

Psychosocial school environment, satisfaction with school, and health complaints among Japanese high school students

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This study aims to examine how students' perception of psychosocial school environment is associated with satisfaction with school and health complaints among Japanese high school students. A self-administered questionnaire was conducted with 2,852 students at 25 public high schools in Okinawa, Japan. The psychosocial school environment was measured by demands (unrealistic expectations), student autonomy and control (justice of the rules and participation in school activities), and support from teachers and students. Students who perceived high demands, low control, and low support reported the highest health complaints, whereas students who perceived low demands, high control, and high support showed the lowest complaints. Each demand-control combination with low support was more likely to have health complaints than those with high support. The high demands, high control, and high support group reported the highest satisfaction, whereas the low demands, low control, and low support group showed the lowest satisfaction. Each demand-control combination with low support had less satisfaction with school than those with high support. This study suggests that interventions which improve the psychosocial school environment are needed in order to promote school-related health.

Keywords: school-related stress, demand, control, support, health and well-being

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1. Introduction

Since students spend their time in the school setting almost all day, they have a large stake in what happens to them at school, hence, their reactions to and perceptions of their school experiences are significant (Fraser, 1994). Traditionally, school climate research has involved investigation of associations between students' perceptions of psychosocial characteristics of school and learning outcomes. Many studies have shown that student perceptions account for substantial amounts of variance in learning outcomes such as achievement, attitudes, and absenteeism (Anderson, 1982; Fraser, 1994; Moos, 1991).

In the same way, school climate may be considered to have a significant effect on students' health

outcomes. Previous studies have suggested that a supportive and accepting school environment can be a resource for the development of students' health behaviors, subjective health and well-being, while a non-supportive and negative school environment can be a risk factor (Battistich et al., 1997; King et al., 1996; Nutbeam et al., 1993; Samdal et al., 1998a; Torsheim et al., 2001; Torsheim & Wold, 2001).

School climate research also owes much in theory, instrumentation, and methodology to earlier work on adult work environment (Rudd & Walsh, 1993). Although the student role is different from the employee role (Samdal et al., 1998a), school can be regarded as a workplace for students. Among adults the demand-control model by Karasek (1979; 1990) suggests that job strain occurs when job demands are high and control over task content is low (high strain

hypothesis) and job satisfaction increases when job demands and control are simultaneously high (active learning hypothesis). In addition, an expanded model including social support proposes that when low support from managers and colleagues are coupled with lack of control and high demands at work, the risk of adverse health outcomes substantially increases (Johnson & Hall, 1988).

Several studies which employed the demand-control model in a school setting have been reported. Gadin and Hammarstrom (2000; 2003) showed that high control in combination with low demand at school was associated with the best health status from both cross-sectional and longitudinal perspectives. Samdal et al (2000) showed that low student autonomy, low teacher and student support, and inadequate demands were significantly associated with smoking and alcohol use directly, and indirectly through students' satisfaction with school.

Samdal et al (1998a; 1998b; 1999) also mentioned how the demand-control-support concept was applied into school environment. According to their view, in a school setting the job demand aspect in adult work environments corresponds to the extent which teachers and parents expect high academic performance and good behavior. Unreasonable expectations, more than the student's capability, may cause strain. The students' notion of autonomy and control is formed by rules and the framework for activities at school, as well as the responsibilities they are given (Samdal et al., 1998a). If the students do not feel the justice and relevance of the regulations and are not allowed to influence the regulation and to participate in activities, they are more likely to have negative perceptions of school environment. Social support from managers and colleagues is regarded as from teachers and fellow students. High teacher support may help students to deal with job demands and make feel they are cared for. If the students perceive high-level support from classmates, they may feel highly accepted by classmates and a sense of belonging in a school context. These social supports may influence students' perceptions of school as well as have a direct impact on their health.

This study using data from high school students in Okinawa, Japan, shows how the students' perception of school environment is related to their satisfaction with school and health complaints. The combined effects of demands/expectations, student autonomy and control, and support from teachers and

students are measured in order to test the following hypotheses: 1) students who perceive high demands, low autonomy and control, and low social support will report increased health complaints, and 2) students who perceive high demands, high control and high support will have better satisfaction with school.

