The effects of individual characteristics, teacher practice, and school organizational factors on students' bullying: A multilevel analysis of public middle schools in Taiwan

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A B S T R A C T

This study investigated the effects of individual characteristics (gender, depression, and delinquency), teacher practice (support and maltreatment), and school organizational factors (school size and pupil–teacher ratio) on adolescents' verbal and physical bullying behaviors. A random sample of 1172 7th-9th grade students from 12 public middle schools in Taichung City, Taiwan was selected for this study. A self-report questionnaire survey was administered. The results showed that during the previous semester, 38.7% of the students had ever bullied other students physically while 53.0% had verbally bullied others. Hierarchical linear modeling was employed to conduct a two-level analysis. Individual characteristics including gender, depression, and involvement in delinquent behaviors were found to significantly contribute to both verbal and physical bullying. Teacher's support and maltreatment of students were also associated with the two types of bullying. School size and pupil–teacher ratio, on the other hand, did not significantly contribute to bullying behaviors. Implications were discussed.

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1. Introduction

Bullying has been recognized as a serious problem in schools worldwide (Olweus, 2003; Smith, 2004). For example, a recent large-scale international data from Health Behavior in School-aged Children survey (HBSC) suggested that percentages of students who bully others in thirty participating countries ranging from 9% to 73% for 11 to 15-year-old students (Craig & Harel, 2004). Another international study, Global School-based Students Health Survey (GSHS), indicated that 37.4% of children were bullied at least one day within the past 30 days (Due & Holstein, 2008). Studies also suggested high rates of bullying in Asian countries, such as China (e.g., Huang, Zhou, & Guo, 2005), Japan (e.g., Morita, Soeda, Soeda, & Taki, 1999), South Korea (e.g., Yang, Kim, Kim, Shin, & Yoon, 2006) and Taiwan (Chen & Astor, in press-a; Wei, Jonson-Reid, & Tsao, 2007). However, few studies explore the knowledge regarding the risk factor of bullying behavior in Asian cultural contexts (e.g., Chen & Astor, in press-b). Furthermore, most of these studies on risk factors of bullying exclusively focus on individual-level variables. It is unclear how contextual variables, such as school-level factors are associated with student bullying behavior. In order to promote effective prevention effort, this study aims to identify the risk factors of bullying on the individual and school levels.

1.1. Individual characteristics of bullies

Boys are consistently found to report more bullying behavior than girls (Espelage & Holt, 2001; Nansel et al., 2001; Scheithauer, Hayer, Petermann, & Jugert, 2006), especially when overt types of bullying such as hitting, kicking and verbal insults are considered. Girls, on the other hand, tend to engage in relational or indirect bullying (Crick et al., 2001; Salmivalli & Kaukiainen, 2004). The overrepresentation of boys in bullying is consistent in the literature and is reflected in studies with Asian populations as well (e.g., Wei et al., 2007; Huang, Zhou, & Guo, 2005).

Bullies are often found to have higher depressive moods, suicidal ideations, and more suicide attempts (Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Kumpulainen, Räsänen, & Puura, 2001; Seals & Young, 2003; Yang et al., 2006), which suggest that the aggressive behaviors may be indicative of their underlying psychiatric or personality disorders (Sourander et al., 2007). Besides emotional adjustment issues, bullying is also associated with a variety of problem behaviors such as tobacco and alcohol use (Jankauskienė, Kardelis,
Sukys, & Kardeliene, 2008; Kaltiala-Heino, Rimpelä, Rantanen, & Rimpelä, 2000), violent behavior and weapon-carrying on the streets (Andershed, Kerr, & Stattin, 2001), gang membership (Homes & Brandenburg-Ayres, 1998) as well as other types of deviance (Barker, Arseneault, Brendgen, Fontaine, & Maughan, 2008). These findings suggest that school bullying may be viewed as a part of a more general pattern of abnormality and reveal a developmental pathway from minor disruptive behaviors to more serious offenses (Loebel & Stouthamer-Loebel, 1996). However, the existing literature focuses primarily on western regions and little empirical research has been done in Taiwan. The present study therefore aims at examining the applicability and effect of these factors in an Asian context.

