

Child–Mother Agreement on Experiences of School Bullying Involvement in Children With ADHD

Journal of Attention Disorders
2021, Vol. 25(1) 44–52
© The Author(s) 2018
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/1087054718765658
journals.sagepub.com/home/jad



Huei-Fan Hu¹, Chia-Nan Yen², Yu-Yu Wu³, Ray C. Hsiao⁴,
Cheng-Fang Yen^{5,6}, and Chung-Ping Cheng⁷

Abstract

Objective: To examine the levels of agreement between the reports of 452 children and their mothers on children's experiences of bullying involvement at school and investigate the factors influencing the levels of agreement in children with ADHD. **Method:** The levels of agreement between children's and mothers' reports were examined. The influence of age, sex, ADHD symptoms, and psychiatric comorbidities on the levels of agreement was also examined. **Results:** The results indicated low agreement on the experiences of bullying involvement in child–mother ADHD dyads. Age and hyperactivity-impulsivity, oppositional, depressive, and anxiety symptoms significantly influenced the levels of agreement on the victimization of physical bullying. Age significantly influenced the levels of agreement on the perpetration of physical bullying. **Conclusion:** Multiple sources of information are required when clinicians assess the experiences of bullying involvement at school in children with ADHD. The factors influencing the levels of agreement should be considered. (*J. of Att. Dis.* 2021; 25(1) 44-52)

Keywords

ADHD, bullying, cross-informant agreement

Introduction

School bullying involvement in childhood can result in severe mental and physical health problems. Bullying victimization in children increases the risks of depression (Nansel et al., 2004), anxiety (Kaltiala-Heino, Rimpelä, Rantanen, & Rimpelä, 2000), suicidality (Kim & Leventhal, 2008), low self-esteem (Olweus, 1993), behavioral problems (Gini, 2008), and physical discomfort (Nansel et al., 2004). Bullying perpetration in children is also associated with depression (Nansel et al., 2004), suicidality (Kim & Leventhal, 2008), and alcohol use disorder (Ferrett et al., 2011). Clinical and epidemiological studies have found that bullying involvement is prevalent in children with ADHD (Chou, Liu, Yang, Yen, & Hu, 2018; Holmberg & Hjern, 2008; Yang et al., 2013). Therefore, early identification of bullying involvement at school is warranted for intervention in children with ADHD.

Self-report is the most frequently used method for identifying the existence of bullying at school. The advantages of self-reported bullying involvement at school are that data are easily obtained in clinical and educational settings and low recall bias due to strong and long-lasting negative feelings evoked by bullying involvement (Ladd & Kochenderfer-Ladd, 2002). However, bullying perpetration, particularly

relational bullying perpetration, is commonly underdetected by the self-reporting method (Seals & Young, 2003). Thus, research indicated that a multi-informant composite measure yields more accurate estimates of relational bullying than any single-informant measure does (Ladd & Kochenderfer-Ladd,

¹Department of Psychiatry, Tainan Municipal Hospital, Tainan, Taiwan

²Department of Psychiatry, Tainan Hospital, Ministry of Health and Welfare, Executive Yuan, Tainan, Taiwan

³YuNing Psychiatric Clinic, Taiwan

⁴Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, and Department of Psychiatry, Children's Hospital, Seattle, WA

⁵Department of Psychiatry, School of Medicine, and Graduate Institute of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

⁶Department of Psychiatry, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan

⁷Department of Psychology, National Cheng Kung University, Taiwan

Corresponding Authors:

Cheng-Fang Yen, Department of Psychiatry, Kaohsiung Medical University Hospital, No. 100, Tzyou 1st Road, Kaohsiung 807, Taiwan.
Email: chfaye@cc.kmu.edu.tw, p03132006@gmail.com

Chung-Ping Cheng, Department of Psychology, National Cheng Kung University, No.1, University Road, Tainan City 701, Taiwan.
Email: cpcheng.psy@gmail.com

2002). However, no study has examined the level of child–mother agreement on the experiences of school bullying involvement in children with ADHD.

Several reasons support the necessity for parents to comprehensively understand their children's bullying involvement at school. First, children with ADHD may have poor relationships with their peers and teachers (Bondü & Esser, 2015; Mrug et al., 2012), which may further increase their difficulties in obtaining assistance to manage bullying. Parents of children with ADHD should be aware of what their children encounter in school and help them to develop strategies to manage bullying victimization. Second, understanding children's bullying involvement at school is the first step for parents to work with teachers to develop strategies to change school bullying involvement. Third, poor family relationships are positively associated with bullying involvement (Spriggs, Iannotti, Nansel, & Haynie, 2007). Moreover, children with ADHD and their families experience various difficulties in supporting, interacting, and communicating with each other (Gau, 2007). Awareness of children's bullying involvement at school may be the first step for parents to change their interaction with children. Moreover, negative parent–child interactions are prevalent in children with ADHD (Keown & Woodward, 2002). Parents of children with ADHD may attribute their children's bullying victimization or perpetration to ADHD and oppositional symptoms. Therefore, parents may neglect their children's true experiences of bullying involvement and postpone providing children with ADHD the necessary assistance to resolve bullying problems.

