied" (3), "I felt dissatisfied" (4), or "I felt very dissatisfied" (5). Each item score was calculated by multiplying the frequency and dissatisfaction scores, with a possible range of 0–10. Higher scores indicated that the respondent felt more distressed about the stressor. The total M-SSCS score was the total of each item score. Those whose M-SSCS total scores were in the top quartile were regarded as having high M-SSCS scores.

Academic and health characteristics

To measure academic characteristics, the subjects self-reported their major (medical or medical technology) and which tertile (top, middle, or bottom) their academic record was in.

Health characteristics were assessed using self-rated health status, the Japanese version of the K6 scale,[18] and the Japanese version of the State–Trait Anxiety Inventory (STAI) Form JYZ.[19]

For self-rated health status, the subjects responded to the question "What do you think of your health status?" by choosing one of the following four options: "I am very healthy," "I am healthy," "I am not very healthy," or "I am not healthy." Those who chose the latter two options were regarded as having poor self-rated health status.

The K6 scale was developed to screen those with mood disorders (depression, dysthymia) or anxiety disorders (panic disorder, agoraphobia, social phobia, generalized anxiety disorder, post-traumatic stress disorder) as defined by the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV) for the general population.[18,20] A K6 score of 13 or greater was regarded in the present study as a high score, suggesting the presence of mood or anxiety disorders.[21]

The STAI Form JYZ, which Hidano et al.[19] created by translating and modifying the STAI Form Y[22] for use in Japan, measures state and trait anxiety. State anxiety indicates the intensity of anxiety as an emotional state at the time of examination; trait anxiety is anxiety proneness as a personality trait, as indicated by how often state anxiety is experienced over time.[23] Higher state and trait anxiety scores are supposed to indicate stronger levels of state and trait anxiety. Hidano and colleagues reported that, for Japanese undergraduate

students, mean scores (standard deviation) of state anxiety were 47.3 (10.4) for males and 45.9 (10.2) for females; trait anxiety scores were 48.8 (10.0) for males and 47.7 (10.0) for females.[19] Another study reported state and trait anxiety mean scores of 41.9 (10.9) and 46.5 (11.2), respectively, among healthy medical students in Japan.[24] According to the STAI Form JYZ Manual,[19] Japanese male and female undergraduate students with a state anxiety score of 52 or greater and of 55 or greater, respectively, are exposed to high levels of state anxiety. We used trait anxiety cut-off scores of 53 for males and 50 for females to screen subjects with high levels of trait anxiety.

Statistical analyses

To validate the M-SSCS, factorial and concurrent validity were examined.

To assess factorial validity, we examined the factorial structure of the M-SSCS and the associations among its subscales. Exploratory factor analysis using the major factor method and varimax rotation was performed to clarify the factorial structure. We used a two-step exploratory factor analysis. First, we determined the number of factors using the scree plot. A scree plot exhibits eigenvalues associated with a factor in descending order versus the number of the factor. Ideally, a scree plot displays a steep curve followed by a flat line. We retained the factors on the steep curve before the first point at which the flat line started. We then repeated the exploratory factor analysis in which the number of factors was fixed as determined earlier. Factor loadings of 0.4 or greater were considered acceptable. To assess the appropriateness of the exploratory factor analysis, we examined whether the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was greater than 0.5 and whether the Bartlett test of sphericity was significant. Spearman correlation coefficients were then calculated to determine the contextual associations among the M-SSCS subscales.

The associations between M-SSCS scores and health characteristics were examined to determine the concurrent validity of the M-SSCS. Multiple logistic regression analysis was used to examine the associations between high M-SSCS total scores (independent variable) and poor self-rated health status, high K6 scale scores, and high STAI state and trait anxiety scores (dependent variables). The formulae were constructed for each dependent variable. Sex, age, academic major, and self-reported academic record were adjusted for.

The reliability of the M-SSCS was tested by examining internal consistency. Cronbach's alpha coefficients were calculated for the M-SSCS total scale and subscales.

