Article

Children With Disability Are More at Risk of Violence Victimization: Evidence From a Study of School-Aged Chinese Children

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Abstract

Although research tends to focus on whether children with disability are more at risk of violence victimization, conclusive evidence on the association, especially in non-Western settings, is lacking. Using a large and representative sample of school-aged children in Hong Kong (*N* = 5,841, aged 9-18 years), this study aims to fill the research gap by providing reliable estimates of the prevalence of disability and the direct and indirect experiences of violence among children with disability. The study also compares the prevalence of child maltreatment, parental intimate partner violence (IPV), and in-law conflict to explore the factors related to the association between disability and violence victimization. The prevalence of disability among children was about 6%. Children with disability were more likely to report victimization than those without disability: 32% to 60% of the former had experienced child maltreatment, and 12% to 46% of them had witnessed IPV between parents or in-law conflict. The results of a logistic regression showed that disability increased the risk of lifetime physical maltreatment by 1.6 times. Furthermore, low levels of parental education and paternal unemployment were risk factors for lifetime child maltreatment. The risk of child maltreatment could have

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an almost sixfold increase when the child had also witnessed other types of family violence. Possible explanations and implications of the findings are discussed.

Keywords
disability, violence, children, child maltreatment, partner violence

Disability affects a large proportion of people around the world. According to the World Health Organization (WHO; 2013), more than one billion individuals, around 15% of the world's population, are living with some form of disability or impairment. Definitions of disability can be exceptionally diverse. The WHO's (2011b) World Report on Disability conceptualizes it as lying "on a continuum from minor difficulties in functioning to major impacts on a person's life" (p. 22), whereas the International Classification of Functioning, Disability, and Health (ICF) proposes a broader view of the concept that includes both permanent and transient experience of impairment, activity limitations, and restrictions resulting from the interaction between health and personal or environmental factors (WHO, 2014). In a practical sense, individuals with disability may encompass those who exhibit a variety of physical, sensory, cognitive, developmental, learning, intellectual, emotional, and behavioral disorders (Kairys et al., 2001; Turner, Vanderminden, Finkelhor, Hamby, & Shattuck, 2011).

It is estimated that approximately 5% of children worldwide are affected by disability or impairment to some degree (WHO, 2011a). Estimates of prevalence vary somewhat. For example, the United Nations Children's Fund (UNICEF) estimates the number of children (persons aged below 18) with disability at around 150 million (UNICEF, 2006), while other literature proposes rates ranging from less than 1% to 13% (Maulik & Darmstadt, 2007). Such variation may be explicable by the differences in definitions and assessment tools employed in the different studies (WHO, 2011b). It has also been suggested that these figures might be underestimated as a result of the use of proxy informants (such as parents or caretakers) who might fail to report the actual experiences of children (Chamie, 1994).

Violence Against Individuals With Disability

Violent victimization has long been identified as a significant health problem for individuals with disabilities (Horner-Johnson & Drum, 2006). Most literature on violence and disability indicates that individuals with disabilities have a higher risk of victimization than their nondisabled counterparts (see, for example, Brownridge, 2009; Hodgins, Alderton, Cree, Aboud, & Mak,

2007; Silver, Arseneault, Langley, Caspi, & Moffitt, 2005). Such an association is also present among children. Although the prevalence varies with the definitions and assessment tools used across studies, research consistently shows that children with disability are more likely to be victimized than those without (see, for example, Rand & Harrell, 2009; Reiter, Bryen, & Shachar, 2007; Sullivan, 2009). Sullivan and Knutson's (2000) large-scale school-based study in the United States conducted between 1994 and 1995 shows that children with disability were 3 times more likely to be victims of violence than children without. In a recent meta-analysis, Jones and colleagues (2012) present evidence supporting the link between violence victimization and disabilities among children. Combining the findings of 16 studies involving more than 14,700 children with disability, they present pooled prevalence estimates of 27% for any type, 20% for physical, and 14% for sexual violence. Overall, disability heightens the risk of violence victimization three- to fourfold (Jones et al., 2012).