Understanding the factors for predicting low levels of child–mother agreement on school bullying involvement is essential for the early detection of children's school bullying involvement. ADHD symptoms (Kawabata, Tseng, & Gau, 2012), young age (Chou et al., 2018), comorbid oppositional defiant disorder (ODD)/conduct disorder (CD; Fite, Evans, Cooley, & Rubens, 2014; Holmberg & Hjern, 2008; Humphrey, Storch, & Geffken, 2007), autism spectrum disorder (ASD) (Chou et al., 2018; Montes & Halterman, 2007), and depression and anxiety (Hu, Chou, & Yen, 2016) are associated with severe bullying involvement in children with ADHD. However, whether these factors are also associated with the level of child–mother agreement on the experiences of school bullying involvement in children with ADHD has not been examined.

The present study examined the levels of child–mother agreement on the experiences of verbal, social, and physical bullying victimization and perpetration at school and investigated the factors predicting low levels of child–mother agreement on school bullying involvement in children with ADHD. We hypothesized that various levels of child–mother agreement correspond to different types of school bullying involvement in children with ADHD. Because of

the lack of previous studies, we temporally hypothesized that young age, comorbid CD, ASD, and severe ADHD, oppositional defiance, depression, and anxiety symptoms are associated with low child–mother agreement on school bullying involvement in children with ADHD.

Method

Participants

Participants were recruited from the child psychiatric outpatient clinics of two medical centers in Kaohsiung and Taoyuan, Taiwan. Children aged 6 to 18 years who were diagnosed with ADHD on the basis of the diagnostic criteria in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) between November 2010 and October 2012 were invited to participate in the study. ADHD was diagnosed on the basis of multiple data sources, including (a) an interview with a child psychiatrist, (b) clinical observation of the participant's behavior, and (c) history provided by the mother and the results of the short version of the Swanson, Nolan, and Pelham Scale, Version IV (SNAP-IV)—Chinese version (Gau, Shang, & Liu, 2008; Swanson et al., 2001). This study excluded children who exhibited intellectual disability, bipolar disorder, difficulty communicating, or any cognitive deficit that prevented the children from understanding the study purpose or completing the questionnaires. In total, 553 children diagnosed with ADHD and their mothers were invited to participate. Among them, 452 (81.7%) agreed. No difference in sex ($\chi^2 = .957, p = .328$) or age ($t = -.337, p = .736$) was found between children who participated and refused to participate in this study.

All participants and their mothers received psychoeducation about the etiology, symptom presentation, and treatment strategies of ADHD. In addition, the mothers received counseling about the skills required to manage children's ADHD symptoms and how to communicate with their children. The intervention used to treat ADHD symptoms was medication in 386 participants (85.4%) and group cognitive-behavioral psychotherapy in 284 participants (62.8%). This study was approved by the Institutional Review Board of Kaohsiung Medical University Hospital.

Measures

School bullying involvement. The Chinese version of the School Bullying Experience Questionnaire (C-SBEQ) was used to evaluate participants' involvement in school bullying in the previous 1 month. The questionnaire has 16 items that are rated on a 4-point Likert-type scale ranging from 0 (*never*) to 3 (*all the time*) (Kim, Koh, & Noh, 2001; Yen,

Kim, Tang, Wu, & Cheng, 2012). This scale is composed of four 4-item subscales that evaluate the victimization of verbal and relational bullying (Items 1-4, including social exclusion, being called a mean nickname, and being spoken ill of), victimization of physical bullying (Items 5-8, including being beaten up, being forced to do work, and having money, school supplies, and snacks taken away), perpetration of verbal and relational bullying (Items 9-12), and perpetration of physical bullying and snatching belongings away (Items 13-16). Higher total scores for the subscales of the C-SBEQ indicate more severe bullying involvement. The psychometrics of the C-SBEQ in Taiwanese adolescents are reported elsewhere (Yen et al., 2012), and the results support that the C-SBEQ has high construct validity, congruent validity, internal consistency reliability, and 1-month test-retest reliability. In the present study, both the child and the mother rated the level of the child's involvement in school bullying on the C-SBEQ in the previous 1 month.

ADHD and oppositional symptoms. The short version of the SNAP-IV-Chinese version was used to assess the severity of the mother-reported *DSM-IV-TR*-derived inattention, hyperactivity-impulsivity, and oppositional symptoms in the month preceding the present study (Gau et al., 2008; Swanson et al., 2001). Each item is rated on a 4-point Likert-type scale, ranging from 0 (*not at all*) to 3 (*very much*). A higher total score for the subscales indicates higher severity of mother-reported inattention, hyperactivity-impulsivity, and oppositional symptoms. In this study, the Cronbach's alpha of the three subscales ranged from .87 to .91.