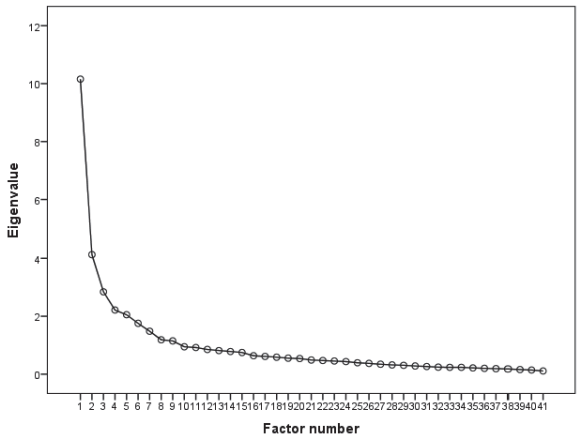
The level of significance was 0.05 (two-tailed) for all tests. Statistical calculations were performed using IBM SPSS Statistics 22 (Japanese version) for Windows (IBM Japan, Tokyo, Japan). Subjects with missing responses were excluded from the analyses.

Results

Factorial and concurrent validity

A total of 196 subjects (99%) fully completed the M-SSCS. The first-step exploratory factor analysis produced the scree plot shown in Figure 1. Our interpretation of the scree plot was that the flat line started after the seventh factor. Therefore, we determined that the SSCS had a seven-factor structure. Table 2 shows the results of the second-step exploratory factor analysis in which the number of factors was fixed at seven. The KMO

Figure 1



Scree plot for exploratory factor analysis (major factor method, varimax rotation) of the Modified Stressor Scale for College Student (M-SSCS) (n = 196).

Table 2. Exploratory factor analysis (major factor method, varimax rotation) of the Modified Stressor Scale for College Student (M-SSCS) (n = 196)

M-SSCS		Factors and factor loadings						
Stressors	Item	1	2	3	4	5	6	7
Family-related	1	0.711	0.155	− 0.069	− 0.069	0.081	0.076	0.145
	2	0.740	0.107	0.107	0.053	0.082	− 0.001	0.056
	3	0.804	0.026	− 0.059	0.023	0.102	0.077	0.104
	4	0.825	0.096	0.086	− 0.08	− 0.012	0.060	0.120
	5	0.523	0.265	0.178	0.150	− 0.006	0.127	0.239
	6	0.462	0.086	0.200	0.084	0.089	0.197	0.015
	7	0.664	0.148	− 0.059	0.151	0.045	0.000	− 0.007
	8	0.768	0.108	0.186	0.192	0.047	0.059	− 0.035
	9	0.782	0.155	0.091	0.102	0.025	0.103	− 0.035
	10	0.665	0.073	0.073	0.102	0.056	0.099	0.015
Friend-related	11	0.064	0.669	0.134	0.035	0.178	− 0.029	0.043
	12	0.121	0.640	0.304	− 0.01	0.056	0.176	0.074
	13	0.197	0.539	− 0.033	0.172	0.268	− 0.003	0.174
	14	0.216	0.729	0.121	0.150	− 0.09	0.174	0.008
	15	− 0.055	0.487	0.320	0.097	0.101	− 0.135	− 0.041
	16	0.127	0.756	0.214	0.126	0.051	0.021	0.025
	17	0.126	0.748	0.108	0.095	− 0.015	0.075	0.090
	18	0.165	0.615	0.307	− 0.096	− 0.044	0.315	0.082
	19	0.167	0.743	− 0.024	0.041	0.171	0.037	− 0.011
	20	0.133	0.441	0.021	− 0.069	0.330	− 0.03	0.139
	21	0.087	0.708	0.126	0.094	0.124	− 0.007	− 0.068
Study-related	22	0.036	0.071	0.036	0.333	0.518	0.163	− 0.05
	23	0.246	0.138	0.075	0.085	0.525	− 0.001	− 0.018
	24	0.188	0.058	0.075	− 0.01	0.082	0.701	0.028
	25	0.134	0.136	0.110	0.073	0.298	0.565	0.156
	26	0.002	0.175	0.130	0.058	0.561	0.215	0.334
	27	0.134	0.022	0.031	0.162	0.056	0.778	0.007
Fulfillment-related	28	0.001	0.084	0.271	0.093	0.616	0.087	− 0.003
	29	0.019	0.108	0.120	0.397	0.372	0.064	0.058
	30	0.140	0.174	0.507	− 0.168	0.030	0.241	0.102
	31	0.133	0.140	0.492	0.250	0.339	0.138	− 0.01
	32	0.170	0.266	0.602	0.174	0.305	− 0.023	− 0.078
	33	− 0.001	0.186	0.635	0.241	0.153	− 0.04	− 0.104
	34	0.138	0.345	0.747	− 0.009	0.062	0.105	0.090
	35	0.114	0.214	0.276	0.009	0.253	0.035	0.265
Part-time job-related	36	0.097	0.035	− 0.023	0.038	0.059	− 0.078	0.823
	37	0.078	− 0.039	0.020	0.070	0.089	0.058	0.669
	38	0.044	0.076	− 0.01	− 0.023	− 0.03	0.071	0.377
Extracurricular activity-related	39	0.162	0.043	0.090	0.743	0.047	− 0.04	0.081
	40	0.101	0.061	0.012	0.704	0.143	0.112	− 0.057
	41	0.171	0.241	0.091	0.645	0.144	0.077	0.073
Contribution (%)		13.4	13.0	6.3	5.4	5.3	4.7	4.2
Accumulated		13.4	26.4	32.8	38.1	43.4	48.0	52.2

