The Impact of School Violence on Self-Esteem and Depression Among Taiwanese Junior High School Students

Ji-Kang Chen · Hsi-Sheng Wei

Abstract The majority of research on the outcome of school violence has been conducted in Western countries. Empirical studies on how school violence impacts student psychological well-being in a Chinese cultural context are relatively limited. The aim of this study was to address this gap by exploring how student maltreatment by teachers, student perpetration against students, and student victimization by other students affected the self-esteem and depression of 1,376 junior high school students in Taiwan. The current study also explored how gender, family socioeconomic status (SES), student–teacher relationships and peer support moderate the impact of school violence. Structural equation analyses showed that student victimization by students and student perpetration of violence against students successfully predicted depression, but not self-esteem. Student maltreatment by teachers was associated with neither depression nor self-esteem. Multigroup analyses showed that relationships among the variables were similar across gender, family socioeconomic status, or student–teacher relationships. However, the impact of student victimization on depression was stronger for subgroups with a low level of peer support than for those with a high level of peer support. The overall findings suggest that depression is the major consequence of school violence in Taiwan and that the impact of student victimization by fellow students on depression is buffered by positive peer support. Implications for theory, intervention and recommendations for future research are discussed.

Keywords School violence · Bullying · Depression · Self-esteem · Taiwan

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1 Introduction

School violence has become a social problem affecting the well-being of students every-where. Over the past few decades, studies on the outcomes of school violence have been conducted mostly in North America and Europe (e.g., Baldry 2003, 2004; Flannery et al. 2004; Klomek et al. 2008a, b). By contrast, empirical evidence on how school violence affects the psychological well-being of students in a Chinese cultural context remains relatively limited (Ng and Tsang 2008; Wei and Chen 2009). There is also a paucity of empirical evidence regarding how the impact of school violence may differ according to gender (Baldry 2004). Little is known about how family socioeconomic status (family SES) and school social dynamics (e.g., school peer support and student–teacher relations) buffer the negative outcomes of school violence in Chinese cultural contexts. Using data from Taiwan, this study expands the available literature on school violence by exploring how school violence impacts the psychological well-being of students in a Chinese cultural context. This inquiry also examines if gender, family SES, peer support and student–teacher relations moderate the impact of school violence in a Chinese cultural context.

School violence in this study is defined as any behavior intended to harm students and their properties while in school (Benbenishty and Astor 2005). The term "violence" includes physical violence (e.g., beating), verbal violence (e.g., cursing), threatening behavior (e.g., extortion), and damaging property (Astor et al. 2004; see Benbenishty and Astor 2005 for a critical discussion). Based on this definition, three types of school vio-lence are discussed in the current school violence literature: student perpetration against students (Chen and Astor 2009a, b), student victimization by students (e.g., Benbenishty and Astor 2005), and student maltreatment by teachers (Benbenishty et al. 2002a, b; Khoury-Kassabri 2006). This study will focus on the outcomes of these three types in Taiwan.

In addition, previous international studies on outcome of school violence have focused mostly on student victimization by students and student perpetration against students (e.g., Baldry 2004; Moore and Kirkham 2001). Student maltreatment by teachers is another common form of school violence in many countries (e.g., Benbenishty et al. 2002a, b; Khoury-Kassabri 2006). Few empirical studies have investigated the effects of maltreat-ment by teachers on students' psychological well-being. Furthermore, the three types of school violence are commonly discussed separately in the literature (Benbenishty and Astor 2005), with a narrow emphasis on their specific impact on student psychological well-being. In real life, however, a student may experience multiple types of school vio-lence at the same time. The impacts of these different types of school violence on well-being may vary at different levels. We think it is important to examine, using a specific model, the negative impacts of these types of school violence on psychological well-being of students. This may provide researchers a better picture of how different types of vio-lence interactively influence students' psychological well-being.

1.1 Literature Review on the Outcome of School Violence

Literature on school violence in Western countries indicates that frequent involvement in or exposure to school violence can negatively impact student psychological well-being and lead to psychological distress (Flannery et al. 2004; Gladstone et al. 2006; Graham and Bellmore 2007) such as short- and long-term depression (Baldry 2004; Gladstone et al. 2006; Klomek et al. 2008a, b) and persistent poor self-esteem (Graham and Bellmore 2007; Moore and Kirkham 2001; Salmivalli 2001; Seals and Young 2003).

There is a lack of empirical evidence on the outcome of school violence in Chinese cultural contexts. However, some researchers have classified Chinese cultures as collectivistic (Chen 2000; Triandis 1995), stressing interpersonal harmony, interdependence and concern for others (Nisbett 2003; Triandis 1995). Once students become involved in conflict or violence, they are less liked by their peers and are more likely to experience psychological distress (Cheng 2001).

In contrast, some have argued that students in Chinese societies are taught from childhood the philosophies of Confucianism, Taoism and Buddhism in order to enable them to cope with unexpected disaster or frustration, including different kinds of violence and victimization (Nisbett 2003; Tiwari et al. 2001). These philosophies involve a series of teachings to increase tolerance and self-control in the face of violence in order to adjust to victimization and aggression (Nisbett 2003; Tiwari et al. 2001). This process of socialization may help students who suffer or perpetrate school violence adjust themselves and come to terms with their victimization and/or perpetration experiences. Thus, students who are victims or perpetrators can recover from perpetration and victimization and stop further development of depression and low self-esteem. Indeed, some empirical studies have shown that Chinese people have a greater ability to moderate and control their emotions when facing conflict, in comparison to people in Western cultures (e.g., Tsai and Levenson 1997). Given these cultural norms and the results of these studies, the impacts of school violence on self-esteem and depression might be weaker in a Chinese cultural context.