Depression. The self-reported Children's Depression Inventory-Taiwanese version (CDI-TW), which consists of 27 items, was used to assess the children's depressive symptoms in the month preceding the study (Chen, 2008; Kovacs, 1992). Children rate themselves on the basis of how they feel and think, with each statement being rated from 0 to 2 (Chen, 2008; Kovacs, 1992). A higher total score on the CDI-TW represents more severe depressive symptoms. The psychometrics of the CDI-TW in Taiwanese youths are reported elsewhere (Chen, 2008). In the present study, the Cronbach's alpha for the CDI-TW was .83.

Anxiety. The self-reported Multidimensional Anxiety Scale for Children-Taiwanese version (MASC-T) was used to evaluate the children's anxiety symptoms (March, 1997; Yen, Yang, Wu, Hsu, & Cheng, 2010). The MASC-T evaluates the level of anxiety symptoms in children and includes 39 items rated on a 4-point Likert-type scale ranging from 0 (*never true about me*) to 3 (*often true about me*). Higher scores for the scales indicate more severe anxiety symptoms. The psychometrics of the MASC-T are reported

elsewhere (Yen et al., 2010), and the results suggest that MASC-T has high construct validity, congruent validity, internal consistency reliability, and 1-month test-retest reliability.

Psychiatric comorbidity. CD and ASDs including autistic disorder, Asperger's disorder, and other ASDs not specified in the *DSM-IV-TR* were assessed through clinical interviews and chart reviews. This study excluded children diagnosed with ASD who exhibited difficulty communicating or low intelligence. The full-scale intelligence quotient was determined using the Wechsler Intelligence Scale for Children, Fourth Edition-Chinese version; a score below 70 indicates low intelligence.

Statistical Analyses

Data on sex are expressed as percentages, and data on psychiatric comorbidity, age, bullying involvement, ADHD, oppositional symptoms, and depressive and anxiety symptoms are expressed as means with standard deviation (*SD*). We examined the level of agreement between child- and mother-reported bullying involvement by using intraclass correlation (ICC). According to Cicchetti (1994), child-mother agreement is poor, fair, good, and excellent if the ICC ranges from .00 to .39, .40 to .59, .60 to .74, and .75 to 1.00, respectively.

We also examined differences in the level of child-mother agreement on bullying involvement in various groups of children with ADHD according to age, sex, severities of ADHD, oppositional symptoms, depressive and anxiety symptoms, and psychiatric comorbidity by Fisher's transformation as Haggard (1958) suggested.

Results

Table 1 presents the age, sex, bullying involvement, ADHD, oppositional symptoms, depressive and anxiety symptoms, and psychiatric comorbidity of participants. Overall, 92 (20.4%) participants were girls and 360 (79.6%) were boys. Mean age was 11.1 years (*SD* = 2.7 years).

Table 2 lists the levels of agreement of child-mother ratings on bullying involvement. The results indicated that child-mother agreement on victimization of verbal and relational bullying was fair (ICC = .402). However, child-mother agreement on victimization and perpetration of physical bullying (ICC = .332 and .129, respectively) and perpetration of verbal and relational bullying (ICC = .243) was poor.

We divided the participants into various groups according to their age, sex, bullying involvement, ADHD, oppositional symptoms, depressive and anxiety symptoms, and psychiatric comorbidity. The continuous variables were transformed into dichotomous variables based on their medians. Table 3

Table 1. Age, Sex, Bullying Involvement, ADHD, Depression and Anxiety Symptoms, and Psychiatric Comorbidity (*N* = 452).

	<i>n</i> (%)	<i>M</i> (<i>SD</i>)
Sex		
Girls	92 (20.4)	
Boys	360 (79.6)	
Age (years)		11.1 (2.7)
Involvement in school bullying		
Victimization of verbal and relational bullying		
Child-reported		2.6 (2.7)
Mother-reported		3.7 (3.3)
Victimization of physical bullying		
Child-reported		1.0 (1.7)
Mother-reported		1.2 (1.6)
Perpetration of verbal and relational bullying		
Child-reported		1.8 (2.1)
Mother-reported		2.7 (2.4)
Perpetration of physical bullying		
Child-reported		0.6 (1.1)
Mother-reported		1.0 (1.7)
SNAP-IV		
Inattention symptoms		15.7 (5.5)
Hyperactivity-impulsivity symptoms		12.1 (6.7)
Oppositional symptoms		12.3 (6.1)
Depression on the CDI-TW		15.0 (7.4)
Anxiety symptoms on the MASC-T		35.1 (17.5)
Conduct disorder	15 (3.3)	
Autism spectrum disorder	23 (5.1)	

Note. SNAP-IV = the short version of the Swanson, Nolan, and Pelham, Version IV; CDI-TW = Children's Depression Inventory–Taiwanese version; MASC-T = Multidimensional Anxiety Scale for Children–Taiwanese version.

Table 2. Child–Mother Agreement Ratings on Bullying Involvement (*N* = 452).