M-SSCS items with factor loadings of 0.4 or greater are indicated by cell borders.

value was 0.847. The Bartlett test produced a significant p-value of less than 0.001. The first and second factors were identical to the SSCS subscales of family- and friend-related stressors, respectively. The third factor included part of the SSCS's subscale fulfillment-related stressors. The fourth factor consisted of items 39–41, which we added to the original SSCS items to assess extracurricular activity-related stressors. The fifth and sixth factors together included items 22–27, which make up the SSCS subscale study-related stressors, and item 28, which is from the SSCS subscale fulfillment-related stressors. The seventh factor included items 36 and 37, which form part of the SSCS subscale part-time job-related stressors. Items 29, 35, and 38 did not have factor loadings of 0.4 or greater.

Table 3 shows the Spearman correlations among the subscales. The subscale family-related stressors was highly correlated with the friend-related stressors subscale. The subscales of friend-, study-, and fulfillment-related stressors were highly correlated with each other.

Regarding the concurrent validity, high M-SSCS total scores were significantly associated with poor self-rated health status, high K6 scale scores, and high STAI state anxiety and trait anxiety scores (Table 4).

Reliability

The Cronbach's alpha coefficient for the M-SSCS was 0.916 (n = 196). The M-SSCS subscales of stressors related to family, friends, study, fulfillment, part-time jobs, and extracurricular activity showed Cronbach's alpha coefficients of 0.914 (n = 197), 0.900 (n = 197), 0.723 (n = 198), 0.800 (n = 198), 0.667 (n = 198), and 0.806 (n = 198), respectively.

Discussion

The purpose of the present study was to develop the M-SSCS by including extracurricular activity-related stressors and to examine the scale's validity and reliability for use among medical and medical science students. We found satisfactory concurrent validity and reliability when the scale was used for medical and medical technology students in a private university in Japan. The factorial validity of the M-SSCS was somewhat different from what we expected. We modified the SSCS by adding an extracurricular activity-related stressors subscale. The SSCS is assumed to have a five-factor structure. However, the M-SSCS produced not a six- but a seven-factor structure.

The results of the exploratory factor analysis showed that the subscales of family- (items 1–10) friend- (items 11–21), and extracurricular activity-related stressors (items 39–41) each constituted an independent factor. Regarding the part-time job-related stressors subscale (items 36–38), the factor loading for item 38 was 0.377, less than but nearly 0.40. Thus, items 36–38 could be treated as a single independent M-SSCS factor.

