

Development of School and Neighborhood Collective Efficacy Scales for Use in Japanese Adolescent Health Research

Minoru Takakura*, Masaya Miyagi**, Masaru Ueji***, Minoru Kobayashi****
and Atsushi Kurihara*****

*Faculty of Medicine, University of the Ryukyus
207 Uehara, Nishihara, Okinawa 903-0215 Japan
minoru@med.u-ryukyu.ac.jp

**Faculty of Education, University of the Ryukyus
1 Senbaru, Nishihara, Okinawa 903-0213, Japan

***Faculty of Education, Ibaraki University
2-1-1 Bunkyo, Mito, Ibaraki 310-8512 Japan

****Graduate School of Education, University of the Ryukyus
1 Senbaru, Nishihara, Okinawa 903-0213, Japan

*****Faculty of Education, Saga University
1 Honjo-machi, Saga, 840-8502, Japan

[Received December 22, 2016 ; Accepted May 12, 2017]

Purpose: The purposes of this study were to develop self-rating school and neighborhood collective efficacy scales for use in Japanese adolescents and to assess the psychometric properties of the scales.

Methods: Self-administered questionnaires were distributed to 1,471 students in grades 10 through 12 in six public high schools in Japan in 2015. The collective efficacy questionnaire comprised of social cohesion in school (7 items), social cohesion in the neighborhood (5 items), informal social control in school (7 items), and informal social control in the neighborhood (6 items). Factor analysis was used to evaluate the construct validity of the scales. The predictive validity was examined using the associations with safety at school and neighborhood and self-rated health and K6. Scale reliability was assessed based on internal consistency.

Results: Factor analysis confirmed that collective efficacy constructs among Japanese adolescents consisted of collective efficacy factors in school and neighborhood with social cohesion and informal social control subordinate factors. The scales had good internal consistency (more than 0.9 of Cronbach's alphas). The collective efficacy scales, as expected, were associated with safety at school and in the neighborhood and subjective health, indicating appropriate predictive validity.

Conclusions: The present findings show the reliability and validity of the school and neighborhood collective efficacy scales for Japanese adolescents.

Keywords: social determinants; social relationships; high school students

[School Health Vol.13, 11-19, 2017]

I. Introduction

Social relationships have been identified as one of the social determinants of health. Social capital frequently refers to the features of social relationships and is generally defined as “resources composed of or derived from trust, and / or norms, and /or networks, which facilitate collective actions”¹⁾. At the collective level, it seems to operate as a collective force that play an important role in the promotion of population health²⁾.

Collective efficacy is a form of social capital³⁻⁵⁾. According to Bandura⁶⁾, collective efficacy refers to “a group’s shared belief in its conjoint capability to organize and execute the courses of action required to produce given levels of attainment”. This concept is in line with the idea of social capital in terms of expectations for collective actions³⁾. In the field of public health, Sampson, Raudenbush, and Earls⁷⁾ first adapted the concept of collective efficacy to a study on violent crime in neighborhoods. They defined it as a combination of two aspects: social cohesion

and informal social control among neighbors, which reflect the linkage of mutual trust and the willingness to intervene on behalf of the common good⁷⁾. In fact, collective efficacy is expected to prevent deviant behaviors and violence through supervising young people and maintaining public order⁷⁾. Using multilevel modelling and adjusting for individual and contextual factors, they showed that neighborhood collective efficacy was associated with lower rates of violence⁷⁾. After the seminal paper of Sampson and colleagues, a growing body of literature has indicated that neighborhood collective efficacy might be a predictor of various health outcomes among young people, such as quality of life⁸⁾, self-rated health⁹⁾, obesity⁵⁾, sexual behaviors¹⁰⁾, and substance use^{11),12)}.