Recent research has begun to focus on the impact of different types of disabilities. Specifically, researchers have explored whether or not different types are associated with specific forms of victimization. Although these findings are preliminary in nature, some support for the proposal has been obtained. For example, physical abuse is more likely to be reported by children with learning or language disabilities, sensory impairments, and attention problems (Knutson, Johnson, & Sullivan, 2004; Kvam, 2000; Oland & Shaw, 2005). However, children with emotional problems and internalizing disorders including depression and anxiety are more at risk from sexual abuse (see, for example, Finkelhor, 2008; Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004). Other research demonstrates a link between peer bullying and internalizing disorders and externalizing conduct problems (Finnegan, Hodges, & Perry, 1998; Oland & Shaw, 2005). A recent national study conducted by Turner et al. (2011) also shows that association with victimization varies across different types of disabilities. In particular, internalizing emotional problems elevates the risk of child maltreatment by caregivers and sexual victimization by noncaregivers, and attention deficit/hyperactivity disorder (ADHD) and learning disorders increase the risk of property crime. However, in contrast with earlier work, the results of Turner et al. do not suggest a link between physical disabilities and victimization. Again, these inconsistencies may be due to variance in how disability has been defined and operationalized. Without a universal definition of the concept and assessment tool, it may not be possible to draw conclusions about whether violence and disability are genuinely linked, and whether such associations vary across different types of disabilities.

Factors Associated With the Victimization of Children With Disability

Some work has attempted to investigate the effect of demographic characteristics on violence against children with disability, but no consensus has yet been reached on whether they influence the association between victimization and disabilities. For example, Sullivan and Knutson (2000) suggest that children with disability are more likely to be exposed to violence at younger ages, but Hershkowitz, Lamb, and Horowitz (2007) find that age has no significant effect on this association. Evidence for the effect of gender is also inconclusive. There is evidence that boys with disability are more likely to be victimized (Sullivan & Knutson, 2000), but other findings suggest that girls with disability are more likely to report such victimization (Briggs, 2006; Kvam, 2000). To make matters even more complicated, some studies show that the effect of gender interacts with the type of victimization. For example, Hershkowitz et al. demonstrate that girls with disability are more likely to experience sexual assault, whereas boys with disability are more likely to be victims of other forms of violence.

Some parent-related factors may also contribute to the increased risk of victimization among children with disability. Parents or caregivers of such children tend to experience more stress than other parents (Vidyasagar & Koshy, 2010). This may arise from the frustration they encounter in taking care of their children, as well as their generally disadvantaged environment, which has been suggested as a common factor for disability and violence (WHO, 2011b). Such a high level of stress may influence parents' perception of their relationship with the child, causing them to be less satisfied with it (Tarabek, 2011). A poor parent–child relationship may, in turn, heighten a child's risk of maltreatment (Sawyer, Di Loreto, Flood, DiLillo, & Hansen, 2002). Furthermore, some symptoms of internalizing or externalizing disorders, which are two forms of disability commonly found among children, may be irritating to parents or caregivers, and hence may contribute to their use of violent behaviors (Turner et al., 2011).

The Current Study

Reliable estimates of the scope of this issue are crucial for the development of effective intervention programs to prevent children with disability from being exposed to violence, as well as to improve their health and quality of life (Jones et al., 2012). However, due to the variations of the definitions of disability and the samples used in previous research, there is no consensus on the association between disability and violence against children. In addition

to this issue, there is a lack of reliable estimates for non-Western countries. This study set out to fill these research gaps by investigating the prevalence of disability among Chinese children studying in Hong Kong. It did so by comparing their rates of violence victimization with those without disability, and exploring the factors associated with disability and violence. A large and representative sample of school-aged children was used, and the experiences of violence were categorized as direct (maltreatment by parents) and indirect (witnessing parental intimate partner violence [IPV] and in-law conflict between parents and grandparents). With reference to previous findings, it was hypothesized that (a) the prevalence of child maltreatment and witnessing parental IPV and in-law conflict would be higher among children with disability; and (b) having disability would be a risk factor for child maltreatment, as would be younger age, gender, and living in conditions of socio-demographic disadvantages, including poverty, single parenthood, and parental unemployment. It is noteworthy that, in this study, it was hypothesized that being a boy would increase one's risk of child maltreatment. Although the current findings on gender have been somewhat mixed in Western studies (e.g., Briggs, 2006; Hershkowitz et al., 2007; Sullivan & Knutson, 2000), a male dominance in violence victimization was hypothesized based on the existing literature on child victimization among non-Western children in general (e.g., Chan, 2013; Chan, Yan, Brownridge, & Ip, 2013).

Method

Participants and Study Design

A representative sample of school-aged children (generally 9-18 years, equivalent to Grades 4-12 in the United States) in Hong Kong was surveyed. Children with fewer than 6 years of formal education, as well as those who were not mentally able to provide consent, were excluded to avoid unreliable responses due to inability to understand the survey items. To avoid the potentially confounding effect of the differences in children's demographic background between different types and geographical districts of schools, a two-stage stratified random sampling procedure was adopted. At the first stage, we sampled 28 primary, 30 secondary, and 15 special schools from various geographical districts in Hong Kong. Of these 73 schools, 44 agreed to participate, giving a consent rate of 60% at the school level. When the characteristics of participating schools (n = 44) were compared with those of nonparticipating schools (n = 29), no significant difference was found in terms of size, type (i.e., primary, secondary, or special), academic ranking, or

geographical distribution. At the second stage, one class was randomly sampled from each grade (Primary 4-Secondary 7) of the selected schools. All students in the selected classes were then invited to participate.

According to the Education Bureau in Hong Kong, special education services are provided for children with special education needs (SEN), including visual impairment, hearing impairment, physical disability, intellectual disability, and other types of disabilities (Education Bureau, 2014b). In the academic year 2013-2014, there were 60 special schools serving 7,904 students in Hong Kong (Education Bureau, 2014a). Students with SEN are first assessed by professionals at Education Bureau. Children with severe SEN or multiple disabilities are placed in special schools for intensive support services while other students with SEN are placed in ordinary primary or secondary schools. Under the policy of integrated education, it is not rare for children with minor disability to enroll in ordinary schools. These schools would be informed of the status of disability of the students. In this study, children with disability who were studying in ordinary schools were screened out by their teachers and were invited to participate in this study. This group of respondents was categorized into the group of "children with disability" for analysis.

Participation was on a voluntary basis. All procedures in this study were approved by the institutional review board of the University of Hong Kong. Informed consent was given by each student and one of his or her parents before the administration of the survey. Approval was also obtained from school principals who were sanctioned by parents to decide to participate in the study. Children were told that they could omit an answer to any question or end the survey at any time if they wished. Anonymity and confidentiality were ensured and no identifiable information retained. In the ordinary schools, the children were given a structured survey which they completed by themselves in a safe and quiet corner in the classroom. In the special schools, children with special needs were given relevant assistance to help complete the survey, such as computer-aided survey tools or a face-to-face interview conducted by a trained interviewer. In both settings, children were encouraged to ask for help when they encountered a problem. Trained survey assistants were available when needed. After completion of the survey, children were given a card containing information about services for victims of family violence.

A total of 5,841 students were successfully surveyed, representing a response rate of 99%. The final sample comprised 5,468 children from ordinary schools (1,506 primary and 3,962 secondary students) and 373 children from special schools.

Measures

The survey contained 12 questions on child maltreatment, parental IPV, and in-law conflict between parents and grandparents. The purpose of using a low number of questions in this study, instead of other detailed and validated scales, was to minimize respondent burden given the children's disabilities. All responses were collected using a 3-point scale including *never*, *happened in my lifetime*, and *happened in the year before the study*.

Child maltreatment. Children's experiences of three aspects of child maltreatment (psychological violence, corporal punishment, and physical violence) were assessed using six items: (a) psychological violence by father, (b) psychological violence by mother, (c) corporal punishment by father, (d) corporal punishment by mother, (e) physical violence by father, and (f) physical violence by mother. To guide the children, lists of examples of these specific types of child maltreatment were created with reference to the concepts used in the Parent–Child Conflict Tactics Scale (CTSPC; Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) and provided in the survey. Examples of psychological violence included insulting, shouting, or yelling; destroying things belonging to the child; calling the child dumb (or other similar names); threatening to send the child away; and not providing meals. Examples of corporal punishment included spanking a child on the bottom and slapping a child on his or her hand, arm, or leg. However, examples of physical violence included more severe harm such as throwing things at a child; pushing or shoving; hitting, choking, burning, or scalding on purpose; and using a knife or some other sharp weapon.

Witnessed parental IPV and in-law conflict between parents and grandparents. Child-witnessed parental IPV was assessed using four items: (a) father's use of physical violence against mother, (b) mother's use of physical violence against father, (c) father's use of psychological violence against mother, and (d) mother's use of psychological violence against father. Examples of physical and psychological IPV were adopted from the Revised Conflict Tactics Scale (CTS-2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Experiences of witnessing in-law conflict between parents and grandparents were recorded using two items modified from previous studies (Chan, Brownridge, Tiwari, Fong, & Leung, 2008; Chan et al., 2009).

Demographic characteristics. Children's characteristics including gender, age, education level, number of siblings, and parents' characteristics including marital status, employment status, educational attainment, and

whether the family was receiving public financial assistance were also recorded.

Statistical Analyses

Demographic characteristics as well as the lifetime and preceding-year prevalence of child maltreatment, parental IPV, and in-law conflict between parents and grandparents were computed. Comparisons of violence experiences between children in special and ordinary schools were also performed using chi-square tests. To examine the associations between disability status, child maltreatment, witnessed parental IPV, in-law conflict, and demographic characteristics, a structured two-phase logistic regression analysis was performed. Independent variables were divided into two groups: (a) demographic factors, including disability status, gender, age, and the presence of siblings; and (b) witnessed family violence, including parental IPV and in-law conflict between parents and grandparents. In Phase 1, an individual logistic regression on child maltreatment was performed with each demographic characteristic after adjustment for the remaining characteristics. Multicollinearity was checked and no indication found. In Phase 2, child maltreatment was regressed on each type of witnessed family violence in separate models, with adjustment for all demographic factors and the remaining types of witnessed family violence.

In all analyses, missing data were handled with listwise deletion. The goodness-of-fit of the regression models was tested with the Hosmer and Lemeshow (H-L) test. A p value of less than .05 was considered statistically significant, and all statistical analyses were performed using SPSS Version 17.

Results

Sample Characteristics

Table 1 summarizes the demographic characteristics of the 5,841 respondents. Overall, 6.4% (n = 373) exhibited some form of disability. About 53.2% were boys, and 78.5% had at least one sibling. Significant demographic differences were found between children with disability and those without disability. In particular, a higher proportion of boys (with disability = 81.8%, without disability = 51.2%, $p < .001$), single parents (with disability = 36.7%, without disability = 13.1%, $p < .001$), unemployed mothers (with disability = 8.7%, without disability = 5.0%, $p < .01$), and families receiving public financial assistance (with disability = 34.8%, without disability = 9.0%, $p < .001$) were present in the group with disability.

Table 1. Demographic Characteristics of the Children Respondents and Their Parents.

Characteristics	Total (*N* = 5,841)	Children With Disability (*n* = 373)	Children Without Disability (*n* = 5,468)	χ^{2a}
Child characteristics				
Gender				131.02***
Male	53.2%	81.8%	51.2%	
Female	46.8%	18.2%	48.8%	
Missing	0.2%	0%	0.2%	
Age (in years)				5.63
9-11	25.1%	20.4%	25.5%	
12-14	35.9%	36.2%	35.8%	
15 or above	39.0%	43.4%	38.7%	
Missing	1.1%	0.2%	0.9%	
Level of education[b]				56.96***
Primary 4-6	28.2%	37.5%	27.6%	
Secondary 1-3	37.9%	45.6%	37.4%	
Secondary 4-5	23.3%	14.5%	23.9%	
Secondary 6-7	10.6%	2.4%	11.1%	
Missing	0	0	0	
Having sibling(s)	78.5%	78.7%	78.4%	0.02
Missing	0.7%	1.6%	0.6%	
Parent and family characteristics				
Parents' marital status				164.75***
Married	84.2%	60.9%	85.8%	
Divorced/separated/widowed/ single	14.6%	36.7%	13.1%	
Missing	1.2%	2.4%	1.1%	
Father unemployed	4.4%	5.7%	4.3%	1.14
Missing (did not know)	20.3%	34.3%	19.3%	
Mother unemployed	5.2%	8.7%	5.0%	7.37**
Missing (did not know)	12.7%	25.7%	11.8%	
Father's educational attainment				41.61***
Primary level or lower	12.5%	16.6%	12.2%	
Secondary level	43.8%	33.0%	44.5%	
Tertiary or above	10.6%	5.6%	10.9%	
Missing (did not know)	33.1%	44.8%	32.3%	
Mother's educational attainment				35.68***
Primary level or lower	14.5%	18.2%	14.2%	

Secondary level	48.0%	35.4%	48.8%	
Tertiary or above	7.3%	5.1%	7.4%	
Missing (did not know)	30.3%	41.3%	29.5%	
Receiving public financial assistance	10.4%	34.8%	9.0%	188.05***
Missing (did not know)	13.6%	43.4%	33.5%	

[a]Comparison between children with disability and children without disability.
[b]Primary 4-6 is equivalent to Grades 4 to 6 in the United States, Secondary 1-3 is equivalent to Grades 7 to 9, Secondary 4-5 is equivalent to Grades 10 and 11, and Secondary 6-7 is equivalent to Grade 12.
*p < .05. **p < .01. ***p < .001.

Experiences of Child Maltreatment, Parental IPV, and In-Law Conflict

Overall, 48.6% of children had experienced psychological violence by either parent, 58.4% had experienced corporal punishment, and 32.2% had experienced physical maltreatment. In terms of family violence, 45.8% had witnessed psychological IPV between parents, 19.1% had witnessed physical IPV, and 31.0% had witnessed in-law conflict between parents and grandparents. The preceding-year prevalence was 28.4% for psychological child maltreatment, 20.9% for corporal punishment, 13.9% for physical child maltreatment, 27.9% for witnessed psychological IPV, 7.6% for witnessed physical IPV, and 14.1% for witnessed in-law conflict. Detailed information about the prevalence rates is shown in Table 2.

The first hypothesis of this study was supported by the current results; that children with disability were more likely than their counterparts who were without disability to report experience of maltreatment and witnessing family violence. Significant differences appeared in lifetime psychological maltreatment by father, corporal punishment by father, and physical maltreatment by both parents (all ps < .05). Similar trends were observed in the lifetime experiences of witnessing family violence. A higher proportion of children with disability reported having witnessed psychological IPV by father, physical IPV by both parents, and in-law conflict by both parents (all ps < .05). However, the differences in preceding-year experiences of violence were not as obvious. Only those involving physical maltreatment by father and witnessed physical IPV by both parents were significant (all ps < .05).

Associations Between Disability, Demographics, and Violence Experiences

Table 3 shows the results of the two-phase logistic regression. Overall, the results provided supportive evidence to the second hypothesis of this study. Disability status was a risk factor for lifetime physical child maltreatment (adjusted odds ratio [aOR] = 1.57, 95% confidence interval [CI] = [1.08, 2.28],

Table 2. Comparison of Lifetime and Preceding-Year Prevalence of CM, Parental IPV, and In-law Conflict Between Children With and Without Disability.

	Lifetime Prevalence				Preceding-Year Prevalence			
Type of Violence	Total (N = 5,841)	Children With Disability (n = 373)	Children Without Disability (n = 5,468)	χ^2 Significance	Total (N = 5,841)	Children With Disability (n = 373)	Children Without Disability (n = 5,468)	χ^2 Significance
CM								
Psychological CM	48.6%	53.7%	48.3%	*	28.4%	26.4%	28.5%	
Father as perpetrator	38.7%	47.4%	38.1%	**	20.9%	20.5%	20.9%	
Mother as perpetrator	39.3%	39.6%	39.3%		21.0%	17.1%	21.3%	
Corporal punishment	58.4%	59.8%	58.3%		20.9%	19.7%	21.0%	
Father as perpetrator	42.9%	49.0%	42.5%	*	13.5%	14.2%	13.5%	
Mother as perpetrator	50.5%	48.3%	50.7%		16.6%	14.2%	16.7%	
Physical CM	32.2%	46.0%	31.3%	***	13.9%	17.4%	13.7%	*
Father as perpetrator	22.2%	35.7%	21.3%	***	8.9%	12.8%	8.7%	*
Mother as perpetrator	24.6%	32.1%	24.2%	**	9.3%	10.4%	9.3%	
Witnessed parental IPV								
Psychological IPV	45.8%	51.7%	45.5%	*	27.9%	27.7%	27.9%	
Father as perpetrator	40.6%	46.1%	40.3%	*	23.4%	22.7%	23.4%	
Mother as perpetrator	35.9%	38.3%	35.8%		21.9%	21.2%	21.9%	
Physical IPV	19.1%	34.3%	18.1%	***	7.6%	12.1%	7.3%	**
Father as perpetrator	16.7%	31.1%	15.7%	***	6.1%	10.2%	5.8%	**
Mother as perpetrator	11.9%	22.5%	11.2%	***	4.8%	7.5%	4.6%	*
Witnessed in-law conflict between parents and grandparents	31.0%	37.3%	30.6%	**	14.1%	15.5%	14.1%	
Father as perpetrator	20.9%	26.5%	20.5%	**	8.3%	9.9%	8.2%	
Mother as perpetrator	22.5%	28.4%	22.2%	**	9.8%	11.4%	9.7%	

Note. CM = child maltreatment; IPV = intimate partner violence.
*p < .05. **p < .01. ***p < .001.

$p < .05$), but not psychological maltreatment or corporal punishment. Being a boy and being younger (aged 9-11) were protective factors for psychological maltreatment (aOR = 0.85 and 0.70, respectively, both *p*s < .05). However, being younger also increased the likelihood of corporal punishment (aOR = 1.25, 95% CI = [1.01, 1.55], $p < .05$). Children with an unemployed father were more at risk for psychological maltreatment (aOR = 1.56, 95% CI = [1.05, 2.34], $p < .05$), and those with less well-educated fathers were more likely to experience physical violence (aOR = 1.36-1.44, both *p*s < .05). Having a mother with little education was, however, associated with higher risk of all three types of maltreatment (aOR = 1.44-1.62, all *p*s < .05).

Experiences of witnessing parental IPV and in-law conflict were both positively associated with all three aspects of child maltreatment (aOR = 1.64-6.23, both *p*s < .001). In particular, the likelihood of physical maltreatment increased more than threefold when the child also witnessed physical IPV between parents, and the risk of psychological maltreatment went up sixfold when there was psychological IPV between parents.

Discussion

Using a large and representative sample of school-aged children in Hong Kong, this study has generated reliable estimates of the prevalence of disability and violence against children with disability, and provided evidence for the effect of disability on the increase in the risk of child victimization. The prevalence of disability among children in this study was 6.4%, slightly higher than the rate of 5% as reported by the WHO (2011a). Yet, as noted in some previous work, 5% may be an underestimate given the dependence on proxy reporting, which might not be accurate in describing children's experiences. The prevalence of 6.4% in this study is believed to be reliable, as all these children had been thoroughly assessed by professionals before being assigned to special schools in Hong Kong. In fact, this figure lies approximately in the center of the range of prevalence rates reported in one literature review (Maulik & Darmstadt, 2007).

The overall lifetime prevalence of child maltreatment ranged from 32.2% to 58.4%, with corporal punishment being the most frequent type of maltreatment and physical violence as the least frequent one. These figures are comparable with the rates reported by existing research in Asian countries, as well as those shown in Western studies (Lampe, 2002; Straus et al., 1998; WHO, 2005). For example, the prevalence rate of corporal punishment was 58.4% in this study. With the use of the same scale (i.e., the CTS), the prevalence of corporal punishment was found to be 51% in a Chinese sample and 62% in a Korean sample (Kim et al., 2000).

Table 3. Associations of Lifetime CM With Disability Status, Witnessing of Parental IPV, Witnessing of In-Law Conflict, and Other Demographic Characteristics.

	Adjusted Odds Ratio (95% CI)		
Variable	Psychological CM	Corporal Punishment	Physical CM
Phase 1[a]			
With disability	0.95 [0.66, 1.38]	1.00 [0.69, 1.46]	1.57* [1.08, 2.28]
Male gender	0.85* [0.74, 0.99]	0.98 [0.85, 1.15]	1.14 [0.97, 1.34]
Age (in years)			
9-11	0.70*** [0.57, 0.87]	1.25* [1.01, 1.55]	1.20 [0.96, 1.49]
12-14	0.86 [0.72, 1.01]	1.06 [0.89, 1.59]	1.01 [0.84, 1.21]
Having sibling(s)	0.95 [0.79, 1.14]	0.88 [0.73, 1.06]	1.02 [0.83, 1.24]
Parents' marital status			
Divorced/separated	1.00 [0.55, 1.82]	1.08 [0.59, 1.97]	0.78 [0.42, 1.45]
Widowed/single	1.45 [0.74, 2.85]	1.41 [0.71, 2.78]	1.25 [0.63, 2.51]
Father unemployed	1.56* [1.05, 2.34]	1.35 [0.89, 2.05]	1.11 [0.75, 1.66]
Mother unemployed	0.87 [0.60, 1.27]	1.08 [0.73, 1.59]	1.17 [0.80, 1.71]
Father's education[b]			
Primary or below	1.23 [0.91, 1.67]	1.17 [0.86, 1.59]	1.44* [1.03, 2.03]
Secondary	1.11 [0.87, 1.42]	1.15 [0.90, 1.47]	1.36* [1.02, 1.80]
Mother's education[b]			
Primary or below	1.44* [1.02, 2.03]	1.59** [1.12, 2.25]	1.62* [1.09, 2.40]
Secondary	1.25 [0.93, 1.67]	1.31 [0.98, 1.76]	1.39 [0.98, 1.97]
Receiving public financial assistance	1.36 [0.99, 1.88]	1.12 [0.80, 1.55]	1.16 [0.84, 1.60]
Model statistics			
n	2,846	2,859	2,868
Nagelkerke's R^2	2.3%	1.5%	2.8%
Phase 2[a]			
Witnessed physical IPV between parents	2.15*** [1.63, 2.82]	2.17*** [1.66, 2.84]	3.38*** [2.69, 4.26]
Witnessed psychological IPV	6.23*** [5.19, 7.47]	2.32*** [1.95, 2.76]	2.33*** [1.92, 2.83]

between parents			
Witnessed in-law conflict between parents and grandparents	1.64*** [1.36, 1.99]	1.73*** [1.44, 2.07]	1.85*** [1.54, 2.23]
Model statistics			
n	2,835	2,856	2,857
Nagelkerke's R^2	31.9%	14.1%	21.3%

Note. Referent groups = with disability (without disability); age (15 or above); having sibling(s) (single child); parents' marital status (married); parent unemployed (parent employed); parent education (tertiary or above); witnessed violence (not witnessed violence). CM = child maltreatment; IPV = intimate partner violence.
[a]Variables in Phase 1 were adjusted by other variables in the same phase, whereas variables in Phase 2 were adjusted by all variables in Phase 1 and other variables in Phase 2.
[b]Primary or below is equivalent to Grade 6 or below in the United States, secondary is equivalent to Grades 7 to 12, and tertiary or above is equivalent to university or above.
*$p < .05$. **$p < .01$. ***$p < .001$.

Children with disability were more likely to report direct experience of maltreatment in their lifetime. This supports an association between disability and violence victimization (Jones et al., 2012). Specifically, a greater proportion of children with disability reported psychological violence, physical violence, and corporal punishment by their parents. Around 32% to 60% had experienced child maltreatment, and 12% to 46% had witnessed IPV between their parents and in-law conflict. These findings confirm that children with disability are highly vulnerable to exposure to both direct and indirect violence, especially the physical ones of which the associations with disability were significant regardless of the time frame of when the violence had happened. The logistic regression further confirmed the link between disability and lifetime exposure to physical violence after controlling for all other possible confounding variables. The risk of experiencing physical maltreatment was 1.6 times higher for children with disability. Possible underlying mechanisms for this may be the higher level of stress experienced by their parents, and the common factors making up a disadvantaged living environment. Indeed, several family elements that have been identified as risk factors for violence, such as single parenting, low educational attainment, and parental unemployment, as well as dependence on public financial assistance, were found to be associated with disability in this study.

The findings on the associations between disability and violence other than physical child maltreatment and physical parental IPV were mixed. The significance of associations was dependent on the time frame of the violence

investigated. When lifetime experiences were examined, all types of violence were significantly related to disability. However, the associations between disability and psychological child maltreatment, corporal punishment, psychological IPV, and in-law conflict became nonsignificant when only preceding-year experiences were considered. Whether this suggests a trend that only recent physical violence, but not the others, is associated with disability, and what underlies beneath the difference of the associations with disability between physical violence and other types of violence, as well as those between lifetime violence and preceding-year violence do require further investigation.

In addition to disability status, several other factors were found to be associated with the lifetime experience of child maltreatment. Among them, indirect exposure to family violence—that is, the witnessing of parental IPV and in-law conflict between parents and grandparents—had the greatest effect on the risk of maltreatment by parents. Such risk could increase by up to 6 times when other types of violence were present in the same family. This supports the observation that one type of violence victimization can co-occur with, or even be predictive of, other types (Chan, 2011a, 2011b, 2011c; Chan, Brownridge, Yan, & Tiwari, 2011; Tomison, 2002). This association may be explained through different mechanisms. First, the perpetrator of child maltreatment, parental IPV, and in-law conflict might be the same person. Second, the negative marital interactions linked with parental IPV might spill over into the parent–child relationship and lead to violence against the child (Holden, Stein, Ritchie, Harris, & Jouriles, 1998). Finally, the presence of parental IPV or in-law conflict might reduce one's parental capacity, making parents more likely to use violent behaviors to discipline their children (Bourassa, 2007).

In this study, different types of violence had different profiles of associated demographic factors. A higher risk of physical child maltreatment was found when the education levels of fathers and mothers were low (i.e., lower than high school education). This echoes with previous findings that parents with low levels of education were more likely to maltreat their children (e.g., Leung, Wong, Chen, & Tang, 2008). Low levels of education among parents may contribute to a poorer parent–child relationship (Sawyer et al., 2002), less negative attitudes toward violence, and a weaker control over child maltreatment (Fujimoto, Hirose, Nakayama, Okawa, & Takigawa, 2007), which may in turn heighten one's potential to use physical violence against their children. In addition to that between child maltreatment and parents' education levels, the significant association between psychological child maltreatment and father's unemployment may provide some support to the robust effect of family disadvantages (e.g., low socio-economic status and

poverty) on the increased risk of child-related violence (WHO, 2005). Another interesting result was the mixed effect of age on different types of child maltreatment in this study. On one hand, younger age was associated with a greater risk of psychological child maltreatment; on the other hand, it was related to a lower risk of corporal punishment. To be specific, children aged 9 to 11 years had 30% lower risk of being maltreated psychologically (aOR = 0.70) and 25% greater risk of experiencing corporal punishment (aOR = 1.25) than children aged 15 years or above. This contrasts with the existing literature that younger children are often more likely to be maltreated (WHO, 2005), and sheds light on the possibility that age has a more complex relationship, rather than a direct one, with child maltreatment, and that different types of child maltreatment may have different profiles of associated factors including age.

Even though this study has focused, alongside other research, on the effect of disabilities on victimization, one should be cautious before drawing any conclusions about a causal relationship. As noted by Stalker and McArthur (2012), the relationship between disabilities and victimization can be "both complex and variable" (p. 30). There is evidence that some types of disabilities may be a consequence of early victimization, and it is not necessary for disability to precede the experience of violence. For example, physical and sexual abuse may lead to developmental delay (Firth et al., 2001), while neglect may partly contribute to behavioral and learning disabilities (Spencer et al., 2005). It is also possible for the two variables to form a vicious cycle, in which victimization may lead to internalizing or emotional problems that increase the risk of future victimization (Harkness & Lumley, 2007). Despite the inconclusive temporal order of the effect, the mixed findings on the associations between disability and different types of violence in this study also highlight the importance of further studies before making any conclusion on the robustness of such associations. Although the lifetime experiences of violence were found to be associated with disability in this study, all the relationships but that between disability and physical child maltreatment and physical parental IPV became nonsignificant when only the experiences during the past year were considered. To fully establish the causal direction in the relationship between disabilities and victimization, future research, especially those with a longitudinal design, is needed.

Two more limitations in this study should also be noted. First, in this exploratory study, the status of disability was "all or nothing," with children not being compared across different types of disabilities. This was necessary given the extremely small number of respondents in each subgroup when the sample was broken down by type. As it is possible for different types of disabilities to be associated with different types of violence, future studies

should include both groups of variables in the analyses. Second, this study was only controlled for certain demographic characteristics, such as gender, age, level of education, and parents' marital status, unemployment, and educational attainment. Other factors that have been linked with child maltreatment and family violence (such as parents' mental health, attitudes toward violence, etc.) were not included in the logistic regression model. It is possible that these factors might confound the current findings. Future research should include them when examining the association between disability and violence against children.

Despite these limitations, this study provides reliable estimates of disability and violence against children with disability, as well as some preliminary findings about the factors associated with disability and child maltreatment, based on a representative sample of school-aged children. The finding that children with disability are more likely to be victimized by both direct and indirect family violence warrants the development of early screening and intervention programs. For example, an assessment of family violence may be conducted once a child is identified as having a disability, and routine assessments of violence can also be carried out in special schools. If the maltreatment of children with disability is related to increased parenting stress and caregiver burden among parents or guardians, interventions may include a focus on the development of social support networks and relevant coping skills. The promotion of integrated home care services may be another potentially effective measure. Such services can also be a vehicle for administering a thorough and all-round assessment of various types of family violence, such as parental IPV, elder abuse, in-law conflict, and peer violence, as well as parental stress and capacity. When a risk is identified, timely intervention can be provided to prevent further violence against children with disability.

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.

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