Factor structure, reliability, and validity of the Chinese version of the School Bullying Experience Questionnaire

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Abstract The aims of this study were to examine the factor structure, internal consistency, 1-month test–retest reliability, and congruent validity of the Chinese version of the School Bullying Experience Questionnaire (C-SBEQ). Study 1, in which 5751 Taiwanese adolescents in Southern Taiwan participated, examined the adequacy of the original four-factor structure of the C-SBEQ using confirmatory factor analysis (CFA) and internal-consistency reliability using Cronbach α. Study 2, in which 108 adolescents in Southern Taiwan participated, examined the 1-month test–retest reliability using intraclass correlation coefficients (ICCs). We examined the congruent validity of the C-SBEQ by examining the consistency between self-reported and teacher- and classmate-nominated experiences of bullying involvement in Study 2. The results of CFA supported the four-factor structure of the C-SBEQ in Taiwanese adolescents. The test–retest and internal reliability values of all subscales of the C-SBEQ were at acceptable to satisfactory levels. Nominated adolescents had significantly higher self-reported scores on three C-SBEQ subscales than non-nominated ones, and the levels of agreement between self-reported and nominated victims were moderate. The results of this study indicate that the C-SBEQ is appropriate for assessing bullying experiences in Taiwanese adolescents.

KEYWORDS
Adolescents;
Bullying;
Factor structure;
Psychometric test

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Introduction

Bullying is a malicious aggressive behavior that is intended to harm others repeatedly, and there is an imbalance in strength or power between the perpetrators and the victims of bullying [1,2]. Longitudinal studies have found that for both perpetrators and victims, involvement in bullying is a risk factor for subsequent mental health and conduct problems in children and adolescents [3–8]. For example, in a 2-year follow-up study [3] on 5-year-old children in the USA, pure victims and perpetrator-victims showed greater behavior and school adjustment problems at 7 years of age. In a 10-month follow-up study [5] on Korean junior high school students, victims at baseline showed increased risk of social problems; perpetrators showed increased aggression; and perpetrator-victims showed increased aggression and externalizing problems. In a 10–15-year follow-up study [8] on Finnish 8-year-old boys, frequent pure victimization (being made a victim) predicted anxiety disorders; frequent pure perpetration of bullying predicted antisocial personality disorder; and frequent perpetration—victimization of bullying predicted both anxiety and antisocial personality disorder. Meanwhile, depression was prevalent among victims [9–12] and perpetrators [11–13]. All the results of these studies indicate that it is necessary for psychiatrists, pediatricians, school psychologists, educators, and parents to identify early the perpetrators and victims of bullying, which is the fundamental step to stopping bullying behaviors and preventing further adverse psychological consequences.

Several methods have been used in identifying the victims and perpetrators of bullying, including peer nomination, teacher and parent observation, and self-reporting. Peer nomination allows for assessment of an individual’s behavior by peers who are most likely to have witnessed or participated in such behavior. Meanwhile, it permits the aggregation of peer judgment about individuals’ roles in bullying [14]. However, the clinical use of peer nomination is limited because, in most clinical situations, it is difficult for clinicians to obtain the results of peer nomination to identify whether young clients are victims or perpetrators of bullying. Teacher and parent observations have been frequently used to identify the presence of bullying activities in school children and adolescents. School and family are two major living environments for children and adolescents, and thus teacher and parent observations can provide valuable information about youths’ involvement in bullying. However, a subset of relational type behaviors (e.g., spreading rumors, or social exclusion) is covert and has recently been shown to be harder to detect for both teachers and parents [15,16]. Self-reporting has most commonly been used in clinical situations. Although it is possible that bullying perpetrators may under-report their bullying behavior, self-reporting has the advantage of providing direct access to the feelings and experiences of youths involved in bullying. This is particularly useful because youths are alert to the possibility of peer abuse, have strong emotional reactions to such events, and develop vivid and lasting memories of such experiences [17].

Although some studies used one or two simple questions to inquire into youths’ experiences of bullying perpetration or victimization [18,19], multidimensional questionnaires can measure more types of bullying involvement experiences [9,20]. The Revised Olweus Bully/Victim Questionnaire (OBVQ) is one of the multidimensional questionnaires that assess bullying involvement experiences, with satisfactory construct validity and reliability [21]. However, some items on the OBVQ may not be suitable to use in some regions and populations; for example, the item “bullied with mean names about my race or color” may not be suitable to use in a population of the same language and the same race.