These previous studies using Sampson's scale have been limited to collective efficacy in neighborhoods and residential communities. Since students spend most of their daytime hours at school, school is plausibly an important source that may share influences and exert collective force on students' daily life, health, and well-being¹³⁾. In the field of education, studies on collective efficacy in school and academic achievement have been often conducted¹⁴⁾, yet, there are few studies focusing on the association between collective efficacy in school and youth health^{15),16)}. Although neighborhood collective efficacy has been found to be associated with youth health, it is uncertain whether school collective efficacy exert an influence on youth health. In addition, most previous studies obtained collective efficacy responses through adults' perceptions such as parents and local residents, even though studies were targeting youth health outcomes^{5),8)-10),12)}. This may lead to a bias against or overlooking the perception of young people¹⁷⁾. Thus, more research on young people's perceptions is needed.

To our knowledge, there has been no scales that applied Sampson's concept for measuring collective efficacy in school and neighborhood among Japanese adolescents. As collective efficacy may vary between different cultures and countries⁴⁾, the original scales that will be adapted to different regional and cultural settings need to be validated. Thus, the purpose of this study was to develop self-rating school and neighborhood collective efficacy scales for use in Japanese adolescents and to assess the psychometric properties of the scales.

II. Methods

1. Participants and procedure

This cross-sectional study was conducted with a sample of 1,471 students in grades 10 through 12 (aged 15-18 years) enrolled in six public high schools at O, K, and I prefectures in Japan, including one general high school and one vocational high school from each prefecture. The schools which agreed to participate in the study were purposively selected from the research fields of the authors. Using written instructions provided by researchers, classroom teachers distributed in class a self-administered anonymous questionnaire during the second term in 2015. After being informed about the nature and intent of the study, all students attending the class were requested to complete and return the questionnaire sealed in an unmarked envelope to assure confidentiality of the responses. Students were free to decline participation. A total of 1,378 students responded to the survey. Finally, responses from 1,309 students with complete data on variables of interest were used for analyses (34% O prefecture, 32% K prefecture, 34% I prefecture; 35% 10th grade, 32% 11th grade, 33% 12th grade; 56% boys, 44% girls; 49% general high school, 51% vocational high school). The study protocol was approved by the Institutional Review Board of the University of the Ryukyus.

2. Instruments

Based on the previous study⁷⁾, collective efficacy was conceptualized as a combination of social cohesion and informal social control both in school and in the neighborhood. Social cohesion was measured by the questions applied in a social capital scale in an earlier study¹⁸⁾. The scale comprised seven items on social cohesion in school (refer to items 1–7 in **Table 1**) and five items on social cohesion in the neighborhood (refer to items 15–19 in **Table 1**) indicating trust and reciprocity among students and teachers at school as well as with their neighbors in their neighborhoods. Informal social control was assessed by items based on Sampson's scale⁷⁾ which were added and adapted to local situations. This scale was composed of seven items on informal social control in school (refer to items 8–14 in **Table 1**) and six items on informal social control in the

neighborhood (refer to items 20–25 in **Table 1**) which represent the willingness of students or neighbors to intervene in cases of trouble in school or in the neighborhood. All collective efficacy items were rated using a five-point scale ranging from “strongly agree” to “strongly disagree”.

Safety at school, safety at neighborhood, self-rated health, and mental health were used as external criteria for predictive validity of the scales. Given that previous studies suggested that people with low collective efficacy were more likely to perceive unsafe environment and experience daily stress and mental health problems^{(4), (5), (7), (9), (19)}, we supposed that these variables may be associated with collective efficacy in theoretically consistent manners. Safety at school and in the neighborhood were evaluated using a five-point rating scale ranging from “strongly disagree” to “strongly agree” to the statements “I feel safe at school” and “I feel safe in the neighborhood”. Self-rated health was evaluated using a four-point rating scale, i.e. “excellent”, “good”, “fair”, and “poor”, to answer the question “how would you describe your current state of health?”. Mental health was assessed using the Japanese version of K6^{(20), (21)}.

3. Data Analysis

For the assessment of factorial validity, all collective efficacy items were submitted to an exploratory factor analysis with a principal components extraction and the varimax rotation. Four factors were extracted, as two components in either school or neighborhood, i.e., social cohesion and informal social control, were conceptually defined. We examined whether each item can be loaded to the most appropriate dimension. A confirmatory factor analysis using a structural equation model was performed to test the validity of the conceptual model with the factor structure extracted by the exploratory factor analysis. In this case, we hypothesized the second-order factor model to consist of two collective efficacy factors in school and in the neighborhood, including social cohesion and informal social control subordinate factors, respectively. The post hoc estimations based on modification indices were used to improve the fit of the model by adding correlations among error terms. To test predictive validity of the scales, we examined whether collective efficacy scales relate to the external criteria variables in expected

ways with Spearman’s rank correlation coefficients. Reliability of the scales was assessed based on internal consistency estimated via Cronbach’s alpha coefficients. The analyses were performed by using SPSS 22 and AMOS 22.

III. Results

The descriptive statistics of collective efficacy items and results of exploratory factor analysis are displayed in **Table 1**. These statistics indicate that the distribution of the items were apparently not biased. The four factors accounted for 71.9% of the percentage of variance. From factor loadings, the first factor was interpreted as social cohesion in school, the second factor as informal social control in school, the third factor as social cohesion in neighborhood, and the fourth factor as informal social control in neighborhood. The second-order factor model was confirmed by the confirmatory factor analysis with 0.92 of the comparative fitness index (CFI) and 0.08 of the root mean square error of approximation (RMSEA), indicating a modest goodness of fit, although the RMSEA was slightly higher than expected. All path coefficients were from 0.56 to 0.94 ($p < 0.001$) (**Figure 1**). The correlation coefficient between school collective efficacy and neighborhood collective efficacy was 0.74. According to the suggestion of modification indices, two correlated error terms between item 6 and item 7 and between item 24 and item 25 were added to improve the model fit. The final score in each scale was the sum of the responses, and a higher score indicated higher collective efficacy.

Table 2 presents the descriptive statistics of the collective efficacy scales and variables of external criteria, as well as Cronbach’s alpha coefficients of the scales. The alphas of each scale were 0.92 for school collective efficacy and 0.94 for neighborhood collective efficacy. **Table 3** shows the relationships between collective efficacy scales and external criteria variables. All correlation coefficients were statistically significant. School collective efficacy was positively associated with safety at school, and neighborhood collective efficacy was also positively associated with safety at neighborhood. In addition, school collective efficacy and neighborhood collective efficacy were negatively associated with poor self-rated health and K6 score.

