Students’ personal traits, violence exposure, family factors, school dynamics and the perpetration of violence in Taiwanese elementary schools

Ji-Kang Chen1* and Ron Avi Astor2

1Chinese University of Hong Kong, Department of Social Work, Hong Kong and 2University of Southern California, Schools of Social Work and Education, Los Angeles, California, 90089-0411

*Correspondence to: J. K. Chen. E-mail: jkchen@swk.cuhk.edu.hk

Received on December 1, 2009; accepted on October 31, 2010

Abstract

School violence has become an international problem affecting the well-being of students. To date, few studies have examined how school variables mediate between personal and family factors and school violence in the context of elementary schools in Asian cultures. Using a nationally representative sample of 3122 elementary school students in Taiwan, this study examined a theoretical model proposing that negative personal traits, exposure to violence and parental monitoring knowledge have both direct influences as well as indirect influences mediated through school engagement, at-risk peers and poor student–teacher relationships on school violence committed by students against students and teachers. The results of a structural equation modeling analysis provided a good fit for the sample as a whole. The final model accounted for 32% of the variance for student violence against students and 21% for student violence against teachers. The overall findings support the theoretical model proposed in this study. Similar findings were obtained for both male and female students. The study indicated that to reduce school violence more effectively in the context of elementary schools, intervention may exclusively focus on improving students’ within-school experiences and the quality of the students’ relationships with teachers and school peers.

Introduction

Over the past decades, violence in schools has become a major social problem affecting school students’ personal, family and social well-being [1, 2]. Thus far, most of the research on school violence has focused on dealing with data involving adolescents [3, 4, 5]. Less attention has been paid to the population of primary school children [6]. In addition, many studies on risk factors associated with school violence have been conducted in Western countries [7, 8]. There is a lack of a nationally representative sample showing that these risk factors are applicable to elementary school in Asian cultures, although significant differences appear to exist between East and West in beliefs, perceptions and worldviews [9].

Furthermore, empirical studies on school violence in elementary settings have examined how students’ personal, family and school experience ‘risk factors’ affect the perpetration of school violence committed by students against students [10]. International studies suggest that teachers are also the targets of school violence committed by students, but less is known about how students’ personal, family and school experience contributes to student violence against teachers in primary school [11, 12]. To date, few studies have examined organizational or school variables that could be mediators between personal and family factors and school violence in the context of elementary schools [13]. There is also a paucity of empirical
evidence investigating how gender might influence patterns of relationships between risk factors and school violence in elementary school settings. The present study is the first inquiry using nationally representative data to examine if school factors could mediate the effects between personal and family factors and school violence among elementary school students in Taiwan.

Taiwan is typical of many Asian cultures. Despite the growing influence of globalization, the Taiwanese people are still guided by Confucianism, Taoism and Buddhism [9]. Recently, a handful of published studies have shown a high prevalence of school violence among elementary school students in Taiwan. For example, a representative sample from Taiwan reported that 58.8 and 16.1% of Taiwanese elementary school students involved in school violence against peers and teachers, respectively [14, 15]. Furthermore, while school violence issues have been a major public concern for many years, for political reasons (China’s lack of recognition of Taiwan as an independent country), Taiwan has never been part of any large-scale cross-national studies on these topics [16]. Relationship patterns between risk factors and school violence among elementary school students have also never been explored in Taiwan.

School violence in this study refers to student behavior intending to harm other students and teachers or to cause damage to belongings or school property. The definition includes physical and verbal violence, psychological harm, threatening behavior and property damage [17, for a critical discussion, see 13].

School variables as mediators between risk factors and perpetration

Most theories or studies on school violence have examined in separate studies how students’ personal traits, family and school experiences independently affect the perpetration of school violence [e.g. 10]. However, these different social contextual influences or risk factors are rarely examined together either in the United States or in other regions [13]. An examination of how multiple ecological risk factors and nested contexts influence school violence could be theoretically and practically fruitful. This makes sense since theories and studies have traditionally postulated that child violent behavior is highly influenced by the transaction of their experiences in various social environments or contexts [13, 18, 19]. Surprisingly, although this call for contextual research emerged nearly 30 years ago, until recently, there have only been limited studies examining how these multiple ecological risk factors interactively influence the perpetration of school violence [12].

Recently, Benbenishty and Astor [13] addressed this lack of theoretical integration surrounding the nested contexts of school violence. They propose a theoretical model of school violence that is influenced by a combination of numerous within-school variables (e.g. teacher–child relationships) as well as other external variables (e.g. students’ personal and family characteristics). In their heuristic model, schools mediate, moderate and attenuate contributions from external contexts. School subcontexts also generate their own direct contributions to different forms of violence. For example, it is possible that students experiencing violence in their community tend to affiliate with the peers in schools who have similar experiences and discuss aggression during their interactions. This may reinforce their own ongoing perpetration of violence against students and teachers [20, 21, 22]. In addition, in contrast with earlier psychological models that center exclusively around the individuals, Benbenishty and Astor [13] stress that when looking at ‘school violence’, the school itself as a social context should be the center of the theoretical model.

Thus far, this model has been examined in school violence victimization across different cultures and school contexts [1, 13, 23, 24]. However, little research has been done with this theoretical orientation on the perpetration of school violence in elementary school [12].

School bonds and school social interaction have been consistently identified as important variables in the school domain to be associated with the perpetration of school violence [e.g. 3]. These variables have also been found to be significant
mediators of adolescent problem behavior in school [25, 26, 27, 28, 29]. However, empirical evidence that establishes the degree to which these three school variables influence and mediate the perpetration of school violence among middle childhood students is currently limited. Thus, this paper proposes to examine how school engagement, at-risk peers and teacher–child relations mediate the perpetration of school violence in Asian elementary schools.