We also found some differences in the subscales of study- and fulfillment-related stressors. First, items 22–27 of the subscale study-related stressors and item 28 "I have little interest in studying" from the subscale fulfillment-related stressors formed two factors on the M-SSCS. One factor consisted of items 22, 23, 26, and 28 and seemed to indicate how the respondents were feeling about their classes. The other factor, which included items 24, 25, and 27, related to how busy the respondents were (mainly because of their studies). Item 28, "I have little interest in studying," was originally assumed to express fulfillment; however, some students might have interpreted it as a study-related stressor. Second, of those items on the fulfillment-related stressors subscale (items 28–35), only items 30–34 formed a factor on the M-SSCS. Our interpretation is that items 30–34 address anxiety about the respondents' future. Item 29 asks about the university facilities and item 35 addresses the relationships of students with their teachers and the university staff. Our findings suggest that the definition of fulfillment for university students should be re-examined, as it may differ across students or universities. This should be explored in other settings.

The contribution of factor four, on which items relating to extracurricular activity-related stressors (items 39–41) loaded highly, was about 5%, almost the same as that found for part-time job-related stressors in this study and in another previous report.[14] For medical and medical science students, extracurricular activity may be as stressful as a part-time job. The items measuring extracurricular activity-related stressors deserve to be added to the SSCS.

We found that factors one and two (on which items relating to family- and friend-related stressors, respectively, loaded highly) exhibited the highest and second-highest contribution percentages, respectively. Kikushima found the same pattern for the SSCS with Japanese undergraduate students.[14] However, study-related stressors are a major cause of stress among medical students worldwide, even during the early school years.[25-29] Further studies are necessary to clarify whether undergraduates' psychosocial stressors are different across countries.

There were high correlations among the subscales friend-, study-, and fulfillment-related stressors. This may be common for university students, for whom these stressors often coexist and are a source of frustration. There was also a high correlation between family- and friend-related stressors. Generally, there is an association between the development of parent–adolescent relationships and the development of friendships. De Goede has reported that adolescent relationships with parents and friends are bidirectionally associated with an equal mutual influence in middle to late adolescence.[30] In summary, the present findings justify the subscale construction of the M-SSCS.

We found satisfactory concurrent validity for the M-SSCS. The total M-SSCS score was significantly associated with all the health characteristics. These findings are in accord with previous reports on the adverse influences of psychosocial stressors on physical and mental health.[2,4-9] Therefore, we concluded that the M-SSCS possesses satisfactory concurrent validity.

We also found good reliability for the scale. The Cronbach's alpha coefficients were sufficiently high, not only for the total scale, but for every single subscale. One limitation is that we only examined internal consistency. The repeatability of the M-SSCS must be examined in future studies using test-retest reliability.

There were some limitations in the study methodology. First, our examination of the validity of the M-SSCS was incomplete as we did not address convergent and discriminant validity. Regarding the concurrent validity, the associations between the M-SSCS and health characteristics might have been overestimated by common method bias: if information on dependent and independent variables is collected using the

Table 3. Spearman correlation coefficients among the Modified Stressor Scale for College Student (M-SSCS) subscales (n = 198)

Subscales	1. Family	2. Friend	3. Study	4. Fulfillment	5. Part-time job	6. Extracurricular activity
1. Family-related stressors (Items 1–10)	1[a]	0.477[b]***	0.276[a]***	0.340[a]***	0.233[a]*	0.177[a]*
2. Friend-related stressors (Items 11–21)		1[a]	0.421[a]***	0.495[a]***	0.151[a]*	0.321[a]***
3. Study-related stressors (Items 22–27)			1	0.502***	0.240**	0.302***
4. Fulfillment-related stressors (Items 28–35)				1	0.108	0.319***
5. Part-time job-related stressors (Items 36–38)					1	0.027
6. Extracurricular activity-related stressors (Items 39–41)						1

Missing responses from [a]one subject and [b]two subjects.

*p < 0.05, **p < 0.01, ***p < 0.001.