	Intraclass correlation
Victimization of verbal and relational bullying	.402***
Victimization of physical bullying	.332***
Perpetration of verbal and relational bullying	.243***
Perpetration of physical bullying	.129**

p* < .01. *p* < .001.

displays the differences in levels of child–mother agreement on bullying involvement in various groups of children with ADHD. The results indicated that child–mother agreement on victimization of physical bullying was low when the children were young, had high hyperactivity/impulsivity symptoms, and had low oppositional and depressive and anxiety symptoms. Child–mother agreement on perpetration of physical bullying was low when the children were young.

No factor examined in the present study was significantly associated with victimization or perpetration of verbal and relational bullying.

Because of the effect of age in child–mother agreement on victimization and perpetration of physical bullying, we further divided the participants into two groups according to their age. Table 4 shows the differences in levels of agreement of child–mother ratings on victimization and perpetration of physical bullying in various groups in the young and old age groups. The numbers of participants with ASD and CD were small; thus, we did not include these two variables in the analysis. Because of multiple comparisons, a *p* value less than .0083 (.05/6) was considered statistically significant. The results indicated that in the young age group, child–mother agreement on victimization of physical bullying was low when the children had high hyperactivity/impulsivity symptoms. In the old age group, child–mother agreement on victimization of physical bullying was low when the children had low depressive symptoms. In the young and old age groups, none of the factors were significantly associated with the level of child–mother agreement on perpetration of physical bullying.

Discussion

The results of the present study demonstrated that child–mother agreement on victimization and perpetration of school bullying in children with ADHD was generally poor. Child–mother agreement on victimization and perpetration of physical bullying was low when the children were young. Moreover, child–mother agreement on victimization of physical bullying was low when the children had high hyperactivity-impulsivity symptoms and low oppositional and depressive and anxiety symptoms. Hyperactivity/impulsivity and depressive symptoms exerted various effects on the levels of child–mother agreement across different age groups.

Research found that many children do not agree with the perspective of adults on whether some behaviors should be regarded as bullying (Boulton, Bucci, & Hawker, 1999). ADHD may aggravate disagreement of bullying involvement between children and mothers. Children with ADHD may develop low self-esteem and become sensitive to peers' comments after experiencing long-term negative judgment from others because of their ADHD symptoms (Kurman, Rothschild-Yakar, Angel, & Katz, 2015). They may interpret peers' verbal expression, behaviors, and attitudes negatively and thus report themselves as victims of bullying. Furthermore, the classmates and teachers of children with ADHD may interpret children's hyperactivity/impulsivity at school as bullying behaviors and report them to the children's mothers. By contrast, the children with ADHD may deny that they have intent to bully others. Children with ADHD and their families may also experience difficulties in interacting and communicating with each other (Gau,

Table 3. Differences in Agreement of Child–Mother Ratings on Bullying Involvement in Various Groups of Children With ADHD.

Variables	Groups			Intraclass correlation				
	n1-n2	n1	n2	ICC1	ICC2	difference	z	p
Victimization of verbal and relational bullying								
Sex	Female-male	92	360	0.405	0.401	0.003	0.033	.974
Conduct disorder	No-yes	437	15	0.400	0.401	−0.001	−0.004	.997
ASD	No-yes	429	23	0.414	0.197	0.217	1.051	.293
Age	Low-high	253	199	0.336	0.486	−0.149	−1.892	.058
Inattention	Low-high	245	207	0.389	0.391	−0.001	−0.019	.985
Hyperactivity	Low-high	244	208	0.426	0.366	0.061	0.759	.448
Oppositional	Low-high	226	226	0.362	0.399	−0.037	−0.456	.648
Depression	Low-high	249	203	0.340	0.353	−0.013	−0.157	.875
Anxiety	Low-high	230	222	0.344	0.398	−0.054	−0.664	.507
Victimization of physical bullying								
Sex	Female-male	92	360	0.300	0.336	−0.036	−0.335	.738
Conduct disorder	No-yes	437	15	0.329	0.520	−0.192	−0.804	.421
ASD	No-yes	429	23	0.339	0.156	0.183	0.853	.393
Age	Low-high	253	199	0.246	0.493	−0.247	−3.031	.002
Inattention	Low-high	245	207	0.243	0.404	−0.16	−1.89	.059
Hyperactivity	Low-high	244	208	0.484	0.212	0.272	3.291	.001
Oppositional	Low-high	226	226	0.219	0.403	−0.184	−2.158	.031
Depression	Low-high	249	203	0.086	0.400	−0.314	−3.545	.000
Anxiety	Low-high	230	222	0.152	0.422	−0.27	−3.134	.002
Perpetration of verbal and relational bullying								
Sex	Female-male	92	360	0.199	0.251	−0.051	−0.457	.648
Conduct disorder	No-yes	437	15	0.211	0.390	−0.178	−0.672	.501
ASD	No-yes	429	23	0.238	0.342	−0.104	−0.498	.619
Age	Low-high	253	199	0.146	0.293	−0.147	−1.622	.105
Inattention	Low-high	245	207	0.194	0.291	−0.096	−1.077	.281
Hyperactivity	Low-high	244	208	0.267	0.227	0.040	0.444	.657
Oppositional	Low-high	226	226	0.241	0.244	−0.003	−0.035	.972
Depression	Low-high	249	203	0.218	0.236	−0.018	−0.199	.842
Anxiety	Low-high	230	222	0.231	0.270	−0.040	−0.448	.654
Perpetration of physical bullying								
Sex	Female-male	92	360	0.181	0.115	0.065	0.564	.573
Conduct disorder	No-yes	437	15	0.111	0.034	0.076	0.262	.793
ASD	No-yes	429	23	0.121	0.276	−0.155	−0.708	.479
Age	Low-high	253	199	0.069	0.255	−0.186	−2.014	.044
Inattention	Low-high	245	207	0.158	0.096	0.062	0.664	.507
Hyperactivity	Low-high	244	208	0.206	0.052	0.154	1.653	.098
Oppositional	Low-high	226	226	0.119	0.114	0.005	0.053	.958
Depression	Low-high	249	203	0.119	0.144	−0.025	−0.267	.790
Anxiety	Low-high	230	222	0.101	0.188	−0.087	−0.933	.351