Korean-Peer Nomination Inventory (K-PNI) is an inventory to evaluate school bullying developed by Kim and colleagues in Korea [22]. However, the peer-nomination method limits the use of the K-PNI in clinical units. Research has found that a self-reported questionnaire such as the OBVQ is clinically useful when no peer nomination is available [22]. Kim and colleagues have adopted the items from the K-PNI to develop the 16-item School Bullying Experience Questionnaire (SBEQ), which is a self-reported questionnaire surveying multidimensional experiences of bullying involvement, including being a victim of and perpetration of physical, verbal, and social relational bullying in Korean adolescents. The roles of victims, perpetrators, and victim-perpetrators in bullying can also be identified by using the SBEQ.

The aim of the present study was to examine the psychometric property of the Chinese version of the SBEQ (C-SBEQ) for surveying the experiences of bullying involvement in Taiwanese children and adolescents. We hypothesized that the C-SBEQ would have satisfactory validity and reliability when it is used in surveying the experiences of bullying involvement in Taiwanese children and adolescents.

Materials and methods

The Institutional Review Board of Kaohsiung Medical University approved this questionnaire survey study and allowed the use of passive consent from parents and students. Before conducting the study, we prepared a leaflet explaining the purpose and procedures of this study. Students brought the leaflet home for their parents or main caretakers, who could telephone the researchers, write in a communications book, or ask their children directly to refuse to join the study. The students also had the right to refuse to participate in this study by returning blank questionnaires along with those from other students.

Study 1

Participants

The participants in Study 1 were chosen from the 2009 Project for the Health of Children and Adolescents in Southern Taiwan, which was composed of data collected from three metropolitan cities and four counties [23]. In this area in 2009, there were 378,728 students in grades 2–6 in 765 primary schools, 254,130 students in 205 junior high schools, and 202,883 students in 143 senior high/vocational schools. On the basis of the definitions of urban and rural districts in the Taiwan Demographic Fact Book...
Instrument
Each student completed the self-reported C-SBEQ anonymously under the direction of research assistants in each classroom during school hours. The C-SBEQ evaluates subjects’ involvement in school bullying in the past 1 year, with 16 items answered on a Likert 4-point scale ranging from 0 indicating “never”, 1 indicating “just a little”, 2 indicating “often”, and 3 indicating “all the time” (see Appendix). This scale was composed of four 4-item subscales evaluating being a victim of passive bullying (items 1–4, including social exclusion, being called a mean nickname, and being spoken ill of); being a victim of active bullying (items 5–8, including being beaten up, being forced to do work, and having money, school supplies, and snacks taken away); perpetration of passive bullying (items 9–12); and perpetration of active bullying (items 13–16). Those who scored higher items indicated that they were involved in school bullying more frequently. Also, those who answered 2 or 3 on any item among items 1–4, items 5–8, items 9–12, and items 13–16 were identified as the self-reported victims of passive bullying, victims of active bullying, perpetrators of passive bullying, and perpetrators of active bullying, respectively.

We first translated the English version of the SBEQ to Chinese by using standard forward-, backward-, and pretest-step methods [25]. We further invited six experts in the field of child and adolescent psychiatry to examine the adequacy of the questionnaire. The final C-SBEQ was used with 10 adolescents to test its clinical feasibility.

Statistical analysis
The adequacy of the four-factor structure of the C-SBEQ was examined using confirmatory factor analysis (CFA). The distributions of items were not normal, therefore, maximum likelihood method with Satorra–Bentler correction for non-normality [26] was used to estimate parameter and calculated goodness-of-fit indices. Four goodness-of-fit indices, including the root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), non-normal fit index (NNFI), and comparative fit index (CFI) were recommended [27]. RMSEA values > 0.10 are typically considered poor and values < 0.10 are acceptable [28]. An SRMR < 0.08, NNFI > 0.90, and CFI > 0.90 indicate a good fit. The internal-consistency reliability of the subscales of bullying victimization (items 1–8) and perpetration (items 9–16) on the C-SBEQ was examined using Cronbach $\alpha$.

Study 2
Participants
One class (36 students) from a primary school (grade 5), one class (37 students) from a junior high school (grade 7), and one class (35 students) from a senior high school (grade 10) were randomly selected to complete the questionnaire. Of the 108 students, 48.6% were male, and the mean age was 13.4 years (standard deviation = 1.7 years, range: 11–16 years). The teachers in charge were also involved in this study.

