



Bullying victimization and conduct problems among high school students in Taiwan: Focus on fluid intelligence, mood symptoms and associated psychosocial adjustment



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ABSTRACT

Adolescents with a history of being bullied or conduct problem demonstrate substantial emotional disturbances as well as psychosocial maladjustment. Data from the Taiwan Education Panel Survey (TEPS), a nationwide longitudinal cohort database, were analyzed. A total of 32,390 high school students were included in this study. Data was collected via a self-report questionnaire. An estimated 9025 youth (31.8%) reported a history of bully victimization (4.0%), conduct problems (23.9%), or both (3.9%). The bullied and bullied/conduct groups demonstrated poorer fluid intelligence than the noninvolved group. Meanwhile, the bullied/conduct group had the highest depression–anxiety scores, the lowest fluid intelligence, and the poorest psychosocial adjustment. At two-year follow-up, the conduct and bullied/conduct groups reported lack of intention for further education. All three involved groups showed increased exposure to illicit drugs. These results provide evidence that school bullying and conduct problem are extensive public health threats that are worthy of prevention and intervention efforts.

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1. Introduction

Bullying is defined as repeated aggressive behavior with the intention to harm or disturb others. The aggressive behavior can be physical, psychological, sexual, or relational, and it usually involves a physical or psychological strength imbalance between the aggressor and the victim (Nansel et al., 2001; Olweus, 1994; Stein, Dukes, & Warren, 2007). Prevalence rates of bullying ranging from as low as 5–20% to as high as 50–65% have been reported in adolescents (Craig et al., 2009; de Moura, Cruz, & Quevedo Lde, 2011; Garcia Continente, Perez Gimenez, & Nebot Adell, 2010; Hazemba, Siziya, Muula, & Rudatsikira, 2008; Mc Guckin, Cummins, & Lewis, 2009; Pergolizzi et al., 2011; Qiao, Xing, Ji, & Zhang, 2009; Ramya & Kulkarni, 2011; Undheim & Sund, 2010; Wang, Iannotti, & Nansel, 2009). The prevalence rates of bullying and victimization vary widely among studies from different countries and with different samples, ages, time points, and subtypes of bullying behavior being investigated. Because of the considerable negative and long-term impacts of bullying on children's and adolescents' mental health and well-being, bullying issues have received unprecedented

attention from the general public, mass media, politicians, teachers, pediatricians, and mental health professionals.

Bullying victimization among adolescents has been reported to be associated with higher rates of emotional and behavioral problems and lower self-esteem (Undheim & Sund, 2010), lower academic achievement (Glew, Fan, Katon, Rivara, & Kernic, 2005) and poorer quality of life (Frisen & Bjarnelind, 2010) and the psychosocial maladaptation (Hawker & Boulton, 2000; Nansel, Craig, Overpeck, Saluja, & Ruan, 2004) in adulthood has been found.

Conduct problems have been shown in previous studies to be related to bully perpetration and victimization and to be a distinct entity mediating the underlying tendency of children to bully others (Kumpulainen, Räsänen, & Puura, 2001; Salmon, James, Cassidy, & Javaloyes, 2000; Viding, Simmonds, Petrides, & Frederickson, 2009; Wolke, Woods, Bloomfield, & Karstadt, 2000). As a result, since conduct problems are associated with bullying, we are interested in the influences of bullying victimization and conduct problems on the adolescent populations. Specifically, we would like to investigate the similarities and differences between those experiencing bullying victimization and those exhibiting conduct problems. Moreover, whether the adolescents with both bullying victimization and conduct problems demonstrate more difficulties than those with either factor alone remained unanswered at present.

Many previous studies in the fields of bullying victimization and conduct problems have focused on their associations with mood symptoms, psychosocial adjustment and substance abuse. Depressive

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symptoms are the most frequently associated mood symptoms. For instance, bullying victimization was linked with increased risks for depressive symptoms (Fekkes, Pijpers, & Verloove-Vanhorick, 2004; Fitzpatrick, Dulin, & Piko, 2010; Sansone & Sansone, 2008), and juvenile's disruptive and aggressive behavior were demonstrated to be associated with their depression (Bleiberg, 1991). Psychosocial adjustment in adolescents refers to a sense of self-control, emotional regulation, relationships with classmates, and school adjustment (Nansel et al., 2001, 2004). Bullying victimization and conduct problems could have negative impacts on psychosocial adjustment (Arseneault et al., 2006; Graham, Bellmore, & Mize, 2006). In terms of substance abuse, bullying victimization and conduct problems were shown to be related with heavier cigarette and alcohol use and also a higher risk of future illicit substance use (Kuo, Yang, Soong, & Chen, 2002; Tharp-Taylor, Haviland, & D'Amico, 2009). In recent years, methylenedioxymethamphetamine (MDMA) has become one of the most abused illicit drugs among adolescents in Taiwan (Chou, Ho, Chen, & Chen, 2006) and raised public concerns. MDMA has also become a frequently surveyed item among illicit substance use in questionnaires studying Taiwanese adolescents. The above findings pointed out the importance and necessity of studying the relationships between bullying victimization or conduct problems with mood symptoms, psychosocial adjustment and risk of substance use in adolescent populations.