2. Methods

2.1. Procedures and Subjects

Using written instructions provided by researchers, classroom teachers conducted a self-administered, anonymous questionnaire in a classroom setting in November to December 2002. After being informed about the nature and intent of the study, both in writing and verbally, students were requested to complete and return a questionnaire sealed in an unmarked envelope to assure confidentiality of the responses. Students could decline to respond to the questionnaire. No follow up was conducted with students absent from school when the survey was conducted. The study protocol was approved by the Medical Ethical Review Board at University of the Ryukyus.

The study sample consisted of 2,852 students in grades 10 through 12 (ages 15-18) at 25 public senior high schools throughout Okinawa, Japan. Schools were chosen from 17 general high schools and eight vocational high schools depending on the size of the student population in school districts and based on willingness of school administrators to participate in the study. Questionnaires were collected from 2,552 students (1219 males, 1321 females, and 12 unknown). One hundred eleven students declined to participate and 189 students were absent from school when the survey was conducted. Once questionnaires of unknown sex were eliminated, a total of 2,540 remained to be used for analyses.

2.2. Measures

The questionnaire mainly consisted of school setting questions adapted from the 1997/1998 Health Behaviour in School-aged Children Study (HBSC) by the World Health Organization (Currie et al., 2000). The questionnaire was translated into Japanese by the research team included a bilingual speaker and were reviewed for content validity by the school principals,

teachers, school nurses, and researchers. The psychometric properties of the Japanese questions for Japanese adolescents were determined by Takakura et al (2002). They showed that Cronbach's alpha coefficients were reasonable, ranging from 0.50 to 0.84, and test-retest reliability at two-week interval demonstrated adequate stability, ranging 0.60 to 0.77. They also found that one dimensionality of each scale was indicated by the results of principal component analyses and the predictive validity was confirmed by the correlations between those scales and health complaints.

The school setting measures include the following: satisfaction with school, unrealistic expectations, student autonomy and control, and support from teachers and students.

Satisfaction with school was measured by four items: 'How do you feel about school at present [anata ha genzai gakkou seikatsu ni tsuite dou omotte imasuka]', 'How often do you think that going to school is boring [anata ha gakkou ni ikunoga unzarida to omoukoto ga dorekurai arimasuka]', 'Our school is a nice place to be [watashitachi no gakkou ha igogochi ga iitokoroda]', and 'I feel I belong at this school [watashi ha kono gakkou no ichiin de aru to kanjiteiru]'. The first of these items was rated on a four-point scale ranging from 'not at all' to 'like it a lot'. Other three items were reported on a five-point scale ranging from 'strongly disagree' to 'strongly agree'. The internal consistency of this scale was 0.75 in this study group.

Unrealistic expectations indicate the students' perceptions of unreasonable job demands in school, and were measured by two items on a five-point scale: 'My teachers expect too much of me at school [gakkou no koto ni tsuite sensei ha watashi ni ohku o kitai shisugiru]' and 'My parents expect too much of me at school [gakkou no koto nitsuite ryoushin ha watashi ni ohku o kitai shisugiru]'. Cronbach's alpha coefficient of 0.65 was obtained for this measure.

Student autonomy and control indicate how the students feel the justice and relevance of the regulations and are involved in school activities, and were measured by five items on a five-point scale: 'Students take part in making rules [watashitachi no gakkou deha seito ga kisokuzukuri ni sanku shiteiru]', 'The rules in this school are fair [kono gakkou no kisoku ha kouhei de aru]', 'Teachers treat us fairly [sensei ha watashitachi o kouhei ni atsukatte kureru]', 'Students are treated too strictly in this school [kono gakkou deha

seito ga amarinimo kibishiku atsukawareteiru]', and 'I am encouraged to express my own views in class [kyoushitsu de jibun no iken o hyougen suruyou sensei ha hagemashite kureru]'. Cronbach's alpha coefficient was 0.63 in this sample.

Teacher support consisted of two items: 'When I need extra help from my teachers, I can get it [watashi ga tokubetsu no tasuke o hitsuyou to surutoki sensei ha tasukete kureru]' and 'My teachers are interested in me as a person [sensei ha hitori no ningen to shite watashi ni kanshin o shimeshite kureru]'. Student support consisted of three items: 'Students in my class enjoy being together [watashi no kurasu no seito ha issyo ni iruto tanoshii]', 'Students in my class are kind and helpful [kurasu no hotondo no seito ha shinsetsu de tayori ni naru]', and 'Other students accept me [ta no seito ha watashi o ukeirete kureru]'. These questions were rated on a five-point scale and were added up to provide the scale score of support from teachers and students. Cronbach's alpha coefficient was 0.76 in this study group.