Instrument
Each student completed the C-SBEQ and was invited to complete it again 1 month later. At the second assessment, students were also provided with a list of classmates and were asked to choose the classmates who fitted the behavioral types described in the 16 items on the C-SBEQ. This questionnaire of nomination was completed anonymously and was returned separately from the self-reported C-SBEQ. The teachers in charge were also provided a list of students attached with the C-SBEQ, and were asked to choose the students who fitted the behavioral types described in the 16 items on the C-SBEQ. The nomination of multiple individuals for each item was allowed.

Statistical analysis
The 1-month test–retest reliability of the C-SBEQ was examined using intraclass correlation coefficients (ICCs). The congruent validity of the C-SBEQ between self-reported bullying involvement and the nominations by classmates and teachers was examined in four steps. First, the scores provided by classmates for each student were summed as total scores for each subscale for each student. The students whose total score for a subscale was higher than the median of the total score of the students in their class for that subscale were identified as victims or perpetrators of passive or active bullying nominated by their classmates. Second, the students who were given a score of 2 or 3 on any item of the subscale by their teacher in charge were identified as the victims or perpetrators of passive or active bullying nominated by their teachers. Third, those who were identified as the victims or perpetrators of passive or active bullying nominated by both classmates and teachers were classified as nominated victims or perpetrators of passive or active bullying. Fourth, correlation between nominated victims or perpetrators of bullying and the C-SBEQ scores was examined by using logistic regression analysis. Meanwhile, the consistency between the self-reported and nominated victims or perpetrators of passive or active bullying was examined using generalized $\chi^2$ coefficients. A $p$ value < 0.05 was considered statistically significant.

Results
Study 1
A total of 6445 students (96.2%) agreed to join this study. Of the 258 students who refused to join this study, 68 refused based on their parents’ opinion, 128 returned blank questionnaires, and 62 were absent when the research
assistants visited their classes. A total of 5751 students (89.2%) completed the research questionnaires without omission. Those who had missing data in the questionnaires were more likely to be male ($\chi^2 = 5.501, p = 0.019$) and younger ($\chi^2 = 48.048, p < 0.001$). Of the 5751 students completing the research questionnaires, 2729 (47.5%) students were boys and 3022 (52.5%) were girls. The mean age was 14.8 years (standard deviation = 1.8 years, range: 11–19 years).

The adequacy of the four-factor structure of the C-SBEQ (factor 1: being a victim of passive bullying; factor 2: being a victim of active bullying; factor 3: perpetration of passive bullying; factor 4: perpetration of active bullying) was examined using CFA. The results of CFA indicated that the values of all indices met our goodness-of-fit standards ($\chi^2 = 1049.08$, $p < 0.001$, RMSEA = 0.039, SRMR = 0.072, NNFI = 0.990, CFI = 0.992, AIC = 1125.08). The results indicated that the four-factor model of the C-SBEQ fitted well for Taiwanese adolescents. Standardized factor loadings of the four-factor model of the C-SBEQ are shown in Table 1. We further examined the correlations between the four factors, and found that the correlation ($r$) between the factors ranged from 0.397 to 0.591, except for a high correlation between factor 2 and factor 4 ($r = 0.874$). We combined factor 2 and factor 4 into a new factor and examined the adequacy of a three-factor structure for the C-SBEQ. Although some of the indices of the three-factor model met our goodness-of-fit standards ($\chi^2 = 1278.393$, $p < 0.001$, RMSEA = 0.043, NNFI = 0.989, CFI = 0.990), the value of SRMR was too high (0.088) and the value of AIC (1348.39) was higher than that of the four-factor model. The discriminant validity test [29] also showed a significant result ($\chi^2 = 70.003$, df = 3, $p < 0.001$), indicated that factor 2 and factor 4 were distinct. Thus, the results further supported that the four-factor model of the C-SBEQ fitted well for Taiwanese adolescents. Meanwhile, the Cronbach $\alpha$ of the subscales for bullying victimization and perpetration on the C-SBEQ was 0.727 and 0.753, respectively, indicating acceptable internal-consistency reliability.

### Study 2

The 1-month test—retest reliability of the C-SBEQ examined using ICC is shown in Table 2. The results indicated that the average ICC for the four subscales on the C-SBEQ ranged from 0.742 to 0.813, which indicated moderate to high levels of 1-month test—retest reliability.

On the basis of the four-step definition of nominated victims or perpetrators of passive or active bullying as described above, 24 students were victims of passive bullying, nine were victims of active bullying, 30 were perpetrators of passive bullying, and nine were perpetrators of active bullying. The congruent validity of the C-SBEQ was examined by using logistic regression analysis to examine the correlation between nominated victims or perpetrators of bullying and the C-SBEQ scores (Table 3). The results indicated that except for the subscale of perpetration of passive bullying, students who reported higher self-reported scores on all C-SBEQ subscales were likely to be nominated ones.

### Discussion

Results of CFA supported the four-factor structure of the C-SBEQ in Taiwanese adolescents. An interesting finding was that there was a high correlation between factor 2 (being a victim of active bullying) and factor 4 (perpetration of active bullying). Previous studies have found that it is not rare for children and adolescents to be both victims and perpetrators in bullying [30,31]. Compared with the pure perpetrators and victims, the perpetrator-victims have more severe concurrent and future psychological and psychosomatic symptoms [6,32,33]. Thus, it has been

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Standardized factor loadings of the four-factor model of the C-SBEQ.</th>
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<tbody>
<tr>
<td>Item 1</td>
<td>Factor 1</td>
</tr>
<tr>
<td>Item 2</td>
<td>Factor 2</td>
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<tr>
<td>Item 3</td>
<td>Factor 3</td>
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<td>Item 4</td>
<td>Factor 4</td>
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<td>Item 5</td>
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<td>Item 6</td>
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<td>Item 7</td>
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<td>Item 8</td>
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<td>Item 9</td>
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<td>Item 10</td>
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<td>Item 11</td>
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<td>Item 12</td>
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<td>Item 13</td>
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<td>Item 15</td>
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<td>Item 16</td>
<td></td>
</tr>
</tbody>
</table>

C-SBEQ = Chinese version of School Bullying Experience Questionnaire; factor 1: victim of passive bullying; factor 2: victim of active bullying; factor 3: perpetration of passive bullying; factor 4: perpetration of active bullying.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>One-month test—retest reliability for the C-SBEQ: intraclass correlation coefficients (ICCs).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single ICC</td>
</tr>
<tr>
<td>Victim of passive bullying</td>
<td>0.611</td>
</tr>
<tr>
<td>Victim of active bullying</td>
<td>0.680</td>
</tr>
<tr>
<td>Perpetration of passive bullying</td>
<td>0.684</td>
</tr>
<tr>
<td>Perpetration of active bullying</td>
<td>0.605</td>
</tr>
</tbody>
</table>

*p < 0.001. C-SBEQ = Chinese version of School Bullying Experience Questionnaire.
proposed that perpetrator-victims in particular need to be identified early and helped [3]. However, we combined factor 2 and factor 4 into a new factor and examined the goodness-of-fit of a three-factor structure. The results of CFA still supported that the four-factor model of the C-SBEQ fit better than a three-factor model for Taiwanese adolescents.

This study found that the test–retest reliability of all subscales of the C-SBEQ was at moderate to high levels, and the internal reliability coefficients for the subscales of bullying victimization and perpetration on the C-SBEQ were acceptable. This study examined the consistency between self-reported and nominated experiences of bullying involvement. In this study, we classified those who were nominated by both their teacher and classmates as victims or perpetrators of bullying. Using such a strict criterion, we found that the scores on the C-SBEQ subcales could differentiate the nominated adolescents from non-nominated ones, and that the levels of agreement between self-reported and nominated victims were moderate. These results support that the C-SBEQ has satisfactory congruent validity for surveying bullying experiences.

The results of this study support the four-factor structure of the C-SBEQ for use with Taiwanese adolescents. This study found that the test–retest and internal reliability of all subscales of the C-SBEQ was at acceptable to satisfactory levels. Meanwhile, the results of this study also supported the congruent validity of the C-SBEQ by examining the correlations between self-reported and nominated bullying involvement experiences. These results indicate that the C-SBEQ is appropriate for assessing bullying experiences in Taiwanese adolescents.

**Acknowledgments**

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**Supplementary data**

Supplementary data related to this article can be found online at doi:10.1016/j.kjms.2012.04.008.

**Table 3** Correlation between nominated victims or perpetrators of bullying and the C-SBEQ scores: logistic regression analysis.

<table>
<thead>
<tr>
<th>Nominated victims or perpetrators of passive or active bullying</th>
<th>Case of VPB</th>
<th>Case of VAB</th>
<th>Case of PPB</th>
<th>Case of PAB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Self-reported</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VPB score</td>
<td>1.872</td>
<td>1.356–2.585</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAB score</td>
<td>1.614</td>
<td>1.121–2.324</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPB score</td>
<td>1.295</td>
<td>1.078–1.556</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAB score</td>
<td>2.445</td>
<td>0.792–7.548</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PAB = perpetration of active bullying; PPB = perpetration of passive bullying; VAB = victim of active bullying; VPB = victim of passive bullying.

**References**