Background of elementary schools in Taiwan

Because the findings reported in this paper were from studies conducted in Taiwan, it is important to describe the Taiwanese elementary school system. Generally, there are three major systems of basic and intermediate education in Taiwan: elementary school (grades one to six), junior high school (grades seven to nine) and high school (grades 10–12). Attending a 9-year compulsory education program from elementary to junior high school is mandatory. A competitive joint high school entrance exam must be taken if junior high school graduates seek higher education. In 2006, there were ~1.8 million students in 2655 elementary schools in Taiwan [30].

Elementary school in Taiwan has a school dynamic that differs from junior high school and high school in philosophy, structure and mission [30]. In Taiwanese elementary schools, the paramount academic aims are literacy, knowledge of basic natural and social science and arts. However, creating a cohesive caring classroom is another goal. Each classroom has a homeroom teacher who is responsible for taking care of students and teaching most of the classes during the day. In contrast to other school types, elementary school students have a more nurturing and less competitive learning environment, because they can enter into junior high school without any entrance exam. High schools, on the other hand, require entrance exams making both junior high and high schools highly competitive social environments. In the west, magnet schools and private preparatory schools would have similar goals and structures to those in Taiwan. Overall, the general goals and structures of elementary schools in Taiwan are very similar to those of elementary schools in the West (i.e. the role of the teacher, the focus of the classroom, peer relations and daily structure are nearly identical).

Factors associated with school violence: East versus West

In the literature of interpersonal violence, negative personal traits, parental monitoring knowledge and violence exposure have been theorized as major factors in personal, family and community domains predicting the perpetration of violence. For example, the character trait model [31] argued that some negative personal traits are the main risk factors associated with aggressive behavior. These common negative traits included such traits as anger traits, attitudes toward violence, hostility and impulsive control. In addition, the cycle of violence and aggression model suggested that children who had been victimized were more aggressive toward other children [32]. In youth violence literature, parenting/family function such as parental monitoring knowledge was recognized as a major factor associated with youth violence perpetration [33].

In fact, Western empirical findings on school violence also suggested that elementary school students who endorse certain negative personal traits [7, 34], who perceive a low level of parental monitoring knowledge and involvement [35, 36] and who have been exposed to violence [10] are more likely to involve in school violence.

Similarly, few Asian studies indicated that negative personal traits, victimization [7, 37, 38] and a low level of parental monitoring knowledge were associated with student violence against students in junior high school [3, 38, 39, 40, 41]. Little is known about how these risk factors apply to middle childhood students in elementary school.

In addition, some smaller scale studies in Taiwan show that students’ negative personal traits, exposure to violence and poor parenting [42, 43, 44] are related to student violence against teachers. However, most of these studies were analyzed
based on teachers’ reports and were conducted using non-representative samples from junior high schools, so it is not clear how these findings in Western countries can be generalized to Asian cultures, particularly Taiwanese elementary schools. Thus, the present study proposes to examine how negative personal traits, parental monitoring knowledge and violence exposure are associated with student violence against students and teachers in primary school.

**Theoretical model for this study**

Based on previous literature and theory, this study proposes that the perpetration of school violence by students against peers and/or teachers is directly associated with external school variables (i.e. negative personal traits, parental monitoring knowledge and violence exposure) and within-school variables (i.e. low level of school engagement, risky peers and poor student–teacher relationships). Most importantly, different from prior studies, this study proposes that school variables mediate the effects between external school variables and both types of perpetration of school violence.

In addition, many international studies suggest that boys engage in more aggressive behavior in schools than girls [3, 14, 15, 45, 46, 47]. However, based only on these studies, it is not clear if the patterns of relationship between the factors stated above and school violence differ across gender. Perhaps, the pattern that causes perpetration behavior in boys is the same pattern that causes it in girls, only that girls have lower base rates of violence than boys. Thus, this current study examines how gender differences impact the pattern of relationship between factors and school violence committed by students against students and teachers. The current study expects that the model does fit both male and female students, but certain paths within the model may differ.

**Methods**

The data used in this study were part of a large-scale project of ‘Prevention and Control of School Violence in Taiwan’ [48]. The survey was conducted throughout Taiwan among >14 000 students from elementary schools (Grades four to six), junior high schools (Grades seven to nine), vocational high schools and academic high schools (Grades 10–12). Students were given a structured questionnaire in classrooms under the guidance of professionally trained survey monitors. Respondents were assured of anonymity and were encouraged to respond truthfully. Participants were free to withdraw from the study at any time and for any reasons. The questionnaires, procedures, informed consent forms and other ethical concerns were reviewed and supervised by Taiwan’s National Science Council.

This sample was designed to represent all students from the 4th to the 12th grade in Taiwan. The students’ response rate was >98%. The probability sampling method used was a two-stage stratified cluster sample. The strata were northern/central/southern/eastern, urban/rural and elementary/junior/technical/academic. In this study, only elementary school students, grades four to six, were selected for this study. In the first stage, schools were randomly selected from the sampling frame according to those appropriate strata. In the next stage, two classes were randomly selected according to each grade in selected schools. All students in that class were included in sample.

This study examined 3122 students from 16 elementary schools (grades four to six). Among them, 51.6% of the students were boys, 47.8% were girls and 0.6% did not indicate gender; the grade level distribution was as follows: 29.1% of the students were in 4th grade, 35.7% in 5th grade, 35.2% in 6th grade and 0.1% did not indicate grade.

The questionnaire was developed on the basis of current school violence studies and theories from both Taiwan and Western countries and validated by Wu et al. [48]. It included >150 items in eight domains regarding students’ basic demographic background and other information in their personal, family and school experience. Each of the student questionnaires took ~30 min to complete. Before
this survey was conducted, the Mandarin Chinese questionnaire was adjusted and adapted based on two pilot studies conducted in the Tainan metropolitan areas in Taiwan.