Table 1 Descriptive statistics and factor analysis of collective efficacy items

Items	Mean	S.D.	Sk	Ku	Factor loadings			
					1	2	3	4
1. Students in my school are kind and dependable	3.8	.9	-.8	.8	.831	.242	.146	.079
2. Students in my school can be trusted	3.6	1.0	-.6	.3	.806	.250	.142	.078
3. Students in my school help each other	3.8	.9	-.7	.6	.805	.286	.129	.116
4. Students in my school usually try to be helpful	3.6	.9	-.4	.0	.773	.304	.124	.089
5. Students in my school understand each other	3.5	1.0	-.4	-.1	.765	.250	.168	.103
6. Teachers in my school are kind and dependable	3.5	1.0	.5	.1	.693	.132	.213	.137
7. Teachers in my school can be trusted	3.6	1.0	-.6	.0	.686	.143	.223	.119
8. If classmates were drinking alcohol beverages, students in my school would do something about it	3.0	1.1	-.1	-.5	.162	.869	.097	.190
9. If classmates were smoking cigarettes, students in my school would do something about it	3.1	1.1	-.2	-.6	.195	.861	.104	.164
10. If classmates were skipping school and hanging out on a street corner, students in my school would do something about it	2.8	1.0	.0	-.5	.205	.785	.123	.174
11. If classmates were showing disrespect to teachers, students in my school would scold the classmates	3.0	1.0	-.2	-.4	.244	.775	.095	.135
12. If classmates were making some noise during class and disturbing class, students in my school would do something about it	3.1	1.0	-.2	-.2	.328	.675	.087	.190
13. If classmates were bullying someone, students in my school would do something about it	3.4	1.0	-.4	-.2	.327	.653	.090	.144
14. Students in my school would work together to solve our problems	3.5	1.0	-.5	.1	.482	.572	.102	.143
15. The neighbors are kind and dependable	3.5	1.0	-.4	.2	.198	.127	.887	.188
16. The neighbors help each other	3.5	.9	-.4	.1	.194	.097	.868	.247
17. The neighbors can be trusted	3.5	1.0	-.4	.1	.200	.144	.864	.145
18. The neighbors usually try to be helpful	3.4	.9	-.2	.2	.176	.124	.863	.237
19. The neighbors get along with each other	3.5	.9	-.4	.3	.194	.071	.835	.229
20. If students were smoking cigarettes, people in my neighborhood would do something about it	3.4	1.0	-.4	.1	.061	.178	.117	.876
21. If students were drinking alcohol beverages, people in my neighborhood would do something about it	3.4	1.0	-.3	-.1	.050	.191	.108	.874
22. If students were showing disrespect to adults, people in my neighborhood would scold the classmates	3.4	1.0	-.4	.1	.139	.171	.161	.789
23. If students were skipping school and hanging out on a street corner, people in my neighborhood would do something about it	3.1	1.0	-.3	-.3	.068	.232	.217	.728
24. People in my neighborhood would get together to improve security in the area	3.6	.9	.5	.5	.215	.090	.383	.653
25. People in my neighborhood would get together to improve the image of the neighborhood	3.6	.9	-.4	.4	.230	.129	.373	.621
Eigen value					10.6	3.4	2.5	1.5
Percentage of contribution					20.2	18.2	17.5	16.0

Bold value represents factor loading more than 0.5

S.D.: Standard Deviation

Sk: Skewness

Ku: Kurtosis

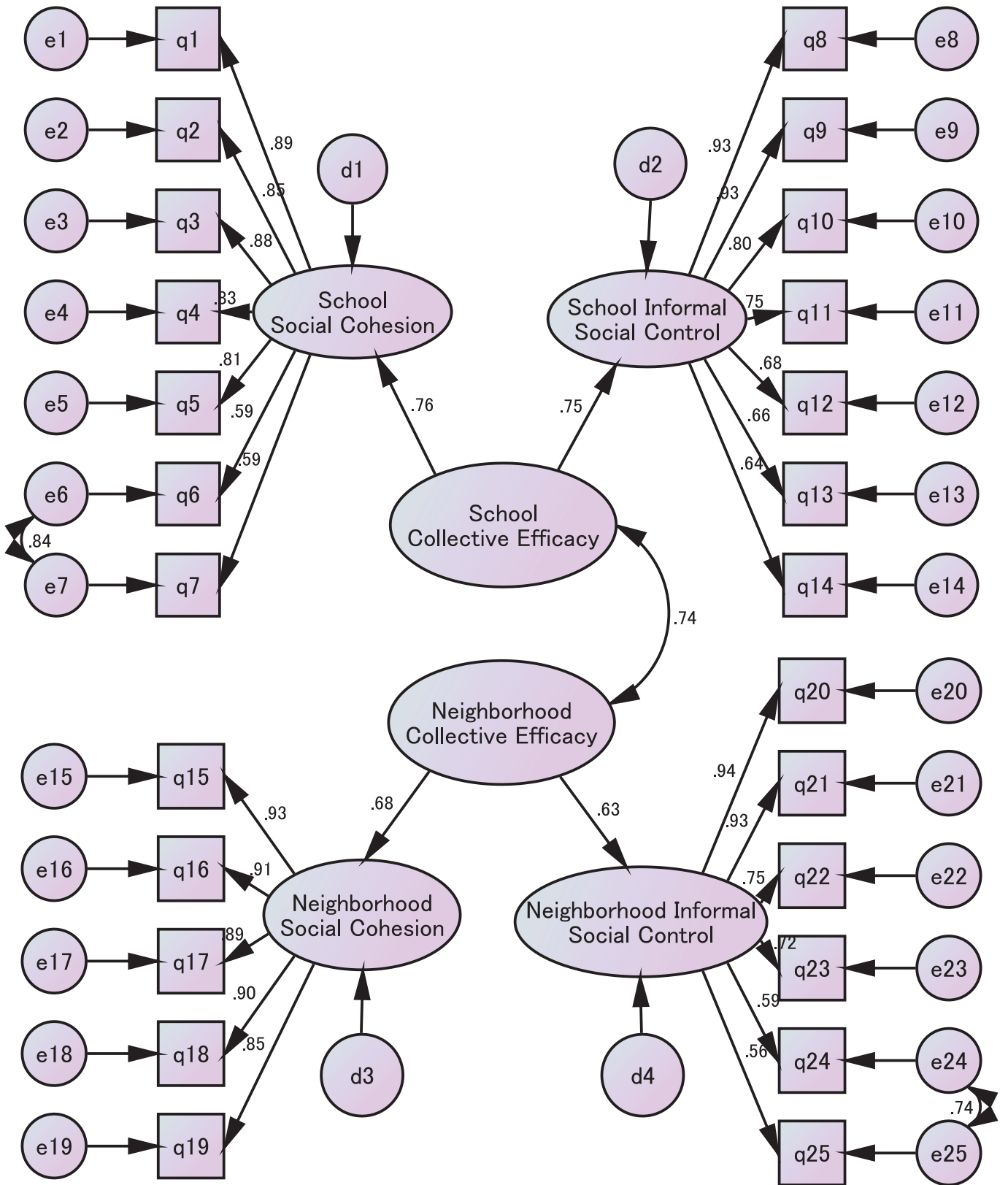


Figure 1 The result of confirmatory factor analysis
CFI=.919, RMSEA=.083

Table 2 Scores of collective efficacy scale and external criteria for validity

	Mean	S.D.	Range	Alpha
School collective efficacy	47.2	10.2	14 - 70	.935
Neighborhood collective efficacy	37.8	7.9	11 - 55	.924
Safety at school	3.6	1.0	1 - 5	
Safety in the neighborhood	3.7	.9	1 - 5	
Self-rated health	1.9	.7	1 - 4	
Mental health (K6)	9.0	5.7	0 - 24	

S.D.: Standard Deviation

Table 3 Relation between collective efficacy and external criteria of validity (Spearman's ρ)

	School collective efficacy	Neighborhood collective efficacy
Safety at school	.590	.282
Safety in the neighborhood	.309	.543
Self-rated health	-.245	-.179
Mental health (K6)	-.233	-.152

All coefficients are statistically significant ($p < .001$)

IV. Discussion

This study developed self-rating school and neighborhood collective efficacy scales for use among Japanese adolescents, based on the concepts originally constructed by Sampson et al.⁷⁾. The study also confirmed the reliability and validity of the developed scales, more specifically, the scales exhibited the same constructs as the Sampson's concepts.

Although there have been some studies applying Sampson's concept of collective efficacy to explain youth health outcomes^{5),8)-12)}, few studies measured adolescent perceptions of collective efficacy. Furthermore, studies on the psychometric evaluation of the collective efficacy scale have been scarce. Jackson et al.²²⁾ determined neighborhood collective efficacy by asking students several questions on social cohesion and parental knowledge of adolescent activities, representing informal social control, and examined the relationship of collective efficacy in the neighborhood with adolescent alcohol use. They indicated reliability of the scale but did not verify its validity. Sapouna¹⁶⁾ defined collective efficacy in school as cohesion and trust among class members combined with their willingness to intervene in the case of aggressive or bullying episodes and showed

that students' perception of collective efficacy in school was negatively associated with victimization. However, the study did not assess the psychometric properties of the scale. Olsson and Fritzell¹⁵⁾ also examined the role of collective efficacy in school in adolescents' health-risk behaviors, but they operationalized collective efficacy by only two items of social cohesion and informal social control. To date, this is the first study to examine the validity of school and neighborhood collective efficacy scales that applied Sampson's concept among Japanese adolescents.

In this study, the exploratory factor analysis found four latent factors and each item was highly loaded to the most suitable factor. The result was good in the subscales tapping social cohesion in school, informal social control in school, social cohesion in neighborhood, and informal social control in neighborhood. Consistent with the hypothesis, the confirmatory factor analysis confirmed the second-order factor model consisting of collective efficacy factors in school and neighborhood with social cohesion and informal social control subordinate factors. This finding supported the idea suggested in previous studies that collective efficacy is appropriately studied at the collective level, i.e.,

school and neighborhood, as one overarching construct combining social cohesion and informal social control components^{7),23)}. The modification indices suggested that the model fit would improve with the addition of two correlations between “teachers in my school are kind and dependable” and “teachers in my school can be trusted” and between “people in my neighborhood would get together to improve security in the area” and “people in my neighborhood would get together to improve the image of the neighborhood”. As these items are consistent with the concepts of trust in teachers and cooperation in neighbors, respectively, it sounds reasonable to add the correlations in the model. Taken together, the result of this study showed the factorial validity of the scales aptly.

This study also showed positive correlations between collective efficacy and safety at school and in the neighborhood and negative correlations between collective efficacy and subjective poor health; that is, students who had higher levels of collective efficacy in school and neighborhood were more likely to feel safe at school and in the neighborhood and perceive good health. Thus, the predictive validity of the scales was confirmed. These findings were in line with previous studies which found that neighborhood collective efficacy among adults was protectively associated with neighborhood safety and mental health^{4),5),7),9),19)}. It is plausible to assume that protective effects of high collective efficacy in the neighborhood would apply to school.

The present school and neighborhood collective efficacy scales were demonstrated to have high internal consistency with more than 0.9 of Cronbach’s alpha coefficients. This finding was consistent with alpha coefficients reported in previous studies that investigated collective efficacy among adult samples, ranging from 0.8 to 0.9^{5),10)–12),19)}

This study has several limitations. First, the participants in this study were restricted to students of public high schools purposively selected from specific three prefectures in Japan. Therefore, the study sample may be biased and the generalizability of the findings to adolescents in Japan as a whole may be limited. The scales should be validated with students in other schools and regions. Second, although high internal consistency of the scales were confirmed, we did not assess the stability of the scales. The test-retest reliability of the scales should be evaluated. Third, as for external criteria for validity, behavioral

outcomes, such as substance use, physical inactivity, and violence, did not be included. Additional research is needed to examine if the scales predict health-risk behaviors among adolescents. Finally, although various units of neighborhood, such as school districts, municipalities, and prefectures, have been used, this study did not define the area size of the neighborhood. Thus, the extent of the neighborhood may depend highly on the respondent’s perception.

With regard to implications for school health, the scales could be used to explore which collective efficacy components are more effective in the promotion of health among young people. From a practical standpoint, school personnel could assess the characteristics of schools and the neighborhoods where the students belong and identify the collectives and individuals at risk for adverse health outcomes.

In conclusion, this study suggests that the developed school and neighborhood collective efficacy scales have high reliability and validity; thus it can be used to explore the potential influence of collective force on health and well-being in Japanese adolescents.

Acknowledgements

The authors would like to thank all students and teachers who agreed to participate in this study. This study was supported by Grants-in-Aid for Scientific Research (B) (KAKENHI Grant Number JP15H03087) from the Japan Ministry of Education, Culture, Sports, Science and Technology (MEXT). The authors declare that they have no conflict of interest. We thank Ms. Marian Fe Theresa Lomboy and Ms. Estrada Crystal Amiel Maceda, University of the Philippines Manila, for comments on earlier versions of the manuscript.

References

- 1) Inaba Y: What’s Wrong with Social Capital? Critiques from Social Science. In: Kawachi I, Takao S, Subramanian SV eds. *Global Perspectives on Social Capital and Health*. 323–342, Springer, New York, NY, 2013
- 2) Kawachi I, Takao S, Subramanian SV: Introduction. In: Kawachi I, Takao S, Subramanian SV eds. *Global Perspectives on Social Capital and Health*. 1–21, Springer, New York, NY, 2013
- 3) Sampson RJ: The neighborhood context of well-being. *Perspectives in Biology and Medicine* 46: S53–64, 2003
- 4) Suen Y, Cerin E, Mellecker RR: Development and reliability of a scale of physical-activity related informal social control for parents of Chinese pre-schoolers. *International Journal of Behavioral Nutrition and Physical Activity* 11: 1–10, 2014
- 5) Cohen DA, Finch BK, Bower A et al.: Collective efficacy and

- obesity: The potential influence of social factors on health. *Social Science & Medicine* 62: 769–78, 2006
- 6) Bandura A: Collective efficacy. In: Bandura A. *Self-efficacy: The Exercise of Control*. 477–525, W.H. Freeman, New York, NY, 1997
 - 7) Sampson, R J, Raudenbush, S W, Earls F: Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science* 277: 918–924, 1997
 - 8) Drukker M, Kaplan C, Feron F et al.: Children’s health-related quality of life, neighbourhood socio-economic deprivation and social capital. A contextual analysis. *Social Science & Medicine* 57: 825–841, 2003
 - 9) Drukker M, Buka SL, Kaplan C et al.: Social capital and young adolescents’ perceived health in different sociocultural settings. *Social Science & Medicine* 61: 185–198, 2005
 - 10) Kim J: Influence of neighbourhood collective efficacy on adolescent sexual behaviour: Variation by gender and activity participation. *Child: Care, Health and Development* 36: 646–654, 2010
 - 11) Leslie HH, Ahern J, Pettifor AE et al.: Collective efficacy, alcohol outlet density, and young men’s alcohol use in rural South Africa. *Health & Place* 34: 190–198, 2015
 - 12) Fagan AA, Wright EM, Pinchevsky GM: The protective effects of neighborhood collective efficacy on adolescent substance use and violence following exposure to violence. *Journal of Youth and Adolescence* 43: 1498–1512, 2014
 - 13) West P, Sweeting H, Leyland A: School effects on pupils’ health behaviours: Evidence in support of the health promoting school. *Research Papers in Education* 19: 261–291, 2004
 - 14) Goddard RD: Collective efficacy: A neglected construct in the study of schools and student achievement. *Journal of Educational Psychology* 93: 467–476, 2001
 - 15) Olsson G, Fritzell J: A multilevel study on ethnic and socioeconomic school stratification and health-related behaviors among students in Stockholm. *Journal of School Health* 85: 871–879, 2015
 - 16) Sapouna M: Collective efficacy in the school context: Does it help explain victimization and bullying among Greek primary and secondary school students? *Journal of Interpersonal Violence* 25: 1912–1927, 2010
 - 17) Hume C, Jorna M, Arundell L et al.: Are children’s perceptions of neighbourhood social environments associated with their walking and physical activity? *Journal of Science and Medicine in Sport* 12: 637–641, 2009
 - 18) Takakura M, Hamabata Y, Ueji M et al.: Measurement of social capital at school and neighborhood among young people. *School Health* 10: 1–8, 2014
 - 19) Ahern J, Galea S: Collective efficacy and major depression in urban neighborhoods. *American Journal of Epidemiology* 173: 1453–1462, 2011
 - 20) Kessler RC, Andrews G, Colpe LJ et al.: Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine* 32: 959–976, 2002
 - 21) Furukawa TA, Kawakami N, Saitoh M et al.: The performance of the Japanese version of the K6 and K10 in the World Mental Health Survey Japan. *International Journal of Methods in Psychiatric Research* 17: 152–158, 2008
 - 22) Jackson N, Denny S, Sheridan J et al.: The role of

Appendix

-
1. 私の学校の生徒は、親切でたよりになる
 2. 私の学校の生徒は、信頼できる
 3. 私の学校の生徒は、お互いに助け合う
 4. 私の学校の生徒は、多くの場合、他の人の役に立とうとする
 5. 私の学校の生徒は、お互いに理解している
 6. 私の学校の先生は、親切でたよりになる
 7. 私の学校の先生は、信頼できる

 8. もし同級生がお酒を飲んでいたら、私の学校の生徒は、それを何とかしようとするだろう
 9. もし同級生がたばこを吸っていたら、私の学校の生徒は、それを何とかしようとするだろう
 10. もし同級生が学校をさぼって街中をぶらぶらしていたら、私の学校の生徒は、それを何とかしようとするだろう
 11. もし同級生が先生に失礼な態度をとっていたら、私の学校の生徒は、その生徒を注意するだろう
 12. 授業中に生徒が騒いだり、授業の妨害をしたとき、私の学校の生徒は、それを何とかしようとするだろう
 13. もし同級生が友だちをいじめていたら、私の学校の生徒は、それを何とかしようとするだろう
 14. 私の学校の生徒は、問題が起こったとき、みんなで協力して解決しようとするだろう

 15. 近所の人々は、親切でたよりになる
 16. 近所の人々は、お互いに助け合う
 17. 近所の人々は、信頼できる
 18. 近所の人々は、多くの場合、他の人の役に立とうとする
 19. 近所の人々は、お互いによく知っている

 20. もし生徒がたばこを吸っていたら、近所の人々はそれを何とかしようとするだろう
 21. もし生徒がお酒を飲んでいたら、近所の人々はそれを何とかしようとするだろう
 22. もし生徒が大人に対して失礼な態度をとっていたら、近所の人々はその生徒を注意するだろう
 23. もし生徒が学校をさぼって街中をぶらぶらしていたら、近所の人々はそれを何とかしようとするだろう
 24. 近所の人々は地域の治安をよくするために協力するだろう
 25. 近所の人々は街のイメージをよくするために協力するだろう
-

neighborhood disadvantage, physical disorder, and collective efficacy in adolescent alcohol use: A multilevel path analysis. *Health & Place* 41: 24–33, 2016

- 23) Dunn EC, Masyn KE, Johnston WR et al.: Modeling contextual effects using individual-level data and without aggregation: an illustration of multilevel factor analysis (MLFA) with collective efficacy. *Population Health Metrics* 13: 12, 2015



Name:

Minoru Takakura

Affiliation:

Faculty of Medicine, University of the Ryukyus

Address:

207 Uehara, Nishihara, Okinawa 903-0215 Japan

Brief Biographical History:

2005 Professor, Faculty of Medicine, University of the Ryukyus
2010 Dean, Graduate School of Health Sciences, University of the Ryukyus

Main Works:

- Takakura M. Relations of participation in organized activities to smoking and drinking among Japanese youth: contextual effects of structural social capital in high school. *International Journal of Public Health* 60:679-89, 2015
- Takakura M. Does social trust at school affect students' smoking and drinking behavior in Japan? *Social Science & Medicine* 72:299-306, 2011

Membership in Learned Societies:

- Japanese Association of School Health
 - Japanese Society of Health Education and Promotion
 - Japan Epidemiological Association
-