Note. Median: Age = 11; inattention = 16; hyperactivity-impulsivity = 12; oppositional defiant = 12; depression = 14; anxiety = 33. ICC = intraclass correlation; ASD = autism spectrum disorder.

2007). Such difficulties may further hinder bullied children from seeking help from their mothers, reciprocally hindering mothers from detecting children's involvement in bullying. Moreover, children with ADHD who perpetuate bullying tend to underreport their bullying behaviors because of fear of being punished (Seals & Young, 2003). Particularly, children with ADHD may learn to cover up

their bullying perpetration because of past experiences of being punished for ADHD symptoms and uncooperative behaviors. Given the crucial role of children's parents in the prevention of and intervention for bullying involvement, the results of the present study indicate that enhancing parents' knowledge of ADHD children's bullying involvement at school is an essential step to address bullying. Moreover,

Table 4. Differences in Agreement of Child–Mother Ratings on Bullying Involvement in Various Groups of Children With ADHD: Stratified by Age.

		Age = low					Age = high				
	n1-n2 and n3-n4	n1	n2	ICC1	ICC2	p	n3	n4	ICC3	ICC4	p
Victimization of physical bullying											
Sex	Female-male	51	202	0.139	0.265	.410	41	158	0.561	0.476	.519
Inattention	Low-high	132	121	0.138	0.351	.073	113	86	0.481	0.491	.931
Hyperactivity	Low-high	110	143	0.458	0.114	.003	134	65	0.517	0.48	.754
Oppositional	Low-high	126	127	0.052	0.358	.011	100	99	0.475	0.498	.830
Depression	Low-high	146	107	0.067	0.334	.029	103	96	0.111	0.519	.001
Anxiety	Low-high	135	118	0.074	0.37	.014	95	104	0.335	0.524	.104
Perpetration of physical bullying											
Sex	Female-male	51	202	0.156	0.048	.496	41	158	0.411	0.239	.285
Inattention	Low-high	132	121	0.106	0.037	.590	113	86	0.274	0.216	.671
Hyperactivity	Low-high	110	143	0.139	0.012	.320	134	65	0.334	0.144	.189
Oppositional	Low-high	126	127	0.043	0.087	.730	100	99	0.267	0.200	.618
Depression	Low-high	146	107	0.113	0.029	.512	103	96	0.136	0.290	.259
Anxiety	Low-high	135	118	0.032	0.178	.244	95	104	0.347	0.193	.248

Note. ICC = intraclass correlation.

to collect information on ADHD children's bullying involvement as extensive as possible, clinicians should consider both children's and parents' reports.

In this study, child–mother agreement on victimization and perpetration of physical bullying was low when the children with ADHD were young. According to the developmental theory of aggression by Björkqvist, Osterman, and Kaukiainen (1992), younger age groups tend to use direct forms of aggression more, particularly physical and psychological or verbal forms, because their social skills have not sufficiently developed for using more subtle forms of aggression, such as gossiping, ostracizing, and spreading rumors. In addition, young children may have difficulties in self-reporting bullying involvement because of age-related limitations of cognitive abilities. Given that younger children have not yet acquired the necessary social skills to effectively manage bullying incidents (Smith, Madsen, & Moody, 1999), parents of children with ADHD should monitor the possibility of school bullying involvement in children, particularly in young children, so that the parents can assist them in changing bullying involvement.