**Measurements**

In order to measure the latent variables in our model, several scales containing a number of subscales were constructed. Table I represents the means and standard deviations of the variables included in the model, broken down by genders. Table II represents the intercorrelation matrix among the variables. For the purpose of structural equation modeling (SEM) analyses, several subscales were constructed based on conceptual and theoretical constructs. Each of these subscales creates the overall factor composites that represent the more general theoretical concepts discussed in literature review of this study. Table III lists the domains, question items, factor loadings and alphas for the theoretically created subscales. The other relevant detailed measurement description or validity information about the particular instrument was also reported in other studies of the authors [2, 14, 15, 49]

**Dependent variables**

**Student violence against students**

This domain involved asking students how many times they perpetrated violent behavior in school against other students during the last academic year. The variables in this domain were coded into ‘never’ and ‘at least once’. This domain included three subscales on the basis of their content according to type of violence. It included physical violence, vandalism and verbal violence/threat/harassment. The score of each subscale was the sum of the items included in the subscale.

**Student violence against teachers**

This domain involved asking students to indicate how many times they perpetrated violent behavior in school against teachers during the last year. The variables in this domain were coded as never and at least once. This domain included three subscales on the basis of their content according to type of violence. It included physical violence, verbal violence/threat and emotional violence/harassment. The score of each subscale was the sum of the items included in the subscale.

**Independent variables**

**Negative personal traits**

This latent variable asked students about their personal characteristics related to aggression. Three subscales were constructed on the basis of their content. These subscales were students’ attitude toward violence, impulsive control and trait anger temperament. The rating for each item in this scale ranged from 1 = strongly disagree to 4 = strongly agree. The score of each subscale was the sum of the items included in the subscale.

**Parental monitoring knowledge**

This latent variable consisted of two subscales: father monitoring and mother monitoring. Respondents were asked about parental monitoring of them in daily life. The rating for each item ranged from 1 = strongly disagree to 4 = strongly agree. Both subscales of father and mother monitoring consisted of five items, and each subscale score was the sum of these five items.

**Violence exposure**

This latent variable asked students if they had experienced victimization surrounding their life, except in school, in the past year. The rating for each item ranged from 1 = never to 4 = almost every day. This latent variable consisted of two subscales on the basis of their content. The two subscales were direct victimization and witness victimization. The score of each subscale was the sum of the items included in the subscale.

**School engagement**

This domain consisted of four items, and students were asked questions in order to measure their level of school engagement. The ratings were
provided on a four-point scale and were coded from 1 = strongly disagree to 4 = strongly agree.

**Risky peers**

In this domain, students were asked questions to determine the quality of their group of friends in school. The ratings ranged from 1 = strongly disagree to 4 = strongly agree. The score of each subscale was the sum of the items included in the subscale. This domain was divided into two subscales based on preliminary factor analysis. The two subscales were risky friendships and risky acts.

**Poor student–teacher relationship**

This domain consisted of five items about whether the respondents experienced a poor relationship between teachers and themselves. The ratings for each item were provided on a four-point scale from 1 = strongly disagree to 4 = strongly agree.

**Analytical plan**

The primary analysis method in this study is latent variables SEM with maximum likelihood estimation using analysis of moment structures program. SEM is a statistical methodology that takes

---

**Table I. Means and standard deviations of subscales by gender**

<table>
<thead>
<tr>
<th>Scale/subscale</th>
<th>Overall</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violence against students(^a)</td>
<td>1.65 (2.01)</td>
<td>2.02 (2.18)</td>
<td>1.26 (1.71)</td>
</tr>
<tr>
<td>Physical</td>
<td>0.52 (0.82)</td>
<td>0.69 (0.91)</td>
<td>0.34 (0.68)</td>
</tr>
<tr>
<td>Vandalism</td>
<td>0.27 (0.56)</td>
<td>0.34 (0.61)</td>
<td>0.21 (0.49)</td>
</tr>
<tr>
<td>Verbal/threat/harassment</td>
<td>0.86 (1.05)</td>
<td>1.00 (1.11)</td>
<td>0.71 (0.95)</td>
</tr>
<tr>
<td>Violence against teachers(^a)</td>
<td>0.23 (0.62)</td>
<td>0.26 (0.66)</td>
<td>0.19 (0.58)</td>
</tr>
<tr>
<td>Physical</td>
<td>0.02 (0.18)</td>
<td>0.03 (0.19)</td>
<td>0.02 (0.17)</td>
</tr>
<tr>
<td>Verbal/threat</td>
<td>0.04 (0.22)</td>
<td>0.05 (0.24)</td>
<td>0.03 (0.19)</td>
</tr>
<tr>
<td>Emotional/harassment</td>
<td>0.16 (0.43)</td>
<td>0.18 (0.44)</td>
<td>0.15 (0.41)</td>
</tr>
<tr>
<td>Negative personal traits(^b)</td>
<td>54.09 (15.02)</td>
<td>56.15 (15.34)</td>
<td>51.92 (14.36)</td>
</tr>
<tr>
<td>Attitude toward violence</td>
<td>18.36 (6.38)</td>
<td>19.55 (6.68)</td>
<td>17.11 (5.80)</td>
</tr>
<tr>
<td>Impulsive control</td>
<td>12.99 (3.85)</td>
<td>13.37 (3.87)</td>
<td>12.67 (3.79)</td>
</tr>
<tr>
<td>Trait anger temperament</td>
<td>22.77 (6.79)</td>
<td>23.22 (6.85)</td>
<td>22.28 (6.70)</td>
</tr>
<tr>
<td>Parental monitoring knowledge(^b)</td>
<td>32.33 (5.31)</td>
<td>31.75 (5.47)</td>
<td>32.95 (5.09)</td>
</tr>
<tr>
<td>Father monitoring</td>
<td>15.94 (2.89)</td>
<td>15.66 (2.99)</td>
<td>16.24 (2.77)</td>
</tr>
<tr>
<td>Mother monitoring</td>
<td>16.36 (2.70)</td>
<td>16.05 (2.78)</td>
<td>16.70 (2.57)</td>
</tr>
<tr>
<td>Violence exposure(^c)</td>
<td>2.67 (3.84)</td>
<td>3.01 (4.01)</td>
<td>2.31 (3.63)</td>
</tr>
<tr>
<td>Direct victimization</td>
<td>1.53 (2.23)</td>
<td>1.77 (2.36)</td>
<td>1.29 (2.06)</td>
</tr>
<tr>
<td>Witness victimization</td>
<td>1.17 (2.03)</td>
<td>1.28 (2.10)</td>
<td>1.05 (1.94)</td>
</tr>
<tr>
<td>Low school engagement(^b)</td>
<td>6.30 (2.24)</td>
<td>6.68 (2.40)</td>
<td>5.90 (1.99)</td>
</tr>
<tr>
<td>Doze off in class or skip class</td>
<td>1.24 (0.57)</td>
<td>1.27 (0.61)</td>
<td>1.20 (0.52)</td>
</tr>
<tr>
<td>Forget bringing material</td>
<td>1.96 (0.91)</td>
<td>2.05 (0.94)</td>
<td>1.87 (0.87)</td>
</tr>
<tr>
<td>Seldom turn in homework</td>
<td>1.62 (0.83)</td>
<td>1.74 (0.88)</td>
<td>1.50 (0.74)</td>
</tr>
<tr>
<td>Bring prohibited material</td>
<td>1.50 (0.82)</td>
<td>1.66 (0.91)</td>
<td>1.34 (0.67)</td>
</tr>
<tr>
<td>Risky peers(^b)</td>
<td>9.15 (3.36)</td>
<td>9.35 (3.53)</td>
<td>8.92 (3.15)</td>
</tr>
<tr>
<td>Risky friendship</td>
<td>6.13 (2.41)</td>
<td>6.22 (2.52)</td>
<td>6.02 (2.27)</td>
</tr>
<tr>
<td>Risky acts</td>
<td>3.05 (1.88)</td>
<td>3.16 (1.89)</td>
<td>2.94 (1.86)</td>
</tr>
<tr>
<td>Poor student–teacher relationship(^b)</td>
<td>7.20 (3.02)</td>
<td>7.56 (3.16)</td>
<td>6.81 (2.80)</td>
</tr>
<tr>
<td>Punish for no reason</td>
<td>1.47 (0.75)</td>
<td>1.53 (0.79)</td>
<td>1.40 (0.69)</td>
</tr>
<tr>
<td>Teachers do not like me</td>
<td>1.45 (0.72)</td>
<td>1.49 (0.74)</td>
<td>1.40 (0.70)</td>
</tr>
<tr>
<td>Teachers mock at me</td>
<td>1.38 (0.67)</td>
<td>1.42 (0.71)</td>
<td>1.33 (0.63)</td>
</tr>
<tr>
<td>Teachers never trust me</td>
<td>1.55 (0.83)</td>
<td>1.66 (0.89)</td>
<td>1.43 (0.75)</td>
</tr>
<tr>
<td>Observe me and snitch</td>
<td>1.39 (0.70)</td>
<td>1.48 (0.77)</td>
<td>1.29 (0.61)</td>
</tr>
</tbody>
</table>