1.2. Teacher practice

Teachers play a crucial role in children's wellbeing and development. A positive relationship with teachers is beneficial for students' psychosocial adjustment such as self-esteem, academic motivation, school performance, sense of belonging to school and peer acceptance (Hughes, Cavell, & Willson, 2001; Harter, 1996; Roesser, Midgley, & Urden, 1996). Care and support from teachers also reduce students' aggression and delinquency (Reinke & Herman, 2002). A study of 885 Norwegian adolescents aged 13–15 years found that more support from teachers decreased the risk of bullying (Natvig, Albrektsen, & Qvarnstrom, 2001). Another study of 283 children also showed that decrease in externalizing behavior during the school transition was associated with teacher–student closeness, especially for children with the highest levels of externalizing behavior upon school entry (Silver, Measelle, Armstrong, & Essex, 2005). Some researchers regard teacher–student relationships as compensatory resources for aggressive children that can buffer the impact of other risk factors (Meehan, Hughes, & Cavell, 2002). They also suggest that this effect is most salient for children of minority groups such as African American and Hispanic American students.

While teacher support can facilitate students' school adjustment and reduce the risk of disruptive behavior, harsh treatment by teachers in school is not an uncommon experience for many students. One national survey of students in Israel revealed that 24.9% of all respondents reported being emotionally maltreated by staff members at least once during the month prior to survey administration and almost a fifth reported being a victim of at least one type of physical maltreatment (Benbenishty, Zeira, & Astor, 2002). Hyman et al. (2004) suggested that corporal punishment and psychological maltreatment by teachers such as verbal insult, physical assault, and sexual harassment may heighten students' sense of alienation and increase their misbehavior and violence. The issue of teacher maltreatment is particularly relevant to educational institutions in Taiwan due to the Confucian tradition that emphasize hierarchy, obedience and respect for teachers. Although such authoritarian values have been questioned with the highest levels of externalizing behavior upon school entry (Silver, Measelle, Armstrong, & Essex, 2005). Some researchers regard teacher–student relationships as compensatory resources for aggressive children that can buffer the impact of other risk factors (Meehan, Hughes, & Cavell, 2002). They also suggest that this effect is most salient for children of minority groups such as African American and Hispanic American students. While teacher support can facilitate students' school adjustment and reduce the risk of disruptive behavior, harsh treatment by teachers in school is not an uncommon experience for many students. One national survey of students in Israel revealed that 24.9% of all respondents reported being emotionally maltreated by staff members at least once during the month prior to survey administration and almost a fifth reported being a victim of at least one type of physical maltreatment (Benbenishty, Zeira, & Astor, 2002). Hyman et al. (2004) suggested that corporal punishment and psychological maltreatment by teachers such as verbal insult, physical assault, and sexual harassment may heighten students' sense of alienation and increase their misbehavior and violence. The issue of teacher maltreatment is particularly relevant to educational institutions in Taiwan due to the Confucian tradition that emphasize hierarchy, obedience and respect for teachers. Although such authoritarian values have been questioned.

1.3. School organizational factors

Compared to the overwhelming research interest on individual risk factors of bullying, less is known about why violence is more prevalent in some schools than others. To date, there are relatively fewer studies examining the potential influence of school environment and organization on students' bullying and the results are less conclusive. On one hand, large schools are often assumed as having insufficient educational resources and more trouble with student discipline and classroom management, which contribute to elevated levels of frustration and delinquency among students (Ferris & West, 2004; Walker & Gresham, 1997). Increased school size was found to be associated with decreasing student attachment to school and to teachers as well as extracurricular participation (Crosnoe, Johnson, & Elder, 2004), and the negative effects may be particularly serious for students of minority and disadvantaged groups (Lee & Smith, 1997). Larger school size also predicts higher levels of criminal incidents and violence (Chen, 2008; DeVoe et al., 2003). Leung and Ferris (2008) analyzed data from 1047 teenage boys in Canada and showed an independent effect of school size on youth violence after controlling for other variables.