The present study found that child–mother agreement on victimization of physical bullying was low when the children had high hyperactivity-impulsivity or low oppositional symptoms. Hyperactivity-impulsivity and oppositional symptoms are frequently proposed risk factors for bullying involvement in children with ADHD (Kawabata et al., 2012). Hyperactivity-impulsivity and opposition result in irritating, socially inappropriate, and aversive behaviors during interactions with peers (Kawabata et al., 2012). Given that hyperactivity-impulsivity and opposition

behavior of children with ADHD are easily detected by others, it is reasonable to hypothesize that because of their high hyperactivity-impulsivity and opposition, children with ADHD may become the targets of school staff's attention. Therefore, ADHD children's bullying involvement may be easier to detect and subsequently report to children's parents. However, the results of the present study support a positive association between the levels of child–mother agreement and oppositional symptoms, but not between the levels of child–mother agreement and hyperactivity-impulsivity symptoms. One possible explanation is that mothers may attribute peers' physical bullying as a normal reaction to ADHD children's hyperactivity-impulsivity and may not interpret such bullying as bullying behaviors. However, the association between the levels of child–mother agreement and hyperactivity-impulsivity warrants further research.

The present study found that child–mother agreement on victimization of physical bullying was low when the children had low depressive and anxiety symptoms. Bullying involvement is significantly associated with depression and anxiety in children with ADHD (Yen et al., 2014). Research has also found that depression (Spencer, Biederman, & Wilens, 1996) and anxiety (Biederman et al., 1994) are prevalent in children with ADHD. Because they are internalized behaviors, children's depression and anxiety are less likely to be easily detected by parents than disruptive behaviors. However, high depression and anxiety, regardless of whether they are related to bullying involvement, may compromise children's daily routines and well-being, which may assist parents in the earlier detection of children's bullying involvement. Nevertheless, additional

studies should investigate why hyperactivity-impulsivity, opposition, and depression and anxiety are significantly associated with child–mother agreement on physical bullying victimization, but not with other forms of bullying involvement.

Comorbid ASD is one of predictive factors of bullying victimization in children with ADHD (Chou et al., 2016). Given that children with ASD may have deficits in interpreting social cues, it is questionable whether children with ASD are aware of their involvement in bullying. However, research has found that the results of ASD children's self-reported bullying involvement are similar to peer-reported results (van Roekel, Scholte, & Didden, 2010). The results of the present study did not identify a significant role of comorbid ASD in the level of child–mother agreement on bullying involvement.

The present study is the first one to examine the child–mother agreement on school bullying involvement and the factors predicting the levels of child–mother agreement in children with ADHD. The results of the present study provided original contributions to the field of study on bullying involvement in children with ADHD. However, this study has some limitations that should be addressed. First, in the present study, no information on children's bullying involvement was obtained from peers and teachers. Thus, it limits the possibility to compare the level of agreement among various informants other than children and mothers. Second, children who exhibited intellectual disability or any cognitive deficit that prevented the children from understanding the study purpose or completing the questionnaires were excluded. However, research has found that a low intelligence quotient increases the risk of chronic victimization among children (Bowes et al., 2013). Additional studies should examine child–mother agreement on bullying involvement in ADHD children with intellectual disability or cognitive deficit. Third, the participants of this study were a clinical sample of children with ADHD. Therefore, the results of the present study might not be generalized to children with ADHD in the community who have never received treatment.

Conclusion

The study results indicate that child–mother agreement on victimization and perpetration of school bullying in children with ADHD is generally low. Multiple sources of information are required when clinicians assessed the experiences of bullying involvement at school in children with ADHD. Age and clinical psychopathology, including hyperactivity-impulsivity, opposition, and depression and anxiety, may influence the levels of child–mother agreement on bullying involvement. Mental health and educational professionals should consider these factors when assessing bullying involvement and developing strategies to

assist children and parents in managing ADHD children's bullying involvement.

Authors' Note

Huei-Fan Hu and Chia-Nan Yen have contributed equally to this study.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was supported by grants NSC 98-2410H-037-005-MY3 and 99-2314-B-037-028-MY2 awarded by the National Science Council, Taiwan (ROC) and the grant KMUH 100-0R48 awarded by Kaohsiung Medical University Hospital.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Biederman, J., Faraone, S. V., Spencer, T., Wilens, T., Mick, E., & Lapey, K. A. (1994). Gender differences in a sample of adults with attention deficit hyperactivity disorder. *Psychiatry Research*, 53, 13-29.
- Björkqvist, K., Osterman, K., & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In K. Björkqvist & P. Niemela (Eds.), *Of mice and women: Aspects of female aggression*. San Diego, CA: Academic Press. 51-64.
- Bondü, R., & Esser, G. (2015). Justice and rejection sensitivity in children and adolescents with ADHD symptoms. *European Child & Adolescent Psychiatry*, 24, 185-198. doi:10.1007/s00787-014-0560-9
- Boulton, M., Bucci, E., & Hawker, D. (1999). Swedish and English secondary school pupils' attitudes towards, and conceptions of, bullying: Concurrent links with bully/victim involvement. *Scandinavian Journal of Psychology*, 40, 277-284.
- Bowes, L., Maughan, B., Ball, H., Shakoor, S., Ouellet-Morin, I., Caspi, A., & Arseneault, L. (2013). Chronic bullying victimization across school transitions: The role of genetic and environmental influences. *Development and Psychopathology*, 25, 333-346. doi:10.1017/S0954579412001095
- Chen, S. H. (2008). *Manual of the Children Depressive Inventory-Taiwan version*. Taipei, Taiwan: Psychological Publishing. [In Chinese]
- Chou, W. J., Liu, T. L., Yang, P., Yen, C. F., & Hu, H. F. (2018). Bullying victimization and perpetration and their correlates in adolescents clinically diagnosed with attention-deficit/hyperactivity disorder. *Journal of Attention Disorders*, 22, 25-34. doi:10.1177/1087054714558874
- Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, 6, 284-290.