\(^a\)On a scale: 0 = never, 1 = at least once in the past year.

\(^b\)On a scale: 1 = strongly disagree to 4 = strongly agree.

\(^c\)On a scale: 1 = never, 2 = sometimes, 3 = often and 4 = almost every day.
Table II. Matrix of correlation among school violence subscales for elementary school

<table>
<thead>
<tr>
<th>Subscale</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>E1</th>
<th>E2</th>
<th>E3</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>G1</th>
<th>G2</th>
<th>H1</th>
<th>H2</th>
<th>H3</th>
<th>H4</th>
<th>H5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 student physical</td>
<td></td>
<td>0.46</td>
<td>0.53</td>
<td>0.18</td>
<td>0.22</td>
<td>0.31</td>
<td>0.37</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.19</td>
<td>0.20</td>
<td>0.16</td>
<td>0.13</td>
<td>0.15</td>
<td>0.17</td>
<td>0.19</td>
<td>0.25</td>
<td>0.26</td>
<td>0.12</td>
<td>0.19</td>
<td>0.20</td>
<td>0.16</td>
<td>0.28</td>
<td>0.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2 student vandalism</td>
<td></td>
<td>0.52</td>
<td>0.21</td>
<td>0.23</td>
<td>0.33</td>
<td>0.26</td>
<td>0.27</td>
<td>0.25</td>
<td>0.18</td>
<td>0.19</td>
<td>0.14</td>
<td>0.11</td>
<td>0.14</td>
<td>0.13</td>
<td>0.13</td>
<td>0.20</td>
<td>0.20</td>
<td>0.07</td>
<td>0.19</td>
<td>0.18</td>
<td>0.13</td>
<td>0.17</td>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3 student verbal/threat</td>
<td></td>
<td>0.21</td>
<td>0.26</td>
<td>0.39</td>
<td>0.29</td>
<td>0.32</td>
<td>0.33</td>
<td>-0.16</td>
<td>0.17</td>
<td>0.18</td>
<td>0.12</td>
<td>0.11</td>
<td>0.16</td>
<td>0.15</td>
<td>0.20</td>
<td>0.20</td>
<td>0.07</td>
<td>0.20</td>
<td>0.19</td>
<td>0.16</td>
<td>0.23</td>
<td>0.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1 teacher physical</td>
<td></td>
<td>0.42</td>
<td>0.17</td>
<td>0.07</td>
<td>0.05</td>
<td>0.06</td>
<td>-0.04</td>
<td>0.06</td>
<td>0.01</td>
<td>0.13</td>
<td>0.06</td>
<td>0.12</td>
<td>0.13</td>
<td>0.15</td>
<td>0.07</td>
<td>0.14</td>
<td>0.12</td>
<td>0.10</td>
<td>0.13</td>
<td>0.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2 teacher verbal/threat</td>
<td></td>
<td>0.34</td>
<td>0.10</td>
<td>0.09</td>
<td>0.08</td>
<td>-0.06</td>
<td>0.07</td>
<td>0.04</td>
<td>0.03</td>
<td>0.14</td>
<td>0.06</td>
<td>0.11</td>
<td>0.13</td>
<td>0.16</td>
<td>0.09</td>
<td>0.16</td>
<td>0.18</td>
<td>0.16</td>
<td>0.16</td>
<td>0.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B3 teacher emotional</td>
<td></td>
<td>0.20</td>
<td>0.21</td>
<td>0.20</td>
<td>-0.11</td>
<td>0.11</td>
<td>0.10</td>
<td>0.08</td>
<td>0.06</td>
<td>0.11</td>
<td>0.09</td>
<td>0.14</td>
<td>0.17</td>
<td>0.09</td>
<td>0.25</td>
<td>0.25</td>
<td>0.18</td>
<td>0.25</td>
<td>0.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1 attitude toward violence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2 impulsive control</td>
<td></td>
<td>0.57</td>
<td>0.63</td>
<td>-0.23</td>
<td>0.24</td>
<td>0.14</td>
<td>0.09</td>
<td>0.20</td>
<td>0.21</td>
<td>0.24</td>
<td>0.31</td>
<td>0.37</td>
<td>0.18</td>
<td>0.31</td>
<td>0.29</td>
<td>0.29</td>
<td>0.29</td>
<td>0.29</td>
<td>0.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C3 trait anger temperament</td>
<td></td>
<td>0.76</td>
<td>-0.24</td>
<td>0.23</td>
<td>0.14</td>
<td>0.11</td>
<td>0.19</td>
<td>0.29</td>
<td>0.30</td>
<td>0.29</td>
<td>0.33</td>
<td>0.14</td>
<td>0.28</td>
<td>0.30</td>
<td>0.26</td>
<td>0.31</td>
<td>0.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D1 father monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.83</td>
<td>-0.08</td>
<td>0.03</td>
<td>-0.13</td>
<td>0.18</td>
<td>-0.18</td>
<td>0.22</td>
<td>-0.22</td>
<td>0.17</td>
<td>-0.17</td>
</tr>
<tr>
<td>D2 mother monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.09</td>
<td>0.03</td>
<td>-0.16</td>
<td>0.19</td>
<td>-0.22</td>
<td>0.24</td>
<td>-0.17</td>
<td>0.17</td>
<td>-0.17</td>
</tr>
<tr>
<td>E1 direct victimization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2 witness victimization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F1 dose off or skip</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2 forget bringing material</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3 seldom turn in homework</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F4 bring prohibited material</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1 risky friendships</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2 risky acts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1 teachers punish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2 teachers dislike</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H3 teachers mock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H4 teachers distrust</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H5 teachers observe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