On the other hand, a survey in Canada with over thirteen thousand 6th and 8th graders found school size a salient contextual characteristic in which students in large schools tend to bully less than those in small schools (Ma, 2002). A nationwide survey in Ireland also revealed a negative correlation between the size of school or class with bullying (O'Moore, Kirkham & Smith, 1997). Some researchers suggest that large schools are actually more effective and efficient than small ones on a variety of educational outcomes (Barnett, Glass, Snowdon, & Stringer, 2002; Bradley & Taylor, 1998). School size was found to positively affect school outcomes and its effect is mediated by school culture and practice such as the amount of cooperation between teachers, which affects school climate and outcomes (Opdenakker & Van Damme, 2007). Still, some other studies found no relationship between school size and students' misbehavior. A large-scale survey in Norway with more than 700 schools found that the size of the class or school was not significantly associated with the frequency of bullying (Olweus, 1995). A study on a nationally representative sample of 10,400 Israeli students in grades 7–11 also suggested that school size was not significantly associated with victimization (Khoury-Kassabri, Benbenishty, Astor, & Zeira, 2004).

Perhaps there are some other important organizational factors that need to be taken into consideration besides school size alone, such as the adequateness of human resources for the students. For example, some studies suggest that low pupil–teacher ratio contributes to a number of positive schooling outcomes (Lamdin, 1995; Willms & Somers, 2001) and may reduce student's risk of dropping out (McNeel, 1997). Over crowded classes were also found associated with bullying (Khoury-Kassabri et al., 2004; Khoury-Kassabri, Benbenishty, & Astor, 2005). But some other studies found that students in small classes showed less peer interaction and the smallest classes seemed to have worse peer relations in terms of aggression and exclusion (Blatchford, Edmonds, & Martin, 2003). In addition, Scheithauer and others surveyed 2086 5th–10th grade students from schools in Germany and found class size not linked to reports of bullying and victimization (Scheithauer et al., 2006).

Given the inconsistent findings from the literature, the present study attempts to address a substantial limitation of the existing research on the relationship between school environment and bullying by investigating the potential effects of school size and pupil–teacher ratio. In summary, this study hopes to examine the potential effects of individual characteristics, teacher practice, and school organizational factors on students' bullying in Taiwan. Based on current knowledge, it is expected that boys bully more than girls do. Depression, delinquency, and teacher maltreatment are hypothesized to be positively associated with students' physical and verbal aggression while teacher support should contribute to less bullying. The relationship between school organization (school size and pupil–teacher ratio) and bullying is more ambivalent and needs to be empirically examined.
2. Method

2.1. Sample

Data used in this study were drawn from a large-scale youth survey in Taichung City. Taichung is the biggest city in the middle area of Taiwan with a population of about one million and the Taichung City Youth Life Conditions Survey is a government-funded project to collect information on the life circumstances and developmental needs of local youngsters. The present study utilized the public middle school subsample of the dataset. Public middle schools are chosen as the target of this study because of the issue of peer victimization is particularly salient during middle school years and most students in Taiwan attend public schools. In 2006, there were a total of 44,276 middle-school pupils in Taichung City, among which 87.46% were in public schools (Chang, 2006). The sample consisted of a total of 1,172 students from 12 local public middle schools (grades 7–9), in which 577 (49.2%) are boys and 595 (50.8%) are girls. A two-stage cluster sampling strategy was employed in which two schools were first randomly selected from each of the districts in Taichung City (except one district without middle schools). In each of the selected schools, one class from each grade was then chosen at random to participate. This procedure resulted in a sample of 36 classes. All the students in the classes were included in the study. They were evenly distributed in grades 7–9 (387, 376, and 409 respectively).

2.2. Procedure

Data were collected as part of the Taichung City Youth Life Conditions Survey supported by the Child Bureau, Ministry of Internal Affairs and conducted in accordance with its ethical guidelines. Anonymous questionnaires were administered by the homeroom teachers to students to fill out during a 50-minute session. Instructions were provided and respondents were free to withdraw at any time in the process without any cost. Confidentiality was ensured and the questionnaires were sealed in blank envelopes upon completion.

2.3. Measures

2.3.1. Physical/verbal bullying

Students’ engagement in a variety of school bullying behaviors during the last semester was assessed with a self-reported questionnaire. The items were adapted and modified from the scale of school violence in Taiwan (Chen & Astor, in press-a) as well as the California School Climate and Safety Survey (CSCSS) (Furlong et al., 2005). A 5-point likert scale was provided (never, 1–2 times, 3–4 times, 5–6 times, 7 times or more). The measure of physical bullying consists of three items including “You hit other students”, “You kick other students”, and “You hurt other students with dangerous objects or tools” (Cronbach alpha = .72). Verbal bullying includes two items as “You verbally insult other students” and “You threaten other students” (Cronbach alpha = .50). The original CSCSS was found to have adequate validity (Furlong et al., 2005) and a back-translation procedure was employed to ensure expression accuracy in Chinese.

2.3.2. Depression

Student’s depression was assessed using the Brief Symptom Rating Scale (BSRS). 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 5-point scale (never–very severe). The items are grouped into 10 subscales such as phobia, depression, and obsession. For the present study, the depression subscale with 7 items was utilized. Example items include “having thoughts of suicide”, “to lose interest in ordinary things” and “to feel hopeless for the future”. One study showed that the 2-week test–retest reliability of the subscales of BSRS on 144 7th grade respondents was all above .80 (Lee, Lee, Lin, & Lue, 1990), and its internal consistency was high based on the current sample (α = 0.87). BSRS was shown to be a valid screening tool and its scores were found highly correlated with the parental form of the Symptom Check List-90-R (SCL-90-R) among medical populations for each symptom dimension (Lee et al., 1990).

2.3.3. Delinquency

Students were asked whether they had engaged in 6 kinds of common delinquent behaviors (smoking, drinking, truancy, getting into fights, stealing, and running away) during the last year. The scores on the 6 items were summed up to create an aggregate measure of student’s delinquent behaviors (α = 0.64).

2.3.4. Gender

Information on student’s gender was obtained from the first part of the survey questionnaire that inquired as to the respondent’s demographics. Female was coded as 0 and male was coded as 1.

2.3.5. Teacher support/teacher maltreatment

The two teacher practice variables were measured using items revised from the California School Climate and Safety Survey. Eight items were used to assess teacher support including “I feel that teachers often hold unreasonable requirement for me” and “My teachers always try to help me when I am in trouble”. A 5-point likert scale was provided (never, 1–2 times, 3–4 times, 5–6 times, 7 times or more). The scores of negative items were reversed and an aggregate score was created by summing up scores on the 8 items (α = 0.91). Teacher maltreatment, on the other hand, was measured by 4 items assessing physical assault and verbal harassment by teachers (α = 0.69). Exemplar items include “School teachers hit me” and “School teachers insult me.”

2.3.6. School size/pupil–teacher ratio

In the present study, school size was defined as the total number of students in school and the pupil–teacher ratio was calculated as the number of students divided by the total number of teachers employed in that school. The calculation of student–teacher ratio includes students and teachers outside the study frame but within the same school. It is basically a school-level measure for the sufficiency of personnel resource, which indicates the average number of students to be taken care of per teacher. These data were publicly accessible information and can be obtained from the official online database of the Ministry of Education, which has a high accuracy and is updated every semester.

2.4. Data analysis

Hierarchical linear modeling (HLM) was employed as the major analytical approach of this study. HLM technique provides a powerful tool to analyze data that has hierarchical and nested structures, such as the individual and school-level variables here. HLM has significant advantages over traditional methods because ordinary regression models often violate a core statistical assumption that all observations should be independent of one another (Raudenbush & Bryk, 2002). In the present study, individual-level models were first computed to assess the relationships between verbal/physical bullying and student-level variables. One regression equation was calculated for each school with intercepts and slopes, which were then used in school-level analysis to further examine the influence of school organizational factors on student’s bullying. Following Raudenbush and Bryk (2002)’s recommendation, baseline models of verbal and physical bullying without individual- or school-level factors were first created. In the next step, gender, depression and delinquency were added to the models to assess the influences of individual-level variables. Finally, school organizational factors were included as predictors for the intercepts of the outcome variables (verbal and
physical bullying), and the individual-level and school-level models were specified as follows:

2.5. Individual-level model

Outcome variable = \( B_0 + B_1 \times (\text{gender}) + B_2 \times (\text{depression}) + B_3 \times (\text{delinquency}) + B_4 \times (\text{teacher support}) + B_5 \times (\text{teacher maltreatment}) + R \).

2.6. School-level model

\( B_0 = \text{G00} + \text{G01} \times (\text{school size}) + \text{G02} \times (\text{pupil–teacher ratio}) + U_0 \).

\( B_1 = \text{G10}; B_2 = \text{G20}; B_3 = \text{G30}; B_4 = \text{G40}; B_5 = \text{G50} \).

When examining complex multilevel effects, quantitative analysis often fails to obtain statistical significance due to a number of issues including small sample size. More liberal alpha levels such as .10 were suggested by previous researchers (e.g., Kenny & La Voie, 1985; McClelland & Judd, 1993). In the present study, the conventional Type 1 error rate (\( p < .05 \)) is used but marginally significant results are reported as well to provide a more complete picture of the relationships between variables.

3. Results

Table 1 lists the descriptive information of the research variables. 453 (38.6%) respondents reported ever engaged in at least one kind of physical bullying during the last semester and 621 (52.9%) reported ever verbally bullying others. A series of ANOVA were conducted to examine the gender and age differences. Results showed that boys reported significantly more physical and verbal bullying than girls did, \( (F(1, 1159) = 35.96, p < .01) \). 8th grade students reported significantly higher physical and verbal bullying involvement than 7th and 9th grade students, \( (F(2, 1158) = 7.70, p < .01) \). No significant difference was found between the latter two grades.

A baseline unconditional model of physical bullying was constructed and computed. The individual-level variance was 3.66 while the school-level variance was 0.13 (\( \text{df} = 11 \), chi square = 47.43, \( p < .001 \)). The Intraclass Correlation Coefficient (ICC) was 0.03, suggesting that the majority of variance was at the individual level. Predictors at individual- and school level were added respectively and Table 2 summarized the final HLM results for physical bullying. Most student-level variables were significantly associated with physical bullying. Being male, more depressive, higher delinquency, and less teacher support contributed to more bullying (coefficients were .43, .05, .68, and -.04, respectively). The negative effect of teacher maltreatment almost reached significant level (\( p = .08 \)). On the other hand, school size was negatively but non-significantly associated with two type of bullying while pupil–teacher ratio was also non-significantly associated with bullying.

Similarly, an unconditional model of verbal bullying was created. The individual-level variance was 2.69 while the school-level variance was 0.05 (\( \text{df} = 11 \), chi square = 32.65, \( p < .001 \)). The Intraclass Correlation Coefficient (ICC) was 0.02, again showing that the individual-level variance accounted for most of the variance in verbal bullying. Predictors at individual- and school level were added respectively and Table 3 summarized the final HLM results for verbal bullying. Individual-level predictors were significantly associated with the outcome variable. Male gender, depression, delinquency, and teacher maltreatment were positively associated with verbal bullying (coefficients were .50, .04, .42, .10, respectively). Teacher support was negatively associated with verbal bullying yet significantly contributed to bullying (coefficient = -.04). School size and pupil–teacher ratio were both non-significantly associated with verbal bullying.

4. Discussion

Utilizing a large-scale survey sample, this study investigated the prevalence of bullying among Taiwanese middle-school students and further examined effects of individual characteristics (gender, depression, and delinquency), teacher practice (support and maltreatment), and school organizational factors (school size and pupil–teacher ratio) on adolescents' verbal and physical bullying behaviors. Physical and verbal bullying were found prevalent in local middle schools, with nearly 40% of the students having ever bullied others, although frequent bullies were much fewer in number. Such results were comparable to studies in other regions of Asia and beyond (e.g., Ndeitei, Ongecha, Khasakhala, Syanda, Mutiso, Othieno, et al., 2007;
Past research has suggested that those harsh disciplinary methods contribute to both verbal and physical bullying in this study as well as in other prior studies (Andershed et al., 2001; Barker et al., 2008; Espelage & Holt, 2001; Kumpulainen et al., 2001; Jankauskiene et al., 2008). Most of the existing research in bullying and school violence is conducted in western countries, and few studies have actually compared risk factors between western and eastern contexts (for an exception see Chen & Astor, in press-b). The results of the present study provide preliminary evidence of the cross-cultural similarity in the individual-level factors of bullying and highlight the need to develop more well-designed international studies in which risk factors can be systematically examined (e.g., Astor, Benbenishty, & Marachi, 2006).

Despite the cultural differences that are often stressed by researchers, findings from empirical studies so far seem to highlight the similarity across cultures. For example, although the culture tradition in Taiwan values non-assertiveness and modesty, Taiwanese children who are shy and timid still have a high risk to be rejected and victimized by peers (Wei & Chen, 2009). At the same time, the cultural belief in hierarchical authority, academic achievement and respect for teachers (especially the homeroom teacher) have crucial impact on middle-school students' attachment to school, which highlights the significant role of teachers in the school adjustment of Taiwanese youth (Wei & Chen, in press). On the other hand, it is possible that teachers' negative attitudes and behaviors towards students increase their resentment and aggression, which in turn leads to escalated conflict and violence among classmates. Maybe it is not school size or class size per se but the climate and interpersonal relationships that have the stronger influence on students' aggressive behavior (Striøe, 2008).

The importance of school and class climate has been suggested by both western and eastern researchers. In discussing the dynamics of school bullying in Japan, Yoneyama and Naito (2003) described the features of Japanese schools as authoritarian, hierarchical with an alienating climate of learning and humiliating discipline techniques, which they regarded as contributing to students' abusive behavior towards peers. However, besides school- and classroom-level variables, the difference in bullying across schools may also be attributed to factors beyond school. For example, exposure to community violence can seriously impact adolescents' mental health and increase their risk of delinquency (McDonald & Richmond, 2008; Patchin, Huebner, McCluskey, Varano, & Bynum, 2006; Zinzow et al., 2009), and community disadvantages such as poverty have been found associated with youthful crime and problem behavior (Li, Nussbaum, & Richards, 2007). In fact, there are a growing number of youth programs that recognize the importance of community (e.g., Safe Schools/Healthy Students Initiative), and they employ a collaborative strategy for violence prevention (Massey, Boroughs, & Armstrong, 2007). These factors are highly relevant to the between school difference in bullying but were not examined in the present study, which constitutes a limitation that needs to be taken into consideration in future research and school violence prevention efforts.

One limitation of the study is the cross-sectional nature of the data, which makes it difficult to determine the direction of causality and other potential interactions between variables. For example, there may be reciprocal effects existing between students' misbehavior and teachers' maltreatment. Male students are consistently found to engage in more delinquency, and they are also the most vulnerable group for all types of teacher maltreatment (Benbenishty et al., 2002).

Harsh treatment by teachers may be actually a response to students' disruptive behavior, which in turn elicits more opposition and acting-out on the students' side. Nonetheless, the findings of this study add to a growing body of research on the individual and environmental factors of school bullying and provide useful insights for educators and social workers who work in school settings. They call for further research and intervention that consider both adolescents' developmental tasks and their school context to evaluate the stage-environment fit (Eccles, 2004). It is hoped that by accumulating knowledge on school bullying in Taiwan we can reduce student's aggression and create a healthy and caring school environment.

References


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