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# Prevalence of adverse childhood experiences among Vietnamese high school students

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## ABSTRACT

**Background:** Adverse childhood experiences (ACE) are linked to a range of negative health outcomes. However, the majority of research has been conducted in high-income-countries and little is known about ACE prevalence in low-and-middle-income-countries (LMIC), where the majority of the world's youth reside.

**Objective:** Assess ACE prevalence and demographic correlates in two provinces of the Southeast Asian LMIC Vietnam.

**Methods:** Prevalence of ACE were assessed among 644 Vietnamese high-school students, using the WHO Adverse Childhood Experiences-International Questionnaire.

**Results:** About 74% of participants reported experiencing at least one ACE, with 27% reporting experiencing three or more ACE. Prevalence of sexual abuse was above 10% for both males and females. Sex differences were non-significant, suggesting child protective services should give consideration to both males and females. Factor analysis identified two patterns of ACE: *Violence and Aggression in Family and Community*, and *Family Member Dysfunction*. Three ACE (sexual abuse, emotional neglect, physical neglect) did not load on either factor. Thus, at least in our sample, sexual abuse was independent of other ACE, which indicates that it can occur in any context, among children in otherwise well-functioning families, an important consideration for child protective services. The lack of significant sex differences in sexual abuse means that Vietnamese boys need equal consideration for protection and support as girls.

**Conclusions:** Results indicate that ACE are a prevalent public health problem in Vietnam. Future research evaluating potential ACE risk factors such as authoritarian parenting may be useful to identify possible targets for prevention programs in Vietnam.

## 1. Introduction

“Adverse Childhood Experiences (ACE) refer to some of the most intensive and frequently occurring sources of stress that children may suffer early in life” (World Health Organization, 2018). They include various forms of child abuse and neglect, violence between parents or caregivers, caregiver alcohol and substance abuse, and exposure to peer, community, and collective violence (World Health Organization, 2018). ACE are associated with a wide range of negative health outcomes (Felitti et al., 2019; World Health Organization, 2018). They not only predict mental health problems such as depression, anxiety, aggression, substance abuse, and suicidal behavior,

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but also physical health outcomes such as obesity, cardiovascular diseases, cancer, and diabetes (Carr, Martins, Stingel, Lemgruber, & Juruena, 2013; Danese & Tan, 2014; Felitti et al., 2019; Safren, Gershuny, Marzol, Otto, & Pollack, 2002; Teisl & Cicchetti, 2008). Research also has found that ACE experiences predict adolescent delinquent behavior (Baglivio et al., 2014; Baglivio, Wolff, & Piquero, 2015) including involvement in serious, violent, and chronic delinquency (Fox, Perez, Cass, Baglivio, & Epps, 2015). Over the long-term, ACE impact economic status and social outcomes such as educational achievement and employment (Metzler, Merrick, Klevens, Ports, & Ford, 2017).

There have been a number of large-scale epidemiology studies of ACE in a number of countries. Studies typically have reported high prevalence of ACE exposure with, for instance, 62% among American adults (Merrick, Ford, Ports, & Guinn, 2018), 47% among adults in United Kingdom (Bellis, Lowey, Leckenby, Hughes, & Harrison, 2014) and 53% among adolescents and adults in Eastern Europe (Bellis, Hughes, et al., 2014) reporting having experienced at least one ACE. The number of respondents reporting three or more ACEs is also high in many countries (e.g. Bellis, Hughes, et al., 2014; Merrick et al., 2018). However, the majority of studies on ACE have been carried out in high-income countries (HIC) (Blum, Li, & Naranjo-Rivera, 2019). From a global health perspective, more information regarding the prevalence of ACE in low to middle-income countries (LMIC) is critical, as the majority of the world's youth live in LMIC and because patterns of ACE and associated factors may differ in different socio-economic contexts (Hughes et al., 2017). For instance, the socio-economic hardship associated with LMIC's lower levels of economic development may increase risk for ACE (World Health Organization, 2018). Within this context, an important factor in the epidemiology of ACE is assessment of a range of different ACE, which is necessary to understand the overall experience and impact on the population in regards to ACE (Liming & Grube, 2018). In Vietnam, a Southeast Asian LMIC, to the best of our knowledge, there have been only two studies reporting prevalence of a range of ACE among secondary and high school students. In Nguyen, Pollack, and Ho (2017), 46% of 388 high school students in Hanoi reported experiencing at least one form of ACE, with 16% reporting having experienced three or more different types of ACE. In Thai et al. (2020), 86% of participants in four provinces in southern Vietnam reported having experienced at least one type of ACE, with almost 30% reporting having experienced three or more types of ACE. Tran, Dunne, Vo, and Luu (2015) assessed prevalence of ACE but focused on university medical students which, although an important population, are likely not representative of the broader population of youth.