Health complaints were measured by the HBSC symptom checklist included the items headache, abdominal pain, backache, feeling low, irritability, nervousness, sleeping difficulties, and dizziness. Students reported on a five-point scale if each symptom was experienced seldom or never, about once every month, about once every week, more than once a week, or most days. Sum scores were calculated for each student. Cronbach's alpha coefficient was 0.77 in this study group.

In addition, demographic variables including gender, grade, and school type were assessed. The students' perceptions of their family wealth and academic achievement were also measured as controls in the analyses. Based on a convenience sample of 240 Japanese high school students in 2001, test-retest at two-week interval showed intra-class correlations of 0.80 and 0.70, respectively.

2.3. Data analysis

The unrealistic expectations, student autonomy and control, and support scale scores were classified into two groups based on each median. These groups were combined into a single measure with eight categories, which generated the interactions of high and low levels of demands, autonomy and control, and support. In the text, these categories

Table 1 Health complaints and satisfaction with school by demographic variables

	Health complaints					Satisfaction with school				
	n	Mean	SD	F/t	p	n	Mean	SD	F/t	p
Total	2439	14.5	5.9			2487	11.9	3.2		
Grade										
10th	852	14.5	5.9	0.02	0.979	876	12.2	3.1	8.89	<0.001
11th	864	14.5	5.8			874	11.6	3.1		
12th	723	14.4	5.9			737	11.8	3.2		
Gender										
Male	1158	13.3	5.3	-9.64	<0.001	1186	11.9	3.1	-0.15	0.881
Female	1281	15.5	6.2			1301	11.9	3.2		
School type										
General H.S.	1660	14.6	5.9	1.04	0.296	1695	12.2	3.1	6.14	<0.001
Vocational H.S.	779	14.3	5.8			792	11.3	3.2		
Family wealth										
Very well off	155	14.2	5.4	12.30	<0.001	162	13.2	3.4	24.03	<0.001
Quite well off	369	13.9	5.5			381	12.5	3.0		
Average	1240	14.0	5.7			1261	12.0	3.1		
Not very well off	524	15.5	6.1			536	11.3	2.9		
Not at all very well off	106	17.1	7.1			110	10.2	3.9		
Academic achievement										
Very good	34	14.0	7.0	7.19	<0.001	36	12.0	3.9	22.50	<0.001
Good	174	14.3	5.3			181	12.4	3.3		
Average	1362	14.0	5.6			1378	12.2	2.9		
Bad	738	15.2	6.2			757	11.5	3.2		
Very bad	116	15.9	5.9			120	9.8	3.7		

Total number varies because of missing data.

Table 2 Descriptive statistics of school environment variables

	Total				Male				Female			
	n	Mean	SD	Median	n	Mean	SD	Median	n	Mean	SD	Median
Unrealistic expectations	2503	5.1	1.6	5	1194	5.3	1.6	5	1309	5.0	1.6	5
Student autonomy & control	2505	13.9	3.4	14	1196	14.1	3.5	14	1309	13.7	3.4	14
Teacher & Student Support	2483	17.5	3.9	18	1187	17.4	3.9	18	1296	17.7	3.9	18

Total number varies because of missing data.

were characterized with capital letters of high and low levels of demands, autonomy and control, and support in turn. For example, HLL indicates students who perceived high demand, low control, and low support. Analyses of covariance (ANCOVAs) were conducted separately for health complaints and satisfaction with school. For each analysis, the independent variable was the combination measure of demands, autonomy and control, and support, and the covariates were grade, gender, school type, family wealth, and academic achievement. A criterion of $p < 0.05$ for statistical significance was applied. In the case of multiple comparisons, we applied the more stringent criterion of $p < 0.001$ for significance due to type I error.

3. Results

The mean scores of health complaints and satisfaction with school are provided in **Table 1**. Females had more health complaints than males.

There were no differences in health complaints by grade and school type. The youngest students and general high school students were more likely to be satisfied with school. There was no gender difference in satisfaction with school. Poorer students had more health complaints and less satisfaction with school. Students who perceived bad academic achievement were more likely to report health complaints and to be dissatisfied with school.

Table 2 shows the descriptive statistics of unrealistic expectations, student autonomy and control, and support from teachers and students. As the medians of each scale did not vary by gender, these scale scores were dichotomized at the median for the total sample. Later analyses were conducted by the use of total sample data.