- Ferrett, H. L., Cuzen, N. L., Thomas, K. G., Carey, P. D., Stein, D. J., Finn, P. R., & Fein, G. (2011). Characterization of South African adolescents with alcohol use disorders but without psychiatric or polysubstance comorbidity. *Alcoholism, Clinical and Experimental Research*, 35, 1705-1715. doi:10.1111/j.1530-0277.2011.01517.x
- Fite, P. J., Evans, S. C., Cooley, J. L., & Rubens, S. L. (2014). Further evaluation of associations between attention-deficit/hyperactivity and oppositional defiant disorder symptoms and bullying-victimization in adolescence. *Child Psychiatry & Human Development*, 45, 32-41. doi:10.1007/s10578-013-0376-8
- Gau, S. S. (2007). Parental and family factors for attention-deficit hyperactivity disorder in Taiwanese children. *The Australian and New Zealand Journal of Psychiatry*, 41, 688-696.
- Gau, S. S., Shang, C. Y., & Liu, S. K. (2008). Psychometric properties of the Chinese version of the Swanson, Nolan, and Pelham, version IV scale—Parent form. *International Journal of Methods in Psychiatric Research*, 17, 35-44. doi:10.1002/mpr.237
- Gini, G. (2008). Associations between bullying behaviour, psychosomatic complaints, emotional and behavioural problems. *Journal of Paediatrics and Child Health*, 44, 492-497.
- Haggard, E. A. (1958). *Intraclass correlation and the analysis of variance*. New York, NY: Dryden Press.
- Holmberg, K., & Hjern, A. (2008). Bullying and attention-deficit hyperactivity disorder in 10-year-olds in a Swedish community. *Developmental Medicine and Child Neurology*, 50, 134-138. doi:10.1111/j.1469-8749.2007.02019.x
- Hu, H. F., Chou, W. J., & Yen, C. F. (2016). Anxiety and depression among adolescents with attention-deficit/hyperactivity disorder: The roles of behavioral temperamental traits, comorbid autism spectrum disorder, and bullying involvement. *The Kaohsiung Journal of Medical Sciences*, 32, 103-109. doi:10.1016/j.kjms.2016.01.002
- Humphrey, J. L., Storch, E. A., & Geffken, G. R. (2007). Peer victimization in children with attention-deficit hyperactivity disorder. *Journal of Child Health Care*, 11, 248-260. doi:10.1177/1367493507079571
- Kaltiala-Heino, R., Rimpelä, M., Rantanen, P., & Rimpelä, A. (2000). Bullying at school—An indicator of adolescents at risk for mental disorders. *Journal of Adolescence*, 23, 661-674.
- Kawabata, Y., Tseng, W. L., & Gau, S. S. (2012). Symptoms of attention-deficit/hyperactivity disorder and social and school adjustment: The moderating roles of age and parenting. *Journal of Abnormal Child Psychology*, 40, 177-188. doi:10.1007/s10802-011-9556-9
- Keown, L. J., & Woodward, L. J. (2002). Early parent-child relations and family functioning of preschool boys with pervasive hyperactivity. *Journal of Abnormal Child Psychology*, 30, 541-553.
- Kim, Y. S., Koh, Y. J., & Noh, J. (2001). Development of Korean-Peer Nomination Inventory (K-PNI): An inventory to evaluate school bullying. *Journal of Korean Neuropsychiatric Association*, 40, 867-875.
- Kim, Y. S., & Leventhal, B. (2008). Bullying and suicide. A review. *International Journal of Adolescent Medicine and Health*, 20, 133-154.
- Kovacs, M. (1992). *Children's Depression Inventory*. North Tonawanda, NY: Multi-Health Systems.
- Kurman, J., Rothschild-Yakar, L., Angel, R., & Katz, M. (2015). How good am I? Implicit and explicit self-esteem as a function of perceived parenting styles among children with ADHD. *Journal of Attention Disorders*. Advance online publication. doi:10.1177/1087054715569599
- Ladd, G. W., & Kochenderfer-Ladd, B. J. (2002). Identifying victims of peer aggression from early to middle childhood: Analysis of cross-informant data for concordance, estimation of relational adjustment, prevalence of victimization, and characteristics of identified victims. *Psychological Assessment*, 14, 74-96.
- March, J. S. (1997). *Multidimensional Anxiety Scale for Children*. North Tonawanda, NY: Multi-Health Systems.
- Montes, G., & Halterman, J. S. (2007). Bullying among children with autism and the influence of comorbidity with ADHD: A population-based study. *Ambulatory Pediatrics*, 7, 253-257.
- Mrug, S., Molina, B. S., Hoza, B., Gerdes, A. C., Hinshaw, S. P., Hechtman, L., & Arnold, L. E. (2012). Peer rejection and friendships in children with attention-deficit/hyperactivity disorder: Contributions to long-term outcomes. *Journal of Abnormal Child Psychology*, 40, 1013-1026. doi:10.1007/s10802-012-9610-2
- Nansel, T. R., Craig, W., Overpeck, M. D., Saluja, G., & Ruan, W. J., & Health Behaviour in School-Aged Children Bullying Analyses Working Group. (2004). Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archives of Pediatrics & Adolescent Medicine*, 158, 730-736.
- Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Cambridge, MA: Blackwell.
- Seals, D., & Young, J. (2003). Bullying and victimization: Prevalence and relationship to gender, grade level, ethnicity, self-esteem, and depression. *Adolescence*, 38, 735-747.
- Smith, P. K., Madsen, K. C., & Moody, J. C. (1999). What causes the age decline in reports of being bullied at school? Towards a developmental analysis of risks of being bullied. *Educational Research*, 41, 267-285.
- Spencer, T., Biederman, J., & Wilens, T. (1996). Attention-deficit/hyperactivity disorder and comorbidity. *Pediatric Clinics of North America*, 46, 915-927.
- Spriggs, A. L., Iannotti, R. J., Nansel, T. R., & Haynie, D. L. (2007). Adolescent bullying involvement and perceived family, peer and school relations: Commonalities and differences across race/ethnicity. *Journal of Adolescent Health*, 41, 283-293.
- Swanson, J. M., Kraemer, H. C., Hinshaw, S. P., Arnold, L. E., Conners, C. K., Abikoff, H. B., . . . Wu, M. (2001). Clinical relevance of the primary findings of the MTA: Success rates based on severity of ADHD and ODD symptoms at the end of treatment. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40, 168-179. doi:10.1097/00004583-200102000-00011
- van Roekel, E., Scholte, R. H. J., & Didden, R. (2010). Bullying among adolescents with autism spectrum disorders: Prevalence and perception. *Journal of Autism and*

- Developmental Disorders*, 40, 63-73. doi:10.1007/s10803-009-0832-2
- Yang, S.-J., Stewart, R., Kim, J.-M., Kim, S.-W., Shin, I.-S., Dewey, M. E., & Yoon, J.-S. (2013). Differences in predictors of traditional and cyber-bullying: A 2-year longitudinal study in Korean school children. *European Child & Adolescent Psychiatry*, 22, 309-318. doi:10.1007/s00787-012-0374-6
- Yen, C. F., Kim, Y. S., Tang, T. C., Wu, Y. Y., & Cheng, C.-P. (2012). Factor structure, reliability, and validity of the Chinese version of the School Bullying Experience Questionnaire. *The Kaohsiung Journal of Medical Sciences*, 28, 500-505. doi:10.1016/j.kjms.2012.04.008
- Yen, C. F., Yang, P., Wang, P. W., Lin, H. C., Liu, T. L., Wu, Y. Y., & Tang, T. C. (2014). Association between school bullying levels/types and mental health problems among Taiwanese adolescents. *Comprehensive Psychiatry*, 55, 405-413. doi:10.1016/j.comppsy.2013.06.001
- Yen, C. F., Yang, P., Wu, Y. Y., Hsu, F. C., & Cheng, C. P. (2010). Factor structure, reliability and validity of the Taiwanese version of the Multidimensional Anxiety Scale for Children. *Child Psychiatry & Human Development*, 41, 342-352. doi:10.1007/s10578-010-0172-7

Author Biographies

Huei-Fan Hu is a child psychiatrist and the chairman of the Department of Psychiatry, Tainan Municipal Hospital, Tainan, Taiwan.

Chia-Nan Yen is the visiting staff member at Department of Psychiatry, Tainan Hospital, Ministry of Health and Welfare, Executive Yuan, Tainan, Taiwan.

Yu-Yu Wu is a child psychiatrist and the dean of YuNing Psychiatric Clinic, Taiwan.

Ray C. Hsiao is a child psychiatrist at the Department of Psychiatry, Children's Hospital, Seattle, WA. He is also the assistant professor in the Department of Psychiatry and Behavioral Sciences, University of Washington.

Cheng-Fang Yen is a child psychiatrists and visiting staff member at the Department of Psychiatry, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan. He is also the professor in the Department of Psychiatry, Kaohsiung Medical University, Taiwan.

Chung-Ping Cheng is the professor at the Department of Psychology, National Cheng Kung University, Taiwan. He is an expert in the field of statistics.