J.-K. Chen and R. A. Astor
Table III. Theoretical domains, subscale and items for elementary school

<table>
<thead>
<tr>
<th>Domain (alpha’s)</th>
<th>Subscales (loadings)</th>
<th>Items</th>
</tr>
</thead>
</table>
| Violence against students        | Physical (loading = 0.70)          | Students beat or kick other students (by group) in order to hurt him/her/them.  
| (alpha = 0.77)                   |                                    | Students beat or kick other students (by individual) in order to hurt him/her/them.  
|                                  |                                    | Students use dangerous objects or instruments in order to harm students.  
|                                  | Vandalism (loading = 0.67)         | Students intentionally destroy or break school public belongings.  
|                                  |                                    | Students intentionally destroy or break other students’ belongings.  
|                                  | Verbal/threat (loading = 0.76)     | Students verbally threaten or intimidate other students.  
|                                  |                                    | Students curse or insult other students.  
|                                  |                                    | Students threaten or blackmail other students.  
|                                  |                                    | Students tease, mock or play physically harmful tricks on other students on purpose.  
|                                  |                                    | Students threaten or force others to buy things.  
| Violence against teachers        | Physical (loading = 0.48)          | Students beat or kick teacher(s).  
| (alpha = 0.55)                   |                                    | Students use dangerous objects or instruments to harm teacher(s).  
|                                  | Verbal/threat (loading = 0.63)     | Students curse or insult teacher(s).  
|                                  |                                    | Students threaten or intimidate teacher(s).  
|                                  |                                    | Students extort or blackmail teacher(s).  
|                                  | Emotional (loading = 0.57)         | Students tease, mock or play physically harmful tricks on teacher(s).  
|                                  |                                    | Students oppose teacher(s) in order to cause them psychologically harm.  
| Negative personal traits         | Attitude toward violence (loading = 0.71) | If someone insulted me or my family, beating him/her will make me feel better.  
| (alpha = 0.93)                   |                                    | If someone disrespects me, I will beat him/her to regain honor.  
|                                  |                                    | I will feel unhappy if I do not beat someone who cursed me.  
|                                  |                                    | A coward is a person who never retaliates when he/she is insulted.  
|                                  |                                    | If someone impedes my plans, he/she will pay for it.  
|                                  |                                    | If someone tries to hurt me, I will take vengeance on him/her.  
|                                  |                                    | Violence is the best way to resolve any problem.  
|                                  |                                    | Violence is justice.  
|                                  |                                    | If someone makes me unhappy, beating him is what he/she deserves.  
|                                  |                                    | Violence is better than negotiation.  
|                                  | Impulsive control (loading = 0.88) | I often make mistakes due to uncontrolled anger.  
|                                  |                                    | I often feel regretful about the things I do.  
|                                  |                                    | When I feel angry, no one can control me.  
|                                  |                                    | I have some bad habit that I always fail to change.  
|                                  |                                    | I cannot help violating school rules.  
|                                  |                                    | I cannot tolerate when others look down on me.  
|                                  | Trait anger temperament (loading = 0.85) | I loose my temper easily.  
|                                  |                                    | I am an irritable person.  
|                                  |                                    | I am easily agitated.  
|                                  |                                    | I feel anger if someone’s mistakes disturb my work.  
|                                  |                                    | I often cannot control my anger.  

Personal, family and school impact on school violence
### Table III. Continued

<table>
<thead>
<tr>
<th>Domain (alpha’s)</th>
<th>Subscales (loadings)</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent monitoring knowledge</strong>&lt;br&gt;(alpha = 0.84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father (loading = 0.92)</td>
<td></td>
<td>When I feel angry, I will curse or use dirty words, such as fuck. I will feel angry if someone criticizes me. Beating others will make me feel better if I feel unhappy. I feel upset if the work is done worse than I expect. I feel angry if my work is criticized.</td>
</tr>
<tr>
<td>Mother (loading = 0.90)</td>
<td>My father (or father figure) knows my friends. My father (or father figure) knows my conduct. If I am not at home, my father (or father figure) will know where I am. My father knows my schedules. My father (or father figure) often takes activities with me.</td>
<td></td>
</tr>
<tr>
<td><strong>Violence exposure</strong>&lt;br&gt;(alpha = 0.93)</td>
<td>Direct (loading = 0.96)</td>
<td>Have you been beaten or kicked by others? Has someone hit and hurt you with an object of any kind? Have you been beaten or kicked by groups of people other than classmates or school? Have you been blackmailed by others? Have you been verbally threatened by others? Have you been intimidated by others? Has someone threatened or intimidated you by passing a slip of paper?</td>
</tr>
<tr>
<td>Witness (loading = 0.68)</td>
<td>Have you seen anyone verbally threatened by others? Have you seen anyone threatened by weapons? Have you seen anyone destroy public belongings on purpose? Have you seen anyone beaten by others or participating in group fights? Have you seen anyone robbed by others? Have you seen anyone insulted by others? Have you seen anyone blackmailed by others?</td>
<td></td>
</tr>
<tr>
<td><strong>Low school engagement</strong>&lt;br&gt;(alpha = 0.68)</td>
<td>Doze off or skip (loading = 0.48)</td>
<td>I often doze off in class or skip class.</td>
</tr>
<tr>
<td>Forget bringing (loading = 0.59)</td>
<td>I often forget to bring required materials (textbooks/homework) to school.</td>
<td></td>
</tr>
<tr>
<td>Seldom turn in homework (loading = 0.71)</td>
<td>I seldom turn in homework.</td>
<td></td>
</tr>
<tr>
<td>Prohibited material (loading = 0.62)</td>
<td>I often bring prohibited materials to school.</td>
<td></td>
</tr>
<tr>
<td><strong>Risky peers</strong> (alpha = 0.70)</td>
<td>Risky friendship (loading = 0.70)</td>
<td>I have friends who are school gang members. I have friends who dropped out due to problem behavior in school. When I have conflicts with others, my friends will help me beat them or fight with them. My friends are always on my side no matter what bad things I do.</td>
</tr>
</tbody>
</table>
a confirmatory approach to the analysis of structural theory describing relationships among endogenous factors [50]. The structured/hypothesized model can be tested statistically in a simultaneous analysis of an entire system of variables to determine the extent to which it is consistent with the data. Confirmative factor analysis (CFAs) was first to be conducted to ensure the measurement model as a good fit. Following the CFAs, the final SEM model including the full data set of all elementary school students was tested. Next, comparative analyses were conducted in order to determine whether patterns of relationships and mediating effects are different between male and female students. In this comparative analysis, all the factor loadings, the paths and the covariances were constrained to be equal simultaneously to the same model across genders. Then, the model was tested by releasing path constraints one at a time in order to find out if releasing equality constraints could significantly improve the fit.

There are various indicators of the goodness of fit for a specific model. The chi-square coefficient is used to assess the size of discrepancies between the relationships in the original data matrix from those implied by the model. A low chi-square measure reveals non-significant discrepancies and means that the data ‘fit’ the theoretical model. However, due to the sensitivity of the chi-square coefficient to sample size, it is not a preferred fit index for large samples such as those in this study. Indeed, researchers have addressed the chi-square limitation by developing goodness of fit indices that take a more pragmatic approach to the evaluation process. More commonly used fit indices include Normed Fit Index (NFI) of Bentler and Bonnett [51], Bollen’s [52] Incremental Fit Index (IFI) and Bentler’s [53] Compared Fit Index (CFI). Typically, these three fit indices consider a model to be a good fit when the value is above 0.90 [54] and a superior fit when it is close to 0.95 [55]. A common misfit measure, the root mean square error (RMSEA), is also reported in the SEM analysis. The RMSEA considers a mediocre fit to range from 0.08 to 0.10 and a good fit to be below 0.06 [55].

Results

Overall model

The results of the analysis based on the total sample provided a good fit to the data \(\chi^2 (224, N = 3122) = 1600.31, P < 0.001\) and with NFI = 0.94, IFI = 0.95, CFI = 0.95 and RMSEA = 0.04. This suggested that the model was a good one. Figure 1 presents the paths in this model.

Figure 1 shows that student violence against students was directly related to negative personal traits, parental monitoring knowledge and violence exposure (\(\beta = 0.33, \beta = -0.12\) and \(\beta = 0.13\), respectively). In addition, student violence against students was indirectly related to negative personal traits, parental monitoring knowledge and violence exposure mediated through risky peers. Low level of school engagement and poor student–teacher

### Table III. Continued

<table>
<thead>
<tr>
<th>Domain (alpha’s)</th>
<th>Subscales (loadings)</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risky acts (loading = 0.38)</td>
<td></td>
<td>My friends and I often stay up all nights to drink, to gamble or to do illegal activities.</td>
</tr>
<tr>
<td>Poor student–teacher relationship (alpha = 0.88)</td>
<td>Punish (loading = 0.83)</td>
<td>My teacher often punishes me for no reason.</td>
</tr>
<tr>
<td></td>
<td>Dislike (loading = 0.84)</td>
<td>I feel that my teacher does not like me.</td>
</tr>
<tr>
<td></td>
<td>Mock (loading = 0.80)</td>
<td>My teachers like to mock me.</td>
</tr>
<tr>
<td></td>
<td>Distrust (loading = 0.74)</td>
<td>Even though I tell the truth, my teacher still distrusts me.</td>
</tr>
<tr>
<td></td>
<td>Snitch (loading = 0.67)</td>
<td>Teachers often ask students to observe on what I am doing and snitch on me.</td>
</tr>
</tbody>
</table>
relationships showed weaker mediational effects for negative personal traits, parental monitoring knowledge and violence exposure. Of all, the variable of negative personal traits had the greatest direct and indirect influence on student violence against students.

In contrast with student violence against students, student violence against teachers was not significantly associated with negative personal traits, parental monitoring knowledge and violence exposure ($\beta = -0.03$, $\beta = -0.04$ and $\beta = 0.02$, respectively). However, student violence against teachers was indirectly associated with these variables mediated through risky peers and poor student–teacher relationships. Negative personal traits had the greatest indirect effect on violence against teachers through risky peers and poor student–teacher relationships. The variable of risky peers had the strongest mediation effect on student violence against teachers.

Together, all the variables in this model accounted for around one-third of the explained variance for student violence against students ($R^2 = 0.32$) and around one-fifth of the explained variance for student violence against teachers ($R^2 = 0.21$). The standardized indirect effect on student violence against students through low level of school engagement, risky peers and poor student–teacher relationships is $-0.04$, $-0.11$ and $-0.04$, respectively. The standardized indirect effect on student violence against teachers through low level of school engagement, risky peers and poor student–teacher relationships is $0.00$, $-0.25$ and $-0.17$, respectively. The standardized indirect effect of negative personal traits, parental monitoring knowledge and violence exposure on student violence against students is $0.15$, $-0.02$ and $0.02$, respectively, and on student violence against teachers is $0.30$, $-0.04$ and $0.04$, respectively.

**Gender analysis**

The gender analysis of this study focused on the inquiry of whether the same theoretical model was applicable to both male and female students in the elementary schools. In this analysis, factor loadings, the paths and the covariances were constrained to be equal in order to fit the covariance matrices of the male and female subgroups to the same model simultaneously. The analysis provided a good fit to the data [$\chi^2 (492, N: \text{males} = 1612, \text{females} = 1492) = 2041.18, P < 0.001$ and with NFI = 0.93, IFI = 0.94, CFI = 0.94 and RMSEA = 0.03]. This suggested that the same theoretical model fits the data from both genders well.

Next, the model was tested to find out if releasing equality constraints on the paths would significantly improve the fit. After releasing path constraints one at a time, it was determined that the release of the constraints between negative personal traits and low level of school engagement, as well as between parental monitoring knowledge and student violence against students yielded a significantly better fit to the model; thus, the results for the final model with the two constraints released together were [$\chi^2 (490, N: \text{males} = 1612, \text{females} = 1492) = 2021.74, P < 0.001$ and with NFI = 0.93, IFI = 0.94, CFI = 0.94 and RMSEA = 0.03]. This suggested that the data from the male and female students fit the same model quite well, but there were some important and significant differences in several paths. Figure 2 represents the results of the gender analysis.

The beta coefficients for both the male and female models exhibited remarkable similarity. However, there was a significant difference in the relationship between parental monitoring knowledge and student violence against students. Parental monitoring knowledge had a stronger influence on student violence against students for males ($\beta = -0.16$) compared with females ($\beta = -0.06$). In addition, the influence of negative personal traits on low level of school engagement was stronger for males than females ($\beta = 0.44$ for boys versus $\beta = 0.35$ for girls).

**Discussion**

Using a nationally representative sample in Taiwan, this study examined how student violence against
students and teachers is associated with the students’ personal, family and school factors in Asian elementary school settings. This study proposed that the perpetration of school violence by students against peers and teachers is directly associated with external school variables (i.e. negative personal traits, parental monitoring knowledge and violence exposure) and school variables (i.e. low level of school engagement, risky peers and poor student–teacher relationships). Most importantly, different from prior studies, this study proposes that school variables mediate the associations between external school variables and both types of perpetration of school violence. This study expected that the model would fit both male and female students but that certain paths within the model might differ.

The results of this study show that elementary school students, who possess negative personal traits, who perceive a low level of parental monitoring and who are exposed to violence are also more likely to be involved with at-risk peers, and consequently, their chances of behaving violently against other students will be increased. By contrast, students’ negative personal traits, parental monitoring knowledge and violence exposure have a limited direct influence on student violence against teachers, but these variables indirectly associate with student violence against teachers through risky peers and poor student–teacher relationships. These findings imply that school violence is highly influenced by the transaction of the students’ experiences in various social environments or contexts [13]. These findings also strengthen our hypothesis that the students’ social experience in elementary schools mediates the relationship between personal and family experience and school violence committed by students against other students and teachers. That is, as students’ negative personal and family experiences increase, they have lower levels of school engagement and poorer
social interaction with students and teachers on school grounds. In turn, their likelihood of becoming involved in school violence will increase. In addition, in contrast with earlier psychological theories stressing the single risk factor contributions of prior victimization, family function and psychological characteristics to the perpetration of violence, these findings provide empirical evidence to support the theoretical model of Benbenishty and Astor [13], which states that school violence is associated with a combination of numerous within- and external school variables and within-school variables can mediate contributions from external contexts. The findings also imply that the school environment is a unique developmental setting, contributing to school violence among elementary school students both directly and indirectly [23, 24]. This provides a new perspective, in that when we look at school violence, the school itself as a social context could be the center of a theoretical model. This perspective is different from earlier psychological perspectives that center exclusively on the individual [13].

The results show that the variable of negative personal traits has the greatest association, both direct and indirect, with student violence against students. This variable also has the strongest indirect association with student violence against teachers. Results also show that involvement with at-risk peers has the strongest mediating effect on both types of school violence. The variable of poor student–teacher relationship has a strong mediating effect on violence against teachers. In addition, parental monitoring knowledge and violence exposure have a small but important association with school violence. These findings suggest that intervention focusing on enhancing the quality of students’ peers and their interaction with teachers as well as improving students’ negative personal traits may lead to a greater reduction of school violence. This is because the findings show that personal traits, risky peers and student–teacher relationships are

---

Fig. 2. SEM of direct and mediating effects on male and female elementary school students’ violence against students and teachers. The coefficients in regular print and those in bold and oblique print represent, respectively, the results for the female and the male samples.
powerful factors associating with elementary school students’ perpetration of school violence.

Among all the variables, the results of this study showed that the variable of negative personal traits has the greatest association with student violence against students. These findings are consistent with previous studies indicating that negative personal traits play a crucial role in middle childhood problem behavior [56]. It is possible that elementary school students tend to be immature and have difficulty regulating their anger and impulsivity, which may lead to their more violent behavior against other students [56]. The results also show that the variable of negative personal traits has indirect association with student violence against students mediated through risky peers. The finding echoes previous studies indicating that children with negative personal traits may provoke more negative interactions with peers, which in turn can lead to those children perpetrating more violence against students [21, 57].

In contrast to student violence against students, student violence against teachers was not directly associated with negative personal traits. This finding is in conflict with previous theories indicating strong association between negative personal traits and violent behavior [56]. However, this does not mean that negative personal traits are not important factors associating with student violence against teachers because this variable still has a very strong indirect association with student violence against teachers mediated through risky peers and poor student–teacher relationships. It is perhaps that elementary school children perceive that teachers have more power than them and judge that they may get into much trouble if they are aggressive toward teachers. This may lead students with negative personal traits to repress their aggression toward teachers [11]. However, these students with negative personal traits tend to affiliate with the peers who have similar characteristics with them and discuss aggression during their interaction, and this may reinforce their perpetration of violence against teachers [20, 21, 22]. In addition, children with negative personal traits may also provoke more negative interactions with teachers, which may cause these students to perceive that teachers treat them unfairly or intend to hurt them. This, in turn, may cause them to strike out in retaliation or self-defense in aggressive ways [11, 58].

Surprisingly, school engagement has a very slight or zero mediation effect on student violence against students and teachers. This is unexpected because previous studies suggest that perpetration of school violence is strongly associated with school engagement [5]. Perhaps, relatively higher scores on the level of school engagement among Asian school children, compared with non-Asian children, explain the slight mediation effects [3]. In addition, the measurement assessing the low level of school engagement is relatively weaker than other two mediation variables, which may explain the slight mediation effects of low level of school engagement.

The results also show that the overall theoretical model is applicable across both genders. Many international studies suggest that the prevalence of school violence and students’ personal, family and school experiences significantly varies by gender [e.g. 13, 46, 47]. However, how school violence is associated with within- and external school variables and within-school mediating effects are quite similar for both genders. These findings may imply that although boys and girls may have different developmental experiences, the patterns of risk factors associated with perpetration behavior among boys and girls are similar. This appears to be a consistent finding in studies that explore structural relationships between these variables in different cultures [e.g. 1, 13, 23, 24].

Overall, the findings suggest that most of the risk factors of school violence perpetration reported in studies from Western countries are relevant to the Asian culture context, especially in Taiwanese elementary school. This finding may imply that structural patterns of relationships between risk factors and school violence could share universal patterns in the way they relate to each other in seemingly diverse cultures [13]. These findings imply that different cultural values may not consistently influence the relationships between various factors and school violence. The findings provide strong empirical evidence to support policymakers, practitioners and
researchers in justifying the use of similar types of interventions across different cultures or countries [3].

It is important to acknowledge that there are several limitations in this study. First, the investigation in this study is cross-sectional. The results of this study do not enable one to establish casual effect relationships. Second, the data are only based on student self-reporting, and school violence was measured in terms of behavior occurring during the prior 12 months. This may lead students to under- or over-report violent behavior because some of these events are so common that students might not recall the entire year’s events [13]. Future studies should collect information from multiple sources, such as teachers’ reports, parents or peer nomination. In addition, this model does not take into account the nested aspect of the data (e.g., students cluster within classroom or school), which may bias the standard errors and influence the results. Future studies can consider cross-cultural nested designs and analyses such as the hierarchical linear model to examine how nested contexts (within and between cultures/contexts) influence the perpetration of school violence. Such future studies could help understand better the interaction between individuals and school contexts.

**Implications**

This study shows that within-school factors mediate the relationship between external school factors and school violence. This finding implies that improving student school experience could result in a strong effective response to violence. However, this does not mean that interventions should solely focus on the school level. To maximize the effectiveness of school violence intervention programs, practitioners must integrate personal, family and school-level approaches [59, 60], because the results of this study show that the influence of the personal, family and school variables in this model account for a relatively large amount of the explained variance for student violence against students and teachers.

In addition, the overall patterns of relationships between the variables are quite similar for both male and female students. This implies that school violence intervention designed on the basis of our theoretical model could be effective across genders in elementary school.

Finally, this study implies that the risk factors of school violence perpetration are similar in both the East and the West. This empirical evidence supports school policy makers or practitioners in developing new internationally based school violence prevention and intervention programs.

**Funding**

Chieng Ching-Kuo Foundation for International Scholarly Exchange (USA).

**Acknowledgements**

The authors would like to recognize the generous funds from Chieng Ching-Kuo Foundation for International Scholarly Exchange (USA) for this research. Data analyzed in this study were collected by the research project “Prevention and Control of School Violence in Taiwan” sponsored by the National Science Council: NSC 89-2420-H-006-001-QBS. This research project was carried out by National Cheng Kung University, and directed by Dr. Jin Wu. The Center for Survey Research of Academia Sinica is responsible for the data distribution. The authors appreciate the assistance in providing data by the institutes and individuals aforementioned. The views expressed herein are the authors’ own.

**Conflict of interest statement**

None declared.

**References**

Personal, family and school impact on school violence


41. Wong DSW. School bullying and tackling strategies in Hong Kong. *Int J Offender Ther Comp Criminol* 2004; **48**:537–53.