Table 4. Associations between high Modified Stressor Scale for College Student (M-SSCS) total scores (top quartile) and health characteristics (n = 198)

Dependent variables	Adjusted odds ratio[a] (95% confidence intervals)	p-value
Self-rated health status of "not very healthy" or "not healthy"[b]	2.80 (1.08, 7.25)	0.034
High K6 score: 13 or greater[b]	2.99 (1.00, 8.96)	0.050
High STAI state anxiety score: 52 (male), 55 (female) or greater[c]	3.32 (1.35, 8.20)	0.009
High STAI trait anxiety score: 53 (male), 50 (female) or greater[c]	2.69 (1.31, 5.51)	0.007

STAI: Stait–Trait Anxiety Inventory Form JYZ.

[a]Adjusted for sex, age, academic major, and self-reported academic record. A single formula was created for each dependent variable.

Missing responses for [b]three subjects and [c]five subjects.

same or similar methods, their associations could be inflated.[31] Second, our sample was limited to third-year medical students and fourth-year medical technology students from one private university in Japan. It is necessary to examine whether the present findings are applicable to medical and medical science students from other years and academic majors in other universities. Finally, the sample was not very large. Thus, we were not able to perform factor analysis separately by sex and academic major. There was a significant difference in sex and age between the medical and medical technology students. There may be differences between males and females and between medical and medical technology students in how they experience and cope with psychosocial stressors. However, we did demonstrate concurrent validity for the M-SSCS, even though there were significant differences between medical and medical technology students on sex and age. The high M-SSCS total scores were significantly associated with the health characteristics even after sex, age, and academic major were adjusted for.

In conclusion, we found good concurrent validity and reliability for the M-SSCS as it was applied to medical and medical technology students. However, the factorial validity results were somewhat different from our expectations. We did not address convergent and discriminant validity in this study. Further studies are needed to examine whether the M-SSCS is relevant to other kinds of medical science students, such as dental, nursing, and radiological technology students, from other universities.

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Conflict of interest

The authors declare no competing financial interests.

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Appendix Table. The Modified Stressor Scale for College Student (M-SSCS)

Family-related stressors	1. There are troubles in my family.
	2. My family oppose what I want to do.
	3. My family cannot convince me of their views.
	4. I cannot accept the opinions of my family.
	5. I cannot tell my parents what I really want to tell them.
	6. I sense my parents' hopes for me.
	7. The rules that my parents set (for example, regarding curfew) are strict.
	8. My parents are inquisitive about what I am doing.
	9. My parents interfere in what I am doing.
	10. My parents unilaterally ask or order me to do things.
Friend-related stressors	11. I have little to talk about with my friends.
	12. I am concerned about my friends' evaluations of me.
	13. My friends cannot convince me of their views.
	14. I cannot help always being good to my friends.
	15. I have few friends.
	16. I have difficulty getting along with my friends.
	17. I cannot tell my friends what I really want to tell them.
	18. I cannot help comparing myself with my friends.
	19. My friends misunderstand me.
	20. I have trouble with my friends.
	21. I find it difficult to be frank with my friends.
Study-related stressors	22. I have to attend a lot of classes and practicals.
	23. I am annoyed with some of my teachers.
	24. I am pressed for time.
	25. I feel busy with my classes, practicals, homework, and exams.
	26. It is difficult for me to understand the topic I am studying.
	27. Every day I have a lot of things that must be done a certain way.
Fulfillment-related stressors	28. I have little interest in studying.
	29. Facilities are poor in my university.
	30. My life prospects are uncertain.
	31. My university life is different from what I imagined.
	32. I have no idea why I am studying here.
	33. My life is monotonous.
	34. I have lost my confidence regarding what I want to do in the future.
	35. I find it difficult to talk to my teachers and the university staff.
Part-time job-related stressors	36. I am bored with my part-time jobs.
	37. I spend a lot of time working at my part-time jobs.
	38. I have trouble with others at my part-time jobs.
Extracurricular activity-related stressors	39. I am bored with my extracurricular activities.
	40. I spend a lot of time doing extracurricular activities.
	41. I have trouble with others at my extracurricular activities.

The M-SSCS used in the present study was written in Japanese. The authors tentatively translated the items into English. The validity and reliability of this English-translated version were not examined in the present study.
Items 1–38 are from the Stressor Scale for College Student (SSCS).[14] Based on items 36–38, the authors created items 39–41 to evaluate stressors related to extracurricular activities.