Few empirical studies on the outcomes of school violence in other Asian countries have been conducted; the findings that do exist are mixed (Kim et al. 2005, 2006; Yang et al. 2006). For example, Yang et al. (2006) suggested an association between depression and poor self-esteem and school violence (student victimization by students and student perpetration of violence against students), but Kim et al. (2006) failed to find this association. The impact of school violence on students' self-esteem and depression in Chinese societies or in other Asian countries remains unclear.

1.2 Gender, Family SES, Peer Support and Student–Teacher Relationships as Moderators

1.2.1 Gender and Family SES

How school violence impacts boys and girls differently is not clear in current empirical literature. We do know that boys are more likely than girls to become involved in school violence (Baldry 2003; Chen and Astor 2009a, b; Nansel et al. 2001; Zeira et al. 2002), and girls are more vulnerable to depression than boys (e.g., Wade et al. 2002) as well as to poor self-esteem (Gentile et al. 2009; Raymore and Godbey 1994). However, it is not clear how gender contributes to the impact of school violence on self-esteem and depression.

In addition, it is not clear how poverty affects the impact of school violence on self-esteem and depression. Theoretically, the impact of school violence on self-esteem and depression may be stronger in students from poor families since relatively fewer family resources are available to aid them in coping with school violence and psychological distress ((Davidson and Demaray 2007; McFarlane et al. 1995). However, some studies have suggested that student perception of family SES is not associated with school violence (Chen and Astor 2010) and depression (Twenge and Nolen-Hoeksema 2002). The findings bring into question the actual impact of family SES on the outcome of school violence, a topic which is indeed explored in the present study.

1.2.2 Peer Support and Student–Teacher Relationships

Previous studies have indicated that high-quality social support and positive interpersonal relationships can work as a buffer to reduce the negative impact of a stressful situation (Lakey and Cohen 2000). School violence is one of the major life stressors challenging students' psychological well-being (Graham and Bellmore 2007), and teachers and peers are major social-support resources available to students. It is believed that strong peer support and positive teacher-student relationships may enhance feelings of security and coping ability, as well as reduce or even overcome the negative impact of school violence on self-esteem and depression (Cowie and Olafsson 2000; Davidson and Demaray 2007; Naylor and Cowie 1999; Williams et al. 2005). In fact, a few empirical studies have shown that peer support does buffer the impact of school violence on psychological well-being (Davidson and Demaray 2007; Demaray and Malecki 2003; Kochenderfer-Ladd and Skinner 2002; Malecki and Demaray 2002). To date, however, empirical evidence regarding the buffering effects of peer support and student–teacher relationships on the outcomes of school violence in Chinese societies is still limited. The present study explores how the quality of peer support and student teacher relationships influences the outcomes of school violence in a Chinese cultural context.

Figure 1 represents our theoretical model. The right side of the model indicates the psychological outcomes of school violence, self-esteem and depression. On the left side, we have the three types of school violence commonly discussed in the current literature (student maltreatment by teachers, student perpetration against students and student victimization by students). As mentioned, based on diverse findings from different sources in the literature, it is unclear how these three types of school violence influence student self-esteem and depression in a Chinese cultural context. Consequently, analyses here are exploratory in that we do not test specific hypotheses. This study examines the following questions:

1. Will school violence in Taiwan relate to decreased self-esteem and increased depression amongst students?
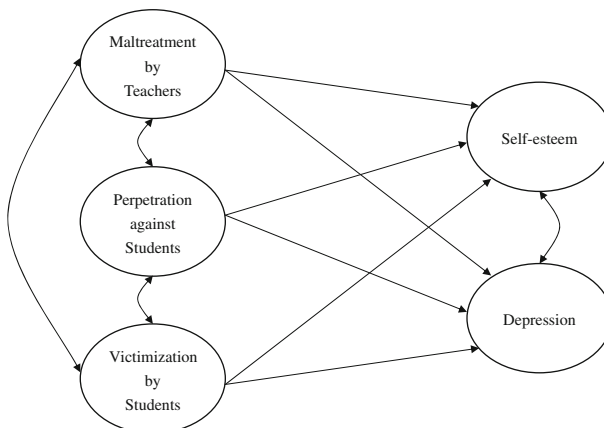

Fig. 1 Theoretical model of impacts of school violence on self-esteem and depression

2. Are there differences in the above relationships when examined across gender and family SES in Taiwan? Do peer support and student–teacher relationships moderate the above relationships?

2 Methods

The data used in this study was taken from a large-scale project entitled "Taichung City Youth Life Conditions Survey" (Wei et al. 2006). Taichung, with a population over one million, is the biggest city in central Taiwan and the political, economic and educational center of the region (Wei et al. 2006). The survey was conducted throughout Taichung city among more than 2,700 students from junior high schools (grades 7–9), and vocational and academic high schools (grades 10–12), and it achieved a response rate of more than 98%. The students were given a structured questionnaire in classrooms under the guidance of professionally trained survey monitors. The questionnaire included over 150 items regarding the students' basic demographic backgrounds and other personal and school experiences. Each of the student questionnaires took approximately 30 min to complete. 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 reason. This study was supported by the Children's Bureau of Taiwan's Ministry of the Interior, which reviewed and supervised the questionnaires, procedures, informed consent forms and other ethical concerns.

This sample was designed to represent all students from 7 to 12th grades in Taichung. The probability sampling method was a two-stage stratified random sample, and the strata were eight geographical districts of Taichung and three types of schools (i.e., junior/vocational/academic). Only junior high school students were selected for this study. In the first stage, schools were randomly selected from the sampling frame according to the appropriate strata. In the next stage, one class was randomly selected according to each grade in the selected schools. The sample included all students in the selected classes (Wei et al. 2006).

This study examined 1,376 students from 16 junior high schools. Around half of the students were boys (48.2%); 49.5% were girls, and 2.3% did not indicate their gender. The grade level distribution was: 30.8%, 7th grade; 33.9%, 8th grade; and 35.0%, 9th grade. About 0.2% did not indicate a grade.

2.1 Measurement

In order to measure the latent variables in our model, several scales containing a number of subscales were constructed. In the following sections, we describe each scale and provide its internal consistency. We also describe each of the subscales and report their internal consistencies as well as their factor loadings on their scales.

2.1.1 Student Maltreatment by Teachers ($\alpha = .72$)

This domain involves six items asking students how many times they experienced maltreatment by teachers in school during the last semester. The six items in this scale were selected and adapted from a version of the California School Climate and Safety Survey (CSCSS; e.g., Benbenishty and Astor 2005; Furlong et al. 1998). The original items in the

CSCSS were translated from English to Chinese to form a standardized version. A standard back-translation procedure was employed in order to ensure accuracy. A five-point Likert scale was provided (1 = never, 2 = 1–2 times, 3 = 3–4 times, 4 = 5–6 times and 5 = 7 times or more). The CSCSS demonstrated adequate construct validity (Furlong et al. 2003; Furlong et al. 2005).

The results of the exploratory factor analysis suggested the scale was unidimensional. We randomly parceled these six items into three indicators (i.e., Maltreatment 1, Maltreatment 2 and Maltreatment 3) in order to build up robust latent structures (Alhija and Wisenbaker 2006; Little et al. 1999; Marsh et al. 1998), and the score of each indicator was the sum of the items included. Maltreatment 1 included two items related to being hit, beaten or kicked (α = .54, factor loading = .63). Maltreatment 2 included two items related to being cursed or verbally sexually harassed (α = .72, factor loading = .88). Maltreatment 3 included two items related to being mocked, insulted, humiliated and sexually touched or kissed (α = .64, factor loading = .79).

2.1.2 Student Violence against Students (α = .84)

This domain involves twelve items asking students how many times they perpetrated violent behavior in school against other students during the last semester. Items in this scale were selected and adapted from the scale of school violence used in a previous survey in Taiwan (Chen and Astor 2009a, in press; Wu et al. 2000), as well as from the adaptive version of the CSCSS (e.g., Benbenishty and Astor 2005; Furlong et al. 1998). The original items in the adaptive version of the CSCSS were translated from English to Chinese to form a standardized version. A standard back-translation procedure was employed in order to ensure accuracy. A five-point Likert scale was provided (1 = never, 2 = 1–2 times, 3 = 3–4 times, 4 = 5–6 times and 5 = 7 times or more). The school violence scale and the CSCSS have shown good reliability and validity (Chen and Astor 2009a, 2010; Furlong et al. 2005; Wu et al. 2000).

This domain included three subscales on the basis of their content, and the score of each subscale was the sum of the items included. The first subscale was verbal/social/physical violence (α = .76, factor loading = .81), which included five items related to beating, kicking, using a dangerous object to cause injury and verbally insulting or socially excluding other school peers. The second was threats/vandalism (α = .81, factor loading = .79), which included five items related to threatening, blackmailing, or breaking property. The third was sexual harassment (α = .55, factor loading = .53), which included two items related to physical or verbal sexual aggression.

2.1.3 School Victimization by School Peers (α = .82)

This latent variable asked students if they had experienced victimization by their peers in school in the last semester. The twelve items in this scale were selected and adapted from the adaptive version of the CSCSS (e.g., Benbenishty and Astor 2005; Furlong et al. 1998). The original items in the adaptive version of the CSCSS were translated from English to Chinese to form a standardized version. A standard back-translation procedure was employed in order to ensure accuracy. A five-point Likert scale was provided (1 = never, 2 = 1–2 times, 3 = 3–4 times, 4 = 5–6 times and 5 = 7 times or more).

This latent variable consisted of three subscales on the basis of their content. The three subscales were physical/threatening violence, verbal/social violence and sexual harassment. The physical/threatening subscale included five items related to being beaten, hit,

kicked, and threatened (α = .80, factor loading = .74); the verbal/social subscale included four items related to being cursed, verbally insulted and socially excluded (α = .70, factor loading = .73); and the sexual harassment scale included three items related to being verbally harassed or physically touched (α = .54, factor loading = .66). The score of each subscale was the sum of the items included.

2.1.4 Rosenberg Self-Esteem Scale

The Rosenberg (1965) 10-item self-esteem scale was used to measure participants' generalized global feelings of self-worth. Participants responded to statements about their positive and negative feelings about the self, such as "I am able to do things as well as most other people" on a Likert four-point scale ranging from 1 (strongly agree) to 4 (strongly disagree). The self-esteem scale has shown good reliability and validity. Regarding reliability, the internal reliability ranged from .77 to .88; the test–retest reliability coefficient ranged from .82 (2-week interval) to .85 (1-week interval). Regarding validity, the self-esteem scale demonstrated adequate construct validity, convergent validity, and discriminant validity (see Robinson et al. 1991). The internal consistency of the current sample was 0.84.

Some studies have identified the Rosenberg self-esteem scale as comprising two meaningful and independent dimensions (Kaplan and Pokorny 1969; Shahani et al. 1990). The identified dimensions were mostly defined by negatively worded versus positively worded items and were called self-derogation and self-enhancement (Shahani et al. 1990). In order to ensure the dimensionality of this scale for the current sample, an exploratory factor analysis was conducted. The results supported a two factor model, indicating that the scale has two wording factors: one factor consists of five positively worded items (self-enhancement), and the other one consists of five negatively worded items (self-derogation; Shahani et al. 1990). The factor correlation was −.41, suggesting that items for self-derogation and self-enhancement do not have the same meaning in one dimension.

In this study, only self-enhancement items were used (α = .83). We randomly placed these five items into two parcels in order to build up robust latent structures (Alhija and Wisenbaker 2006; Little et al. 1999; Marsh et al. 1998). Self-esteem Parcel 1 (α = .73, factor loading = .87) included three items, which are "On the whole, I am satisfied with myself," "I feel that I have a number of good qualities" and "I am able to do things as well as most other people." Self-esteem Parcel 2 (α = .63, factor loading = .84) included two items, which are "I feel that I am a person of worth, at least on an equal plane with others" and "I take a positive attitude toward myself."

2.1.5 Depression Scale (α = .88)

Student's depression was assessed by a depression subscale of the brief symptom rating scale (BSRS; Lee et al. 1990). The BSRS is a Chinese questionnaire developed by local psychiatrists to screen individuals for common mental health problems. It has 50 items, and respondents report their conditions during the past week on a five-point scale (from 1 = never to 5 = very severe). The items are grouped into 10 subscales. For the present study, a depression subscale with seven items was utilized. One study showed that the 2-week test–retest reliabilities of the subscales of the BSRS on 144 7th-grade respondents were all above .80 (Lee et al. 1990). This suggested that the BSRS was a reliable screening tool; its scores were found to be highly correlated with the parent form of the symptom check list-90-R (SCL-90-R) among medical populations for each symptom dimension (Lee

et al. 1990). The internal consistency of the depression subscale was .88, based on the current sample. The results of an exploratory factor analysis of the current sample suggested that the depression subscale was unidimensional. In order to build up robust latent structures, these seven items were randomly placed into three parcels (Alhija and Wisenbaker 2006; Little et al. 1999; Marsh et al. 1998). Depression Parcel 1 ($\alpha = .68$, factor loading $= .76$) included two items related to restlessness and depressive moods. Depression Parcel 2 ($\alpha = .67$, factor loading $= .80$) included two items related to suicide ideation and worthlessness. Depression Parcel 3 ($\alpha = .74$, factor loading $= .93$) included three items related to loneliness, hopelessness and fatigue.

2.2 Control Variables

2.2.1 Gender

In this variable, students were asked to choose male or female.

2.2.2 Family SES

Based on previous studies (e.g., Chen and Astor, in press), family SES was measured by five items. For the first two items, students were asked to indicate each of their parents' education levels. Items were rated on a scale of $1 =$ junior high school, $2 =$ high school, $3 =$ college, and $4 =$ graduate or above. For the next two items, students were asked to indicate the employment status of each of their parents. Items were rated on a scale of $1 =$ no job and $2 =$ having a job. The fifth item asked the students' perception of their families' current economic condition. Items were rated from $1 =$ poor to $4 =$ rich. The score of this scale was the sum of these five items. This scale was found to be reliable ($\alpha = .70$).

For the analysis of this study, we dichotomized the scale into low and high family SES subgroups (range from 5 to 15, median $= 10$ and mean $= 10.53$). Students whose scores were equal to or below the median were rated as low and those whose scores were above the median were rated as high. This left about half (50.4%) the students in the low family SES subgroup, with the other half (49.6%) in the high family SES subgroup.

2.2.3 Student–Teacher Relationships

This domain consisted of six items concerning whether or not the respondents experienced a poor relationship with their teachers. These items were selected and adapted from a scale of student–teacher relationships in Taiwan (Chen and Astor, in press; Wu et al. 2000). Examples included the following "My teacher often punishes me for no reason"; "My teacher distrusts me." The ratings for each item were provided on a four-point scale from $1 =$ strongly disagree to $4 =$ strongly agree. This total scale score was a sum of these six items (range from 6 to 24; media $= 18$; mean $= 19.12$). This scale was found to be reliable ($\alpha = .92$). For this study, this scale was recoded as two subgroups (i.e., negative vs. positive student–teacher relationship). Students whose scores were equal to or below the median were rated as negative and those whose scores were above the median were rated as positive. Finally, 687 students (49.9%) were categorized as a subgroup having negative student–teacher relationships, 649 students (47.2%) were categorized as a

subgroup having positive student teacher relationships and 40 students (2.9%) have missing values.

2.2.4 Peer Support

This variable involved four items asking students about their perception of their social support from peers. These four items in this scale were selected and adapted from the student social support scale (SSSS; Malecki and Elliott 1999). Examples included the following: "My friends encourage me when I feel frustrated." The ratings for each item were provided on a four-point scale from 1 = strongly disagree to 4 = strongly agree. This scale score was a sum of these four items (range from 4 to 16; media = 12; mean = 12.77). This scale was found to be reliable ($\alpha = .92$). For this study, this scale was recoded as two subgroups (i.e., poor vs. good peer support). Students whose scores were equal to or below the median were rated as poor and those whose scores were above the median were rated as good. Finally, 640 students (46.5%) were categorized as a subgroup having poor peer support, 699 students (50.8%) were categorized as a subgroup having good peer support and 37 students (2.7%) had missing values for this scale.

2.3 Analytical Plan

The primary analysis method used in this study was latent-variable structural equation modeling (SEM) with maximum likelihood estimation using AMOS. Confirmative factor analysis (CFA) was first conducted to ensure the measurement model as a good fit. Next, the final SEM model, including the full dataset of all junior high school students, was tested. In addition, comparative analyses were conducted in order to determine whether or not gender, family SES, peer support and student–teacher relationships moderated the impact of school violence on self-esteem and depression.

The Chi-square coefficient has often been used to assess whether data fit theoretical models. 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 Bentler and Bonnett's (1980) normed fit index (NFI), Bollen's (1989) incremental fit index (IFI), and Bentler's (1990) compared fit index (CFI). Typically, these three fit indices consider a model to be a good fit when the value is above .90 (Bentler 1992), and a superior fit when it is close to .95 (Hu and Bentler 1999). 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 .08 to .10 and a good fit to be below .06 (Hu and Bentler, 1999).

3 Results

3.1 Descriptive Statistics

Table 1 presents descriptive statistics (including mean, standard deviation, and correlation) of the latent variables in our theoretical model. First, it can be seen that the three types of school violence (student maltreatment by teachers, student perpetration against students

Table 1 Descriptive statistics of latent variables

Variables	Mean	SD	Correlation				
			1	2	3	4	5
1. Self-esteem	14.34	2.82	–				
2. Depression	13.27	5.79	−.36*	–			
3. Maltreatment by teachers	6.96	2.54	−.02	.17*	–		
4. Perpetration against students	15.20	5.10	−.05	.24*	.35*	–	
5. Victimization by students	14.74	4.81	−.02	.27*	.45*	.44*	–

* $p < .001$

and student victimization by students) were positively correlated ($r = .35$ to .45, $p < .001$). Second, self-esteem was negatively correlated with depression ($r = −.36$, $p < .001$), but not significantly correlated with the three types of school violence ($r = −.02$ to $−.05$, $p > .05$). Finally, there was a positive correlation between depression and maltreatment by teachers ($r = .17, p < .001$), student perpetration ($r = .24, p < .001$), and student victimization ($r = .27, p < .001$).

3.2 Overall Model

Structural equation modeling was then used to examine the proposed model in Fig. 1. The results of the analysis, based on the total sample, provided a good fit to the data [χ^2 (67, $N = 1,376) = 420.33$, $p < .001$, and with NFI = .95, IFI = .96, CFI = .96, and RMSEA = .06]. This suggested that the model is a good one. Figure 2 presents the paths of this model.

Figure 2 shows that student victimization by students and student perpetration against students affected students' depression ($\beta = .16$ and $\beta = .26$, respectively) but had non-
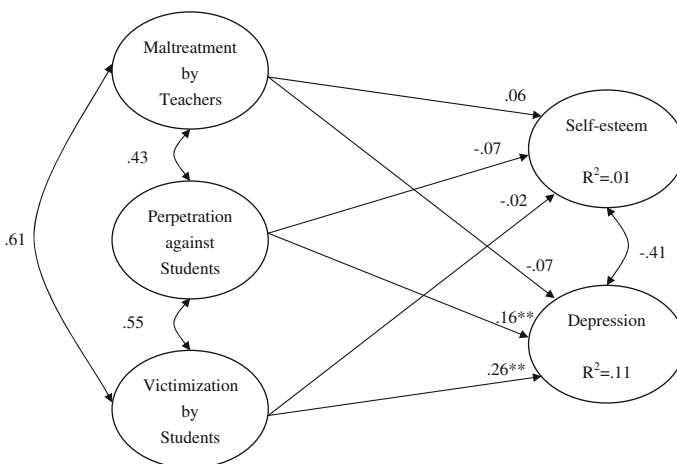

Fig. 2 Overall structure equation model (full student dataset). Significant paths are indicated with *asterisks*, * = $p < .01$, ** = $p < .001$

significant links to students' self-esteem ($\beta = -.07$ and $\beta = -.02$, respectively). Surprisingly, student maltreatment by teachers had no association with students' depression ($\beta = -.07$) or self-esteem ($\beta = .06$). Together, all types of school violence accounted for 11 percent of the explained variance for students' depression ($R^2 = .11$) and for only 1 percent of the students' self-esteem ($R^2 = .01$).

3.3 Gender Comparison Analysis

In this analysis, factor loadings, paths, and covariances were constrained to be equal in order to fit the covariance matrices of the male and female subgroups simultaneously to the same model. The analysis provided a good fit to the data [χ^2 (153, N: male = 698, female = 678) = 767.75, $p < .001$ and with NFI = .90, IFI = .92, CFI = .92, and RMSEA = .05].

Next, the model was tested to find out if releasing equality constraints on the paths could significantly improve the fit. After releasing path constraints one at a time, there were no significant changes in the chi square index, so each constraint remained in the final model. Figure 3 represents the results of this analysis in the gender comparison SEM model.

Figure 3 shows that the beta coefficients for both male and female models exhibit remarkable similarities. For males and females, student perpetration against students and student victimization by students had similarly positive effects on depression (for student perpetration against students, $\beta = .20$ for males and $\beta = .16$ for females; for student victimization by students, $\beta = .27$ for males and $\beta = .20$ for females) but reveal a non-significant relation to self-esteem (for student perpetration against students, $\beta = -.10$ for males and $\beta = -.08$ for females; for student victimization by students, $\beta = -.04$ for males and $\beta = -.03$ for females). Student victimization by teachers was not significantly associated with depression and self-esteem for both males and females (for depression, $\beta = -.01$ for males and $\beta = .00$ for females; for self-esteem, $\beta = .04$ for males and $\beta = .02$ for females).
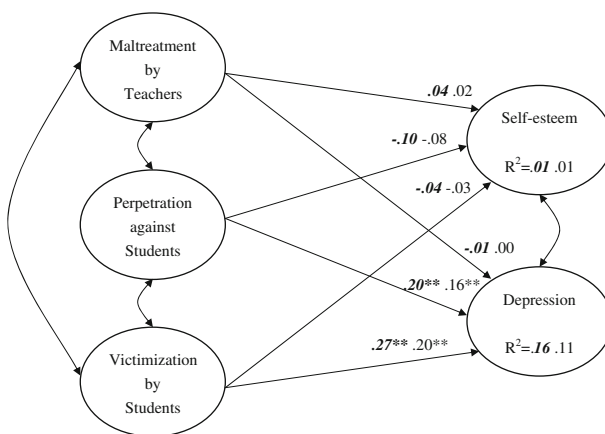

Fig. 3 Gender comparison of theoretical model. The coefficients in regular print and those in *bold* and *italics* represent, respectively, the results for the female and the male samples. Significant paths are indicated with *asterisks*, * = $p < .01$, ** = $p < .001$

The percent of variance for the gender models was also similar. The overall model explained an identical proportion of variance on self-esteem for both of males and females ($R^2 = .01$). For depression, the overall model explained around one-fifth of the variance for males ($R^2 = .16$) and one-tenth of the variance for females ($R^2 = .11$).

3.4 Family SES Analysis

The family SES analysis was conducted using a procedure similar to that used for gender comparison analysis. First, factor loadings, paths, and covariances were constrained to be equal, in order to fit the covariance matrices of the low and high family SES subgroups simultaneously to the same model. The analysis provided a good fit to the data [χ^2 (153, N: low = 550, high = 542) = 659.20, $p < .001$ and with NFI = .90, IFI = .92, CFI = .92, and RMSEA = .05]. The results suggest that the same theoretical model fits the data from both family SES groups.

Next, the model was tested to find out if releasing equality constraints on the paths could significantly improve the fit. After releasing path constraints one at a time, there were no significant changes in the chi square index, so each constraint remained in the final model. Figure 4 represents the results of this analysis in the family SES comparison SEM model.

Figure 4 shows that the beta coefficients for both low and high family SES models exhibit remarkable similarities. For low and high subgroups, student perpetration against students and student victimization by students had similarly positive effects on depression (for student perpetration against students, $\beta = .14$ for low and $\beta = .17$ for high; for student victimization by students, $\beta = .25$ for low and $\beta = .28$ for high) but reveal a non-significant relationship with self-esteem (for student perpetration against students, $\beta = -.04$ for both low and high subgroups; for student victimization by students, $\beta = .01$ for both low and high subgroups). Student victimization by teachers was not significantly associated with depression and self-esteem for both low and high family SES subgroups (for depression, $\beta = -.04$ for low and $\beta = -.05$ for high; for self-esteem, $\beta = .01$ for low and $\beta = .02$ for high).
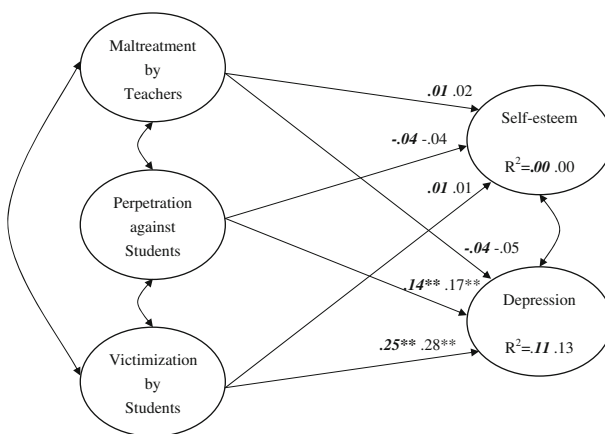

Fig. 4 Family SES comparison of theoretical model. The coefficients in regular print and those in *bold* and *italics* represent, respectively, the results for the high and the low family SES samples. Significant paths are indicated with *asterisks*, * = $p < .01$, ** = $p < .001$

The percent of variance across the family SES models was also similar. The overall model explained an identical (i.e., zero) proportion of variance on self-esteem for both low and high subgroups ($R^2 = .00$). For depression, the overall model explained around one-tenth of the variance for both low and high subgroups ($R^2 = .11$ and $R^2 = .13$, respectively).

3.5 Student–Teacher Relationships Analyses

The quality of student–teacher relationships analysis was conducted similar to the procedure for the gender and family SES comparison analyses. The results of the structural equation analysis for the comparison model between negative and positive student–teacher relationships subgroups revealed a good fit to the data [χ^2 (153, negative = 712, positive = 630) = 763.27, $p < .001$, with NFI = .90, IFI = .92, CFI = .92, and RMSEA, = .05]. The results suggested that the same theoretical model fits the data from both subgroups quite well. In this initial comparison, the structural equation analyses were conducted with the constraints on all factor loadings, paths, and covariances being equal. After testing whether the fit could be improved by releasing equality constraints on each path, there were no significant changes in the chi square index, so each constraint remained in the final model. The final school level comparison SEM model is shown in Fig. 5.

The beta coefficients for both negative and positive relationship models are similar. The percent of variance explained across the student–teacher relationship models was also similar. The model explained 12 and 13% of the variance in depression (for negative and positive, respectively) and 1 and 0% of the variance in self-esteem (for negative and positive, respectively). As illustrated in Fig. 5, for both subgroups of student–teacher relationships, student maltreatment by teachers had non-significant links to self-esteem ($\beta = .08$ for negative and $\beta = .05$ for positive) and depression ($\beta = -.08$ for negative and $\beta = -.05$ for positive). For both subgroups, student perpetration against students had non-significant effects on self-esteem ($\beta = -.03$ for negative and $\beta = -.02$ for positive) but
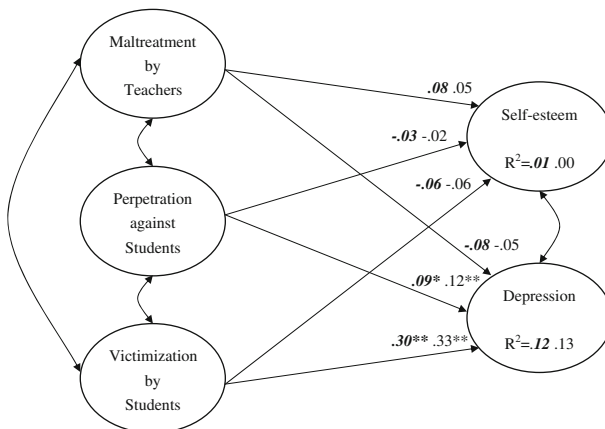

Fig. 5 Student-teacher relationships comparison of theoretical model. The coefficients in regular print and those in *bold* and *italics* represent, respectively, the results for the negative and the positive quality of student–teacher relationship samples. Significant paths are indicated with *asterisks*, * = $p < .01$, ** = $p < .001$

had significant but weak effects on depression ($\beta = .09$ for negative and $\beta = .12$ for positive). Student victimization by students also had a non-significant impact on self-esteem ($\beta = -.06$ for both subgroups) but a stronger impact on depression for both subgroups ($\beta = .30$ for negative and $\beta = .33$ for positive).

3.6 Peer Support Analyses

The peer support analysis was conducted similar to the procedure for the gender, family SES and student–teacher relationship comparison analysis. First, factor loadings, paths, and covariances were constrained to be equal, in order to fit the covariance matrices of the poor and good peer support subgroups simultaneously to the same model. The analysis provided a good fit to the data [χ^2 (153, N: poor $= 640$, good $= 699$) $= 750.35$, $p < .001$ and with NFI $= .90$, IFI $= .92$, CFI $= .92$, and RMSEA $= .05$]. The results suggest that the same theoretical model fits the data from both poor and good peer support subgroups well.

Next, path constraints were released, one at a time. It was determined that the release of the constraint between student victimization by students and depression yielded a significantly better fit to the model. Thus, the results for the final model, with the one constraint released, were [χ^2 (152, N: poor $= 640$, good $= 699$) $= 742.85$, $p < .001$ and with NFI $= .91$, IFI $= .92$, CFI $= .92$, and RMSEA $= .05$]. Figure 6 represents the results of the peer support analysis.

Figure 6 shows that the beta coefficients for both poor and good peer support models exhibit similarities. For both subgroups, as illustrated in Fig. 6, student maltreatment by teachers did not have an important impact on self-esteem and depression (for self-esteem, $\beta = .02$ for the poor subgroup and $\beta = .03$ for the good subgroup; for depression, $\beta = -.03$ for poor and $\beta = -.04$ for good). Student perpetration against students had a weak impact on self-esteem but revealed a slightly stronger influence on depression for both groups (for the poor subgroup, $\beta = -.08$ for self-esteem and $\beta = .12$ for depression; for the good subgroup, $\beta = .-09$ for self-esteem and $\beta = .16$ for depression).
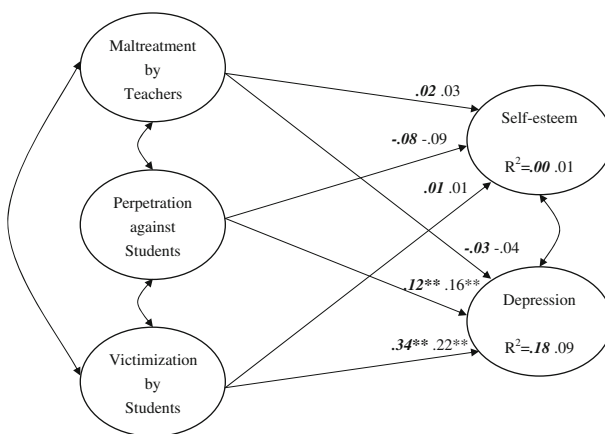

Fig. 6 Peer support comparison of theoretical model. The coefficients in regular print and those in *bold* and *italics* represent, respectively, the results for the poor and the good peer support samples. Significant paths are indicated with a*sterisks*, * $= p < .01$, ** $= p < .001$

It is interesting to note that student victimization by students had almost no link to self-esteem for both subgroups ($\beta = .01$). However, it had a significant influence on depression for both subgroups, and the impacts were stronger for the poor peer-support subgroup ($\beta = .34$) than for those in the good peer-support subgroup ($\beta = .22$).

The overall model explained almost none of the variance of self-esteem for both of the poor and the good peer support subgroups ($R^2 = .00$ for the poor peer support and $R^2 = .01$ for the good peer support). However, for depression, the overall model exhibited twice the variance for the poor peer support subgroup ($R^2 = .18$) than for the good peer support subgroup ($R^2 = .09$).

4 Discussion

This study, using a random sample in one city in Taiwan, explored how student maltreatment by teachers, student perpetration against students and student victimization by students affected student psychological well-being in the Chinese junior high school setting. The study also examined how gender, family SES, the quality of student–teacher interaction and peer support buffered the outcomes of school violence in Taiwan. Overall, the results of this study showed good indices of model fit. The findings suggest that the theoretical model of this study is supported by our data in a Chinese cultural context.

Consistent with previous studies from the East and the West (Baldry 2004; Gladstone et al. 2006; Klomek et al. 2008a, b), this study shows that students who perpetrate school violence against other students and those who experienced victimization by students are more likely to suffer from depression. The results also show that student victimization by students and student perpetration against students successfully accounts for a high proportion of the variance in depression. These findings indicate that depression is a major negative impact of school violence among students. The findings suggest that the mechanism of emotional moderation in Chinese culture may not influence the impact of school violence on depression (e.g., Tsai and Levenson 1997). In addition, the results of this study suggest that student victimization by students has a much stronger impact on depression in Taiwan than does student perpetration. These findings question the public belief that school-violence victimization is associated with internal problems while perpetration of school violence is associated with external problems (e.g., Graham and Bellmore 2007; Flannery et al. 2004). These findings support previous studies indicating that both school violence victimization and perpetration have negative impacts on depression, with victimization having stronger impacts on depression (e.g., Juvonen et al. 2003).

In contrast to findings on depression, the results of this study show that student victimization by students and student perpetration in school cannot successfully predict low student self-esteem, and accounts for almost no proportion of self-esteem. These findings indicate that low self-esteem is not a major outcome of school violence among students in Taiwan. This finding thus does not support previous Western studies indicating a strong association between school violence and low self-esteem (Baumeister et al. 1996). Perhaps, relatively equal and low self-esteem scores reported by Chinese students may account for the non-significant association between student victimization and perpetration and self-esteem in Taiwanese schools (e.g., Boucher et al. 2009). Another possible explanation may be that Rosenberg self-esteem scale is unidimensional and relatively global construct, which may not reflect the multi-dimensionality of self and fail to detect the effects of school violence on specific aspects of self-esteem (e.g., Mruk 2006; Rosenberg et al. 1995).

Future research may be conducted using domain-specific and multidimensional self-esteem constructs to further determine the association between school violence and self-esteem.

Surprisingly, the results of this study suggest that student maltreatment by teachers is not significantly associated with student self-esteem and depression. These findings indicate that student maltreatment by teachers has a limited impact on student self-esteem and depression. These findings are unexpected, because previous Western studies and theories have suggested that low self-esteem and depression are major negative impacts of student maltreatment by school staff (Benbenishty and Astor 2005). Perhaps, Chinese students have perceived corporal punishment by adults such as parents and teachers as a proper disciplinary measure to correct students' misbehavior (Hahm and Guterman 2001). This cultural logic may lead Chinese students to view teacher maltreatment as a problem not affecting depression and self-esteem.

The results in this study show how the affects of school violence on self-esteem and depression are applicable across genders. These findings suggested that although many international studies suggest that the prevalence of school violence and depression varies by gender (Benbenishty and Astor 2005; Baldry 2003; Nansel et al. 2001), how school violence affects self-esteem and depression is quite similar in both genders. In addition, the results show that the family SES did not significantly impact the associations between school violence and psychological well-being. The findings do not support the argument that families with fewer resources account for stronger negative outcomes of school violence in students from impoverished families (Davidson and Demaray 2007; McFarlane et al. 1995). Perhaps, the relatively equal family-income distribution in Taiwan accounts for the non-significant impacts on outcomes of school violence in Taiwan (Chen and Astor 2010; Lee 2008).

The results show that this study's theoretical model of how school violence affects self-esteem and depression is applicable across the subgroups of different student–teacher relationships and peer support. The findings are not consistent with previous theories and studies indicating high quality social support and positive interpersonal relationships can buffer the negative impacts of school violence (Lakey and Cohen 2000).

However, it is very important to note that the peer support comparison analyses reveal important differences between poor and good peer support subgroups with regards to how student victimization by students has an impact on depression. In addition, the impact of student victimization by students on depression was stronger for those who had poor peer support than those with good support. Furthermore, the model accounted for greater variance in depression for the poor social support subgroup than for the good one. The findings suggest that peer support can buffer or moderate the impact of student victimization by students on depression. These findings are consistent with previous studies in which the negative impact of school violence is buffered by positive relationships with peers (Davidson and Demaray 2007; Kochenderfer-Ladd and Skinner, 2002; Demaray and Malecki 2003; Malecki and Demaray 2002).

Overall, the findings of this study suggest that depression could be successfully predicted by student perpetration against students and student victimization by students. The findings suggest that intervention is needed in Taiwan to prevent students who are perpetrators and victims of school violence from becoming depressed (Baldry 2004). In addition, intervention strategies geared toward decreasing the impact of school violence on depression could also focus on increasing positive relations and support among school peers, because the findings suggest that peer support has important moderating effects on the association between student victimization by students and depression. Finally, school social workers, psychologists, counselors, teachers and parents should work seriously

together to prevent school violence and screen students for depression to prevent the development of more serious psychological distress, such as suicide.

It is important to acknowledge the limitations of this study. First, the investigation in this study is cross-sectional. The results of this study do not enable the establishment of casual-effect relationships. Further longitudinal research is needed to examine the cause-effect relationships between school violence and depression and self-esteem. Second, the data is based only on student self-reporting. This may lead students to under- or over-report (Benbenishty and Astor 2005). Future studies should collect information from multiple sources, such as teacher or peer reports. In addition, relatively small amount of variance on outcome variables accounted for by the theoretical model may suggest that other outcome variables have been overlook in this study. Future studies should examine other important psychological outcome variables such as anxiety and somatization. Future studies may also consider a culture-specific model on psychological outcomes of school violence in Chinese cultural contexts since our overall findings suggest that the impact of school violence is not quite similar in Taiwan and in western countries. Finally, this study is based on a representative sample of junior high schools in one city in Taiwan. The results in this study might not be generalized to other younger (e.g., elementary school students) or older (e.g., senior high schools) populations in other Chinese societies.

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