These two studies suggest that prevalence of ACEs among Vietnamese high school students may be high, but the substantial differences between the studies prevents definitive conclusions. Possible factors underlying the differences between these two studies are (a) that the studies used different ACE measures, and (b) that they were conducted in different geographical regions of Vietnam. Thus, additional research will be important to more accurately estimate ACE prevalence in Vietnam. In addition, understanding how ACE tend to co-occur will be important in order to assist future research seeking to identify common risk factors. Finally, it is important to identify demographic factors related to increased risk for ACE, in order to identify subgroups at particular risk for ACE, to more efficiently identify youth in need of support. The purposes of the present study thus were to: (a) assess the prevalence of ACE in high school students in two highly different provinces of northern Vietnam, Hung Yen (rural) and Hanoi (highly urbanized); (b) assess relations between the ACE using tetrachoric correlations and exploratory factor analysis, in order to identify patterns of co-occurrence of ACE; and (c) determine whether the prevalence of the ACE differed as a function of sex, urban vs. rural settings, and public vs. private schools which represents variation in a key environment (school) for youth.

## 2. Methods

### 2.1. Design and sampling frame

The present study conducted a cross-sectional assessment of ACE and associated factors among Vietnamese high school students. The goal of the sampling frame was to provide a sample of participants from a range of socio-economic conditions in northern Vietnam. Two provinces in northern Vietnam thus were purposively selected: Hanoi province, the most highly developed area in northern Vietnam, and Hung Yen province, one of the least developed areas in northern Vietnam. These two provinces thus provided a contrast between highly developed urban vs. lesser developed rural areas in northern Vietnam. Within each province, two high schools were randomly selected. Within each of these four schools, stratified (by grade) random sampling was used to identify 100 students in Grade 10 and in Grade 11 to recruit for study participation. Depending on the size of each class and number of students providing consent, between 4 and 6 classes were selected randomly within each grade within each school for participant recruitment. Potential

**Table 1**  
Sample demographics.

		Frequency	Percent
Sex	Male	296	46%
	Female	348	54%
Age	16	271	42%
	17	371	58%
	18	2	>1%
Area	Urban	332	52%
	Rural	312	48%
School type	Public	328	51%
	Private	316	49%

participants were recruited from each class (or from another randomly selected class, if all potential participants had been contacted in that class) until the number of students required for the study was reached. The minimum sample was set at 620 participants, in order to produce power of 0.85 to detect a between groups (e.g., males and females) effect size of  $z = 0.25$  (Spybrook et al., 2011). The total number of students invited to participate in the study was 800. The number of students whose parents provided consent and the adolescent provided assent was 723, for a 90% participation rate. Participants considered to have invalid responses (e.g., >10% items of missing; fixed pattern responses) were not included in data analysis, with 644 participants (89%) considered to have valid data. Within this sample, missing data were treated as missing (i.e., missing data were not estimated). The mean age of participants was 16.6 (SD = 0.5). Sample description is provided in Table 1. The STROBE guidelines for cross-sectional research were used in this study and manuscript (Vandenbroucke et al., 2007).

## 2.2. Measures

### 2.2.1. Demographic information

Participants' age and sex, the province in which they lived, and whether they attended a private vs public school (Type of School) were collected in a demographic questionnaire. Because Hanoi province is significantly more economically developed than Hung Yen province (Hanoi Government Statistical Office, 2019; Hung Yen Government Statistical Office, 2019), comparison of the two provinces was used to assess the relation between level of economic development (Urban vs. Rural) and the ACE experiences of the participants. The Type of School variable was included in the study to assess relations between variation in a key environmental factor (the type of school in which the child was receiving education), and ACE.