A result of ANCOVA on health complaints is presented in **Table 3**. High demand, low control, and low support group (HLL) reported the highest health complaints, whereas low demand, high control, and high support group (LHH) showed the lowest

Table 3 The results of ANCOVA on health complaints and satisfaction with school

	Combinations [†]	n	Mean [‡]	SE	F	p	Multiple comparisons [§]
Health complaints	LHH	385	12.3	0.3	16.89	<0.001	LHH<HLH,LHL,LLL,HHL,HLL HHH<LLL,HLL LLH<HLL
	HHH	486	13.7	0.3			
	LLH	201	13.9	0.4			
	HLH	194	14.9	0.4			
	LHL	251	15.0	0.4			
	HHL	219	15.4	0.4			
	LLL	385	15.7	0.3			
	HLL	229	16.3	0.4			
Satisfaction with school	LLL	388	9.6	0.1	121.30	<0.001	LLL,HLL<LLH,HLH,LHL,HHL<LHH,HHH
	HLL	233	9.7	0.2			
	LHL	268	11.4	0.2			
	HHL	224	11.6	0.2			
	LLH	207	11.7	0.2			
	HLH	197	12.4	0.2			
	LHH	396	13.5	0.1			
	HHH	497	13.8	0.1			

Total number varies because of missing data.

[†]: Combinations of demand, control, and support

[‡]: Adjusted for grade, gender, school type, family wealth, and academic achievement

[§]: Bonferroni test (p<0.001)

LHH: low demand, high control, and high support group

LLH: low demand, low control, and high support group

HHH: high demand, high control, and high support group

HLH: high demand, low control, and high support group

LHL: low demand, high control, and low support group

LLL: low demand, low control, and low support group

HHL: high demand, high control, and low support group

HLL: high demand, low control, and low support group

complaints. Each demand-control combination with low social support was more likely to have health complaints compared to those with high social support. Within the high social support condition, high demand-low control group (HLH) had significantly more complaints than low demand-high control group (LHH). Within the low social support condition, no combinations significantly differed in health complaints.

Table 3 also contains a result of ANCOVA on satisfaction with school. High demand, high control, and high support group (HHH) reported the highest satisfaction, whereas low demand, low control, and low support group (LLL) showed the lowest satisfaction. Each demand-control combination with low social support had less satisfaction with school than those with high social support. Both in high and low levels of social support, high demand-high control groups (HHH, HHL) were significantly more satisfied with school than low demand-low control groups (LLH, LLL). Similarly, low demand-high control groups (LHH,

LHL) were significantly more satisfied with school than high demand-low control groups (HLH, HLL).

4. Discussion

This study showed that the combined measure of demands, control, and support was associated with health complaints and satisfaction with school among Japanese high school students.

In this study, it is hypothesized that students who perceive high-school strain, that is high demands and low control conditions, may report increased complaints compared with those who perceived low demands and high control, and health complaints at high demands and low control condition may increase as the level of social support decreases. Our findings supported this hypothesis if high social support was provided. The combined effect of demands and control on health complaints was evident only if social support was present. On the other hand, in the low support condition, there was

no difference in health complaints among each demand-control combination. A possible explanation could be that the adverse impact of low social support surpasses that of demand and control on health complaints. Thus, no matter how students perceived demands and control, if their social support from teachers and students was lacking, their risk for health complaints greatly increased. As Japanese culture is collective and mutually cooperative, the existence of social support may be extremely important (Markus & Kitayama, 1991). Previous studies in Japanese high school students also found that lack of social support was significantly related to more stress responses, such as depression and anxiety (Okayasu et al., 1992; Takakura et al., 1998). Another explanation may be due to our measurement of student autonomy and control. As this scale includes a small number of items concerning teachers, which can be construed as another component of teacher support, it is possible that the effect of autonomy and control may accentuate as the level of teacher support increases. Johnson and Hall (1988) showed that, with few exceptions for each demand-control combination, prevalence rates of cardiovascular disease increase with decreasing levels of social support. However, the high demand-high control combination with low social support showed the highest prevalence rate. They suggest that their indicator of control may be measuring responsibility, which in some occupations might constitute another component of job demands.

Adult job strain research also reported consistent findings that the combination of high job demands and low control was associated with job dissatisfaction (Karasek, 1979). In addition, it was revealed that there was a complex interaction of job demand and control effects on job dissatisfaction, that is, when job demands and control were simultaneously high, the level of job dissatisfaction decreased (Karasek, 1979). In the demand-control model, this condition is called "active job" in a work context and the opposite condition with low demand and low control is "passive job". This phenomenon is explained by the active-learning hypothesis that learning is predicted to occur most often when the challenges in the situation are matched by the individual's control over alternatives or skills in dealing with those challenges, leading to development of new behavior patterns and high levels of job satisfaction (Karasek & Theorell, 1990). The highest satisfaction occurs with an "active

job", where both the challenge of high job demands and the opportunity for significant use of judgment and discretion are available (Karasek, 1979). Interestingly, this study also showed that students who perceived high demands and high control were more likely to be satisfied with school than those with low demands and high control or low demands and low control. These findings were consistent with the findings of the adult working population and supported the active-learning hypothesis. In this study, the job demands in school were expressed by teachers' and parents' expectations of the students, which they perform well. Thus, expressed expectations may be a positive motivation to do one's best. Moreover, increased social support may promote an aspiration or desire to improve oneself. In such a context, students are more likely to be reinforced to do their best, to develop an interest in the topics addressed in school, and also feel satisfied with school (Samdal et al., 1999). By contrast, low expectations from teachers and parents may reduce motivation to perform. The findings of the adult work environment studies suggest that employees with low job demands and low control face the different problem of passivity and apathy (Gadin & Hammarstrom, 2000). In this study, students with low demands, low control, and low support had the lowest satisfaction with school.

School climate research has been often conducted in accordance with Moos's scheme for classifying human environments: Relationship Dimensions, which identify the nature and intensity of personal relationships within the environment and assess the extent to which people are involved in the environment and support and help each other (e.g., support, cohesion); Personal Development Dimensions, which assess basic directions along which personal development and self-enhancement tend to occur (e.g., competition, academic achievement); and System Maintenance and Change Dimensions, which involve the extent to which the environment is orderly, clear in expectations, maintains control, and is responsive to change (e.g., organization, control) (Fraser, 1982; Moos, 1973; 1991). The characteristics of the school environment scales used in this study can be considered as parts of these dimensions. The unrealistic expectations may be related to the Personal Development Dimension. Student autonomy and control can be regarded as the System Maintenance and Change

Dimensions. Teacher and student support is a part of the Relationship Dimensions. It must, however, be added that these variables do not represent all aspects of Moos's three types of dimensions. In Japan, some researchers developed the school climate scale based on Moos's scheme (Hirata & Sako, 1999; Ito & Matsui, 2001). Although the perceptions of school climate among Japanese junior high school, non-attendant and delinquent students were described (Hirata & Sako, 1999), it is unclear how students' perceptions of the school environment are associated with their health outcomes.

Samdal et al (1999) showed that school environments seemed to explain more variance in academic achievement among students in Western as opposed to Eastern Europe. They considered that the reason for this result was found in the lower internal consistency of the school environment scales for Eastern Europe, suggesting the scales might have been less appropriate for school system in Eastern Europe than in the West (Samdal et al, 1999). In this study, alpha coefficients on the unrealistic expectations and student autonomy and control were somewhat low. It is possible that these scales may not grasp precisely the concepts of school environments in the West, and that there may be cultural differences in students' perceptions of the school environment. Student autonomy and control is not especially common in Japan, as the Japanese school system is structured in a uniform educational fashion and Japanese students are tied down by long school hours and strict rules compared with the Western students (Lock, 1986; Sengoku, 1998). Therefore, the findings must be interpreted cautiously when conducting cross-cultural comparisons.

It has been shown that factors other than demand and control might be even more important for school-related health in young age groups (Gadin & Hammarstrom, 2000). Although socio-demographic variables were adjusted in this study, other possible confounders such as the student's personality and bullying problems need to be controlled in future research. Another limitation is the cross-sectional study design. Clearly our data cannot provide any information about causal linkages between school environment and health.

In conclusion, the combined effect of demand, autonomy and control, and teacher and student support was found to be related to health complaints and satisfaction with school among Japanese

high school students in Okinawa. In addition, as students with high demand, low control, and low support reported the most health complaints and high demand, high control, and high support group reported the highest satisfaction with school, it may be supportive of the demand-control-support model for adult work environment. This study suggests that interventions which improve the psychosocial school environment are needed in order to promote school-related health.

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