In spite of previous studies demonstrating multiple negative influences related to bullying victimization and conduct problems among adolescents, only a few studies have focused on their associations with the adolescents' problem solving abilities. Fluid intelligence was defined as the capacity to think logically and solve problems in novel situation, independent of the acquired knowledge (Cattell, 1967). When quantifying fluid intelligence as an index and comparing the problem solving abilities among different groups, lower fluid intelligence scores were associated with more physical violence, both in the bullying victim and victimizer groups. Drug intake, especially cannabis, cocaine and inhalants and lower self-esteem were also associated with lower fluid intelligence. In addition, scores on the perceived mental health assessment were better when fluid intelligence scores were higher (Huepe et al., 2011).

Further education is one of the other less studied topics among the adolescents of bullying victimization or conduct problems. Children experiencing bullying victimization or conduct problems may be prone to isolation by peers. Rejected children may have negative attitudes towards school and possess higher risks to drop out from school (Zettergren, 2003). Dropping out from school may be detrimental to future developments as previous studies showed evidence supporting that higher education is positively linked to less psychosocial distress (Brannlund & Hammarstrom, 2014). Understanding whether the adolescents have intentions and plans for further education may be helpful to assess their long-term prognosis.

In Taiwan, the incidence of school bullying has increased abruptly in recent years. The Taiwan Education Panel Survey (TEPS) is a nationwide longitudinal database released by the Center for Survey Research, Academia Sinica, in Taiwan (Chang, 2005). It provides a good opportunity to study school bullying in a nationally representative sample of Taiwanese youth in the seventh and eleventh grades. The first and second wave TEPS datasets of 2001 and 2003 were selected for analysis in the present descriptive study because they included the largest sample sizes and also could provide the basis for further longitudinal study when incorporating the third and fourth wave datasets collected in 2005 and 2007.

2. Hypothesis

The current study aimed to elucidate (A) the prevalence of bullying victimization and conduct problems; (B) differences in prevalence by sex, grade, area, and school type; (C) the associations of victimization

and conduct problems with mood symptoms (the depression–anxiety symptoms) and psychosocial adjustment; (D) the associations of victimization and conduct problems with fluid intelligence level; and (E) the associations of victimization and conduct problems with intentions for additional education and exposure to illicit drugs measured two years later. The hypothesis of this present study is individuals with problems of victimization, deviant conduct or both would exhibit more depression–anxiety symptoms, lower fluid intelligence, less motivation for further education and more possibility of illicit drugs exposure than non-involved individuals.

3. Methods

3.1. Study population

Our data were extracted from the database of the Taiwan Education Panel Survey (TEPS). TEPS is a nationwide cohort longitudinal study conducted among junior high and high school students in Taiwan. The database was released in 2005 for public use by the Center for Survey Research, Academia Sinica. All data were provided to researchers without identifying information. TEPS was designed to collect longitudinal educational data in Taiwan by means of four waves of questionnaires administered from 2001 through 2007. In the present study, the 2001 (wave one) and 2003 (wave two) datasets were used for analysis. The source population of TEPS consisted of students in seventh- and eleventh-grade classes in all public and private schools, excluding schools with an enrollment of fewer than 10 students. The TEPS survey included data from a random selection of 1244 seventh grade classes and 1020 eleventh grade classes, with random enrollment of at least 15 students from each class. The sample was stratified by metropolitan statistical area status (urban, suburban, or rural) with probability proportional to the size of the primary sampling units. Post-stratification weights were developed to adjust minority sampling to be consistent with the population. As a result, the sample represents the Taiwanese student population with regard to gender, public or private school status, and area status.

The TEPS questionnaires, presented to the students in Mandarin, in 2001 contained 261 questions about family, school activities, leisure activities, and demographic variables. Tests about verbal, scientific, mathematical, and intelligence-related abilities were conducted. In addition, an analytical ability test was conducted with each student to evaluate respondents' problem-solving and inferential abilities, which were considered as acceptable substitute for measures of fluid intelligence, the analytical ability test was designed to be unrelated to the school curriculum and unspecialized. All students completed the questionnaire and analytical ability test in their classroom during school hours. A response rate of 99% was achieved, and the sample included 20,055 seventh graders and 19,051 eleventh graders in 2001 and 19,088 seventh graders and 18,383 eleventh graders in 2003. Two studies using TEPS questionnaires had been published. One revealed relation between parental illness and children's function, the other found factors with longitudinal effect on adolescents' academic achievements (Chen, 2014; Liu, Cheng, Chen, & Wu, 2009).

3.2. Sample and data selection

In the current study, students who missed any of the questions involving bullying victimization, misconduct behaviors, alcohol use or smoking, or emotional symptoms on the wave-one questionnaire were excluded, yielding a final study sample of 32,390 students (15,914 male) for analysis, Mean age = 14.19 (SD = 2.05). Of the 32,390 students for whom wave-one data were available, 31,626 had been followed in wave two in 2003 and had completed the wave-two TEPS questionnaire concerning further education and illicit drug exposure.

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