### 2.2.2. Adverse Childhood Experiences

ACE were assessed using the Adverse Childhood Experiences — International Questionnaire (ACE-IQ) developed by the World Health Organization (World Health Organization, 2018). The ACE-IQ contains 29 items assessing 13 domains of childhood adversity, including (1) emotional abuse, (2) physical abuse, (3) sexual abuse, (4) emotional neglect, (5) physical neglect, (6) violence between parents or caregivers, (7) household member substance abuse, (8) household member incarceration, (9) household member mental illness, (10) parent separation/fatality, and (11) peer, (12) community, and (13) collective violence. Questions assess respondents' experiences over the first 18 years of their life. The ACE-IQ has two options for scoring: *binary* or *frequency*. For the *binary* scoring, each item is scored as the ACE having occurred if the respondent reported any level of experiencing the ACE (e.g., a respondent seeing a family member verbally abused once would count as exposure to family violence). For the *frequency* scoring, different ACE-IQ items have different thresholds regarding what is considered to constitute an ACE. For instance, for sexual abuse, any event (e.g., unwanted sexual fondling) had to occur only once to be considered an ACE, whereas for certain other ACE (e.g., emotional abuse), experiencing the event (e.g., being yelled at) *many times* is required. Because the *frequency* scoring attempts to be sensitive to the different severities of ACE, the present study used the frequency scoring. The final ACE IQ score refers to the number of categories of ACE reported, ranging from 0 to 13, with the higher the ACE score, the more adversities that the participant has experienced (World Health Organization, 2018).

The ACE-IQ has been culturally adapted and validated in a wide range of countries around the world, including in East Asia (Ho, Chan, Chien, Bressington, & Karatzias, 2019). In Vietnam, the ACE-IQ was used in the Thai et al. (2020) and Tran et al. (2015) studies. The present study used Tran et al. (2015) version of the ACE-IQ. However, Tran et al. (2015) used an 11 category ACE-IQ, not including the emotional neglect and collective violence domains. In order to have a comprehensive assessment of ACE, the present study's version of the ACE-IQ included the items for emotional neglect and the four items for collective violence. The items were first translated, then back-translated by the research team and compared, then reviewed by five high school students for their clarity and appropriateness. In the present study, internal consistency for the full ACE-IQ score was 0.84.

## 2.3. Data collection procedures

As the first step in the school recruitment process, an introduction letter was sent to the principal of the selected schools; all four principals agreed for their schools to participate in the study. In each 10th and 11th grade class randomly selected for study participation, project research assistants introduced the study to the students and asked interested student to bring a consent form home to their parents. On the day of the survey, only students whose assent and consent form were obtained participated in the survey. The research assistants provided an overview of the questionnaire, response categories, etc. Students then completed the self-report questionnaire, which took about 20 to 30 min. In order to reduce potential respondent bias, all questionnaires were anonymous (i.e., students' names were not on the questionnaires) and teachers were not in the classroom when data were collected. The data were collected from November 2019 to January 2020. The study was reviewed and approved by the Institutional Review Board of the VNU University of Education-Hanoi, Vietnam.

## 2.4. Statistical analysis

One-way frequencies were used to describe the prevalence of ACE for the entire sample, and two-way frequencies were used to describe the numbers and types of ACE by groups. Generalized linear models with a logit link function and binary distribution were used to compare the prevalence of the different ACE by sex, urban vs. rural areas (Hanoi vs. Hung Yen province), and public vs. private schools. Tetrachoric correlations were used to describe the relations between pairs of ACE to identify patterns of co-occurrence. An

exploratory factor analysis using iterated principal factor analysis with the tetrachoric correlations and squared multiple correlations as the prior communality estimates was used to summarize the patterning of these relations. The parallel analysis technique (Glorfeld, 1995) was used to determine the appropriate number of factors, with a promax rotation used. Following the recommendation of Matsunaga (2010), a loading criterion of 0.40 was used (i.e., if an ACE loaded 0.40 or above, it was considered to load on the factor).

### 3. Results

#### 3.1. ACEs prevalence

Among the 644 students included in the analyses, 74% reported having experienced at least one form of ACE. Across the 13 categories of ACE, 47% of participants reported have experienced one or two categories of ACE, and 27% reporting have experienced three or more types of ACE (see Table 2). The most common adversities reported were witnessing domestic violence (36%), emotional neglect (34%), and witnessing community violence (23%). The least common adversities reported were for having a family member with a mental illness (4%), being repeatedly bullied at school (5%), and having a family member involved in substance abuse (6%) (see Table 3).

Frequencies for two of the categories of ACE differed significantly by sex. The proportion of students reporting witnessing family violence was higher for females than males ( $\chi^2[1] = 8.35, p < 0.005$ ), with 30% of males reporting this ACE but 41% of females. Conversely, a significantly higher proportion of males reported experiencing collective violence than females (12% vs. 6%, respectively),  $\chi^2[1] = 7.56, p < 0.01$ . Prevalence of exposure for several types of ACE varied significantly as a function of public vs. private schools. Students in public schools reported more (a) emotional neglect ( $\chi^2[1] = 5.29; p < 0.05$ ) than their peers in private schools, 39% vs. 30% respectively; students in public schools also reported more (b) emotional abuse ( $\chi^2[1] = 4.82; df = 1; p < 0.05$ ) than students in private schools (56% vs. 47%, respectively). Private school students reported higher prevalence than their public school peers of: (a) having an incarcerated family member ( $\chi^2[1] = 6.73; p < 0.01$ ), 10% vs. 4% respectively; (b) witnessing community violence ( $\chi^2[1] = 11.26; p < 0.001$ ), 28% vs. 17%, respectively; and (c) exposure to collective violence ( $\chi^2[1] = 3.91; p < 0.05$ ), 11% vs. 6% respectively. The one significant difference between urban and rural schools was that 21% of students in urban schools reported having separated parents whereas 11% of students in rural schools ( $\chi^2[1] = 11.89; p < 0.001$ ).

#### 3.2. Correlations among ACE, and exploratory factor analysis

In general, correlations among ACEs were positive, ranging from low to moderate (Table 4). Witnessing violence between household members significantly correlated with 11 of the 12 other types of ACEs, as did emotional abuse. Three types of experiences strongly correlated with each other, including emotional abuse, physical abuse, and domestic violence (correlations among these three variables ranged from). Students living with a family member who abused drugs and alcohol were more likely to also report of incarceration of a family member ( $r = 0.64; p < 0.0001$ ). Physical neglect had the least correlations with other types of ACE.

To summarize these correlations, an exploratory factor analysis was conducted on the ACE items. Because the ACE items were binary, tetrachoric correlations were used for the factor analysis, with the parallel analysis technique indicating three factors. However, extracting three factors produced a Heywood case (i.e., a negative error variance; Kolenikov & Bollen, 2012), so the number of factors was reduced to two, which was estimable. Table 5 reports the factor loadings for the two rotated factors. Factor 1 represented Violence and Aggression, directed towards the child (physical and emotional abuse, being bullied by peers) but also more generally (household, community, and collective violence). Factor 2 represented Family Member Dysfunction that did not involve intentional violence or other harm towards other family members (family substance abuse, family member incarceration, parental absence, and parental mental illness). Emotional Neglect and Physical Neglect did not load on either of the factors, nor did Sexual Abuse.

**Table 2**

Number of ACE domains experienced, by sex, urban vs rural area, and public vs private school.

		Number of ACE domains experienced										
		0	1	2	3	4	5	6	7	8	9	10
Percentage of sub-group participants reporting having the above number of ACE domains												
Sex	Male (N = 296)	26%	28%	21%	12%	5%	4%	1%	1%	1%	0%	0%
	Female (N = 348)	26%	27%	18%	12%	8%	5%	2%	2%	0%	0%	0%
Area	Urban (N = 332)	24%	30%	20%	11%	7%	5%	1%	3%	0%	0%	0%
	Rural (N = 312)	28%	26%	19%	13%	7%	4%	1%	1%	1%	0%	0%
School type	Public (N = 328)	25%	30%	18%	13%	6%	5%	0%	2%	1%	0%	0%
	Private (N = 316)	27%	25%	20%	11%	8%	3%	3%	2%	1%	0%	0%
Total (N = 644)		26%	28%	19%	12%	7%	4%	1%	2%	1%	0%	0%

**Table 3**  
Prevalence of categories of ACE, by sex, urban vs rural area, and public vs private school.

	Male (N = 296)	Female (N = 348)	$\chi^2_{(1)}$	Urban (N = 332)	Rural (N = 312)	$\chi^2_{(1)}$	Public school (N = 328)	Private school (N = 316)	$\chi^2_{(1)}$	Total (N = 644)
Emotional abuse	9%	11%	0.42	10%	10%	0.00	11%	9%	0.65	10%
Physical abuse	8%	5%	1.94	6%	7%	0.10	6%	6%	0.06	6%
Sexual abuse	10%	11%	0.10	9%	13%	2.61	12%	9%	1.52	11%
Emotional neglect	31%	37%	2.37	36%	33%	0.54	39%	30%	5.27*	34%
Physical neglect	18%	14%	2.89	16%	15%	0.05	13%	18%	2.65	16%
Household substance abuse	5%	6%	0.10	5%	6%	0.07	4%	7%	1.76	6%
Household mental illness	4%	5%	0.29	5%	4%	0.27	5%	3%	1.51	4%
Household member incarceration	6%	8%	0.65	9%	5%	2.67	4%	10%	6.41*	7%
Parental separation, divorce, death	14%	17%	0.97	21%	11%	11.52***	15%	16%	0.09	16%
Violence in Household	30%	41%	8.30**	36%	35%	0.05	36%	35%	0.05	36%
Repeatedly bullied by peers	5%	5%	0.18	5%	5%	0.01	5%	5%	0.15	5%
Community violence	26%	20%	3.15	23%	22%	0.05	17%	28%	11.08***	23%
Collective violence	12%	6%	7.27**	7%	10%	2.26	6%	11%	3.83	9%

$\chi^2$  is test statistic for generalized linear models group comparison.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

## 4. Discussion

### 4.1. Prevalence of ACEs in adolescents

This study is one of the first assessments of the prevalence of multiple ACE among high school students in Vietnam. The ACE prevalence was somewhat higher than reported in most other LMICs (Scully, McLaughlin, & Fitzgerald, 2020) and about 1.5 times higher generally reported for high income countries (Moore & Ramirez, 2016; Scully et al., 2020). Compared to other the two studies in Vietnam, the present study's ACE prevalence of 74% (for one or more ACE) was higher (by 28%) than that reported by Nguyen et al. (2017) (46%) but somewhat lower (by 12%) than that reported by Thai et al. (2020) (86%). The difference in these prevalence rates may be due to several factors. The first involves the specifics of the questionnaires used. Nguyen et al. (2017) used the CDC-Kaiser ACE questionnaire, which does not assess school bullying, or collective or community violence, with community violence being the third most frequently reported ACE in our study. Thus, our study's higher prevalence as compared to Nguyen et al. (2017) may be due in part to a more comprehensive assessment of ACE. Thai et al. (2020) did use the WHO ACE-IQ questionnaire but an older version that does assesses community violence but not school bullying or collective violence. However, the current study as well as Nguyen et al. (2017) were conducted in northern Vietnam whereas Thai et al. (2020) was conducted in southern Vietnam. This suggests that a second potential factor underlying study differences may be regional variations in ACE prevalence. These possibilities suggest the importance of ensuring that an assessment is as comprehensive as possible (which will be related in part to the assessment measure used). In addition, these possibilities also suggest the importance of future research to identify potential regional variations in ACE rates, which could in turn identify possible regional differences in potential risk factors (or their rates).

Perhaps the most concerning finding is that >10% of both males and females reported having experienced some form of sexual abuse. This prevalence is higher than that reported by Thai et al. (2020) for their Vietnamese samples, but in the same range with other studies in Asia (Stoltenborgh, IJzendoorn, Euser, & Bakennans-Kranenburg, 2011). One possible reason underlying these differences across studies in Vietnam may be the age range of participants. Nguyen et al. (2017) and Thai et al. (2020) included secondary school students (aged 12–14) while our study surveyed only high school students (aged 15–17). This suggests that prevalence may be higher among older youth, which is logical given that they will have had a longer time period to be exposed to ACE. In our study, the prevalence of sexual abuse did not differ across girls and boys. Previous findings regarding this issue in Vietnam are mixed. The Tran et al. (2015) study of medical students did not find sex differences in sexual abuse whereas Tran, Van Berkel, van IJzendoorn, and Alink (2021) reported higher prevalence of sexual abuse among boys than in girls. In contrast in HIC, girls tend to report higher rates of sexual abuse than boys (Gray & Rarick, 2018; Kloppen, Haugland, Svedin, Mæhle, & Breivik, 2016). One possible explanation for these differences across studies is that because one of the highest Confucian values is women's virginity at marriage (Huong, 2020), females may be particularly inhibited from reporting sexual abuse. Such abusive events could be considered as the family "losing face" and prevent girls from marrying in adulthood. In addition, in Vietnam there is a lack of a strong, clear legal framework to protect children from sexual abuse (UNICEF & UNFPA, 2017), reducing the value of taking the cultural risk of reporting the abuse for girls. It is also possible that the lack female vs. male differences in reported prevalence of sexual abuse in our study is due at least in part to the fact that in general, as has been well known for several decades (e.g., Groth & Hobson, 1997), sexual assault is more often related to issues of power and anger for the perpetrator than sexuality. Thus, sexual assault and abuse may be less linked to the victim's own sex, particularly in developing countries where individuals (in this case, perpetrators) may generally feel less control over their lives.

The most prevalent ACEs observed in our sample were violence in household, followed by emotional neglect and community

**Table 4**  
Tetrachoric correlations among ACE categories

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Emotional abuse	1												
(2) Physical abuse	0.73****	1											
(3) Sexual abuse	0.26**	0.32**	1										
(4) Emotional neglect	0.43****	0.22*	0.08	1									
(5) Physical neglect	0.32***	0.09	0.16	0.08	1								
(6) Household substance abuse	0.38***	0.44****	0.16	0.14	0.14	1							
(7) Household mental illness	0.47****	0.07	0.41***	0.26*	-0.02	0.42**	1						
(8) Household member incarceration	0.43****	0.46****	0.16	0.19*	0.26**	0.64****	0.37**	1					
(9) Parental separation, divorce, death	0.17	0.06	0.12	0.09	0.15	0.46****	0.42****	0.49****	1				
(10) Violence in Household	0.54****	0.46****	0.33****	0.34****	0.10	0.48****	0.29**	0.28**	0.18*	1			
(11) Repeatedly bullied by peers	0.29*	0.51****	0.34**	-0.11	0.02	0.33*	0.13	-0.14	-0.04	0.24*	1		
(12) Community violence	0.28**	0.42****	0.09	0.20**	0.06	0.39****	-0.07	0.38****	0.15	0.31****	0.11	1	
(13) Collective violence	0.27*	0.47****	0.35***	-0.04	0.13	0.34**	-0.18	0.38***	0.10	0.30***	0.12	0.32***	1

Notes: Because the statistical significance of tetrachoric correlations is influenced by base rates of the two variables as well as by the correlation,  $p$ -values and the tetrachoric correlations do not relate in a strictly linear manner.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

\*\*\*\*  $p < 0.0001$ .

**Table 5**  
ACE-IQ factor loadings

ACE	Factor 1	Factor 2
	Violence and aggression	Family member dysfunction
Physical abuse	<b>1.00</b>	-0.09
Emotional abuse	<b>0.57</b>	0.32
Repeatedly bullied by peers	<b>0.52</b>	-0.16
Collective violence	<b>0.51</b>	-0.01
Violence in household	<b>0.47</b>	0.27
Community violence	<b>0.40</b>	0.12
Parental divorce, separation, death	-0.18	<b>0.71</b>
Household mental illness	-0.11	<b>0.68</b>
Household member incarceration	0.16	<b>0.67</b>
Household substance abuse	0.30	<b>0.57</b>
Sexual abuse	0.34	0.15
Emotional neglect	0.12	0.27
Physical neglect	0.11	0.18

Notes: Factor 1 and Factor 2 correlated 0.41 with each other.  
Factor loadings above 0.4 are in bold.

violence. This study's prevalence of household violence is similar with the one reported by Tran et al. (2015) but higher than the one reported by Thai et al. (2020) or Nguyen et al. (2017). The use of different ACE measures and/or different scoring guidelines and different populations makes it difficult to determine with certainty the cause of these differences. However, research on Intimate Partner Violence (IPV) in Vietnam indicates a quite high prevalence of IPV (which represents a form of household violence), ranging from about 56% to 91% (Do, Weiss, & Pollack, 2013; Nguyen et al., 2018; Raghavendra, Duvvury, & Ashe, 2017). It has been suggested that Confucian societal values, where patriarchal norms and authoritarian parenting styles including the use of physical force dominate, may underlie abusive behavior in the home, including in Vietnam (Mestechkina, Son, & Shin, 2014; Nguyen, 2017).

Emotional neglect was reported by more than a third of the participants, which is consistent with results reported for Thai et al. (2020) sample. There are several possible explanations for such high prevalence of emotional neglect. First, in the WHO ACE-IQ a lack of understanding of a child's life problems is considered emotional neglect, because it can link to the parent not being supportive. In countries with hierarchical family structures like Vietnam (e.g., Mestechkina et al., 2014) where parents often are not expected to understand their child's problems, this may result in increased scores for this ACE domain. In addition, it is possible that the authoritarian parenting style common in Vietnam which involves high levels of control may be associated with low emotional responsiveness (Mestechkina et al., 2014). Finally, due to the recent industrialization and urbanization in Vietnam, parents spend increased time at work or work out of their hometown (Nguyen, 2020; Pham & Nguyen, 2012), which may result in less time and support, including emotional support, for their children.

The proportion of students reporting collective violence in this sample was 23%, which probably would be considered high given that Vietnam was not involved in a war or armed conflict, or experiencing terrorism during the time period covered by the ACE measure. Rather than military action or terroristic acts, the collective violence reported by our participants may have been connected to drug-related or organized crime, gambling debts, or land disputes (Do, 2020). In Hanoi (and other developed areas), families in certain districts may be able to sell their property at very high prices to commercial developers, resulting in amounts of money that the family is unprepared to manage. With this excess money, children sometimes may become involved in gambling and drugs (Duchère, 2019), resulting increased risk for family exposure to collective violence. In contrast, in rural areas such as Hung Yen, agricultural land is sometimes taken over by eminent domain by the government and transferred to private holders in an attempt to spur development. This may result in disputes and conflict between farmers, and the local authorities and new owners (Labbé, 2015; Nguyen et al., 2020).

One ACE that was surprisingly low in our study was having a family member with mental illness, with only about 4% of participants reporting this ACE. Generally, epidemiological studies have reported prevalences of mental illness in Vietnam much higher than 4% (e.g., Pollack, Weiss, & Trung, 2016). There are at least two potential reasons for discrepancy between prevalence of mental illness and prevalence of mental illness as an ACE in our study. First, because mental illness is highly stigmatized in Vietnam (as in many countries, particularly LMIC), family members may hide their illness from the children (Do, Pham, Wallick, & Nastasi, 2014; Martensen et al., 2020). Second, because of relatively limited mental health literacy, mental health symptoms such as depression-related withdrawal, psychosis, severe anxiety, etc. may not be seen as "mental illness" (e.g., Dang, Lam, Dao, & Weiss, 2020). Hence, youth may not link experiences they have with a family member as related to mental illness. These possibilities highlight the importance of research focused on how to best increase mental health literacy within the context of the family, in particular targeting that mental illness is in fact a health problem not directly under the control of the individual.

#### 4.2. Variation of ACE prevalence as a function of demographic characteristics

In our study, the sex difference in total ACEs score was non-significant but there were significant sex differences for some specific adversities. Female adolescents were more likely to have witnessed violence between parents than male adolescents whereas male adolescents were more likely to have been exposed to collective violence. One of possible explanation for these results is that as a consequence of Vietnam's patriarchal nature, female adolescents spend more time at home, with more housework and responsibilities

for taking care of other family members (Lam & Laura, 2016) This may result in increased opportunities for witnessing domestic violence or family members being emotionally abused. In contrast, as they reach young adulthood, male adolescents are allowed and tend to involve themselves more frequently in activities outside the home, and thus may be more likely to be more exposed to collective violence.

Another significant demographic effect was that adolescents living in urban areas reported parental separation more frequently than those living in rural areas, which is consistent with the 2019 Vietnam General Statistics Office national report (Huong, 2020). One possible explanation is that urban areas tend to be more Westernized, (Bélanger & Barbieri, 2020) and hence may be more influenced by the social and cultural factors that underlie higher rates of divorce in Western societies (Hemez, 2017). It is also possible that higher levels of stress associated with urban areas could lead to increased rates of divorce (Chiriboga & Galston, 2020). Finally, an additional demographic effect that was significant was that students in public schools reported higher prevalence of emotional abuse than their private school peers. Although in Western countries private schools are often seen as more rigorous and prestigious (and hence likely more potentially stressful and adverse), in Vietnam to some extent the opposite is true. To attend a public high-school, it is necessary to pass an entrance exam, and children who do not pass the exam may instead attend private school (Trines, 2017). Children also may attend a private school because they are expelled from the public school for behavior problems. Public schools in Vietnam generally are seen as of higher-quality and more prestigious (Dang & Rogers, 2016). Thus, one possible explanation for the above finding is that the higher expectations for parents of public school children regarding their academic achievement may be particularly stressful and underlie the increased prevalence of emotional abuse. In addition, Vietnamese parents with children in public schools often have higher expectations regarding academic achievement than parents of children in private schools (London, 2011). As a result, parents with children attending public schools often put more emotional pressure on their children. If replicated, this result highlights the importance of not making assumptions of cross-cultural similarity regarding ACE-related environmental factors.

#### 4.3. Patterns of ACE exposure

The factor analysis identified two factors, the first labeled Violence and Aggression, and the second Family Member Dysfunction. This suggests that at least in our sample, there are broadly speaking two forms of ACE: (1) the adolescent experiencing violence and aggression, and (2) the adolescent living in a family with significant dysfunction. A literature search identified one study that had conducted a factor analysis of the ACE-IQ among youth. In this study, which was conducted in Malawi, three factors were identified, including household disruption (household member drug use, incarcerated, parental divorce or death, collective violence), abuse (physical and emotional abuse and domestic violence) and neglect (physical and emotional neglect, and experience of bullying) (Kidman, Smith, Piccolo, & Kohler, 2018). These results differ somewhat from ours. In our study, for the Violence and Aggression factor, all domains directly involved violence and aggression in the family (Physical Abuse, Emotional Abuse, Violence in Household) or in the neighborhood community (Collective Violence, Community Violence and Repeatedly Bullied by Peers). This suggests that there may be community-level influences broadly impacting on the youth with violence and aggression a community norm. The levels of processes likely differ across communities, creating the variability that generates this factor.

The second factor in our sample, Family Member Dysfunction, may reflect either the common effects of stress on family functioning, or the inter-connected effects of these domains of functioning on each other. For example, high levels of general stress in the family could result in parental substance abuse, parental divorce, and precipitate mental illness. It is also likely that these domains of functioning directly influence each other, creating this factor. For instance, parental substance abuse could result in incarceration, and subsequent parental divorce and increased risk for mental illness. In interpreting this Family Member Dysfunction factor, it is important to consider that in certain critical aspects the ACE item Family Member Mental Illness differs from other items loading on the factor. To some extent, substance abuse, incarceration and even divorce/separation (the other items loading on this factor) involve volitional choices that one makes in life. That is, to some extent one chooses to consume recreational substances, or commit a crime that results in incarceration, or engage in the behaviors that lead to divorce or separation (Schwarzer, 2014). Mental illness such as depression or schizophrenia, however, less clearly involve volitional decisions (e.g., Bender et al., 2013). This is a complex issue, of course, since a variety of non-volitional experiences – including oneself having experienced ACE as a child – are associated with all of these problems. The key issue is that mental illness' association with these dysfunction among family members should not increase mental illness' already high stigma.

There were three items that did not load on either of the factors. Sexual abuse, one of the non-loading items, is an extreme violation of social norms, and therefore may have different causal pathways than the ACE in the two factors. The two other ACE that did not load, emotional neglect and physical neglect, may have been at least somewhat distinct from the others because they do not directly involve to aggression. As assessed by ACE-IQ, emotional neglect can involve a lack of understanding of the child's emotional needs and feelings. Emotional neglect, as defined by the ACE-IQ, thus could be found in a reasonably well functioning family using the "tiger parenting" style often adopted in many Asian families including Vietnam (Chua, 2011; Herr, 2016). Similarly, physical neglect, defined as not providing a child with basic necessities when they are available, also could occur in a reasonably functioning family (i.e., without other ACE occurring) where the parents are excessively busy with work or temporarily away from home for work.

This study has several limitations that should be considered in interpreting the findings. First, the study was conducted in only two provinces in northern Vietnam. Although these provinces were selected because they represented different endpoints along a socio-economic and urban/rural continuum, the broader representativeness of the study results to the rest of the country is unclear. A related limitation is that although these two provinces differ significantly in regards to levels of economic development, we did not directly assess participants' SES status. A second limitation is that assessment of ACE was based on a self-report questionnaire. Although the ACE-IQ is generally accepted as a valid measure globally, the extent to which results were influenced by social



desirability or other factors related to self-report is unclear.

## 5. Conclusions

The present study found relatively high prevalence of ACE exposure among high school students in Vietnam, with only a small percentage (approximately 26%) of students reporting no adverse experiences. Household violence and emotional neglect were the two most frequent ACE. This relatively high prevalence may be reflective of the fact that Vietnamese society historically has been and remains heavily influenced by Confucianism (Tho, 2016). Under Confucianism, parents follow an authoritarian caregiving model where children are expected to follow parental commands without question and if they do not, they may be physically struck for this violation (Graham, Phelps, Nhung, & Geeves, 2014; Hoang, 2015). In addition, within a Confucianistic parental role, direct emotional support is generally not provided (e.g., Li, 2021). Together, these factors may in part underlie the relatively high prevalence of physical abuse and emotional neglect reported in our sample; determining whether this is the case will be an important area for future research. If confirmed, this suggests that potential targets for ACE prevention programs may not simply be the ACE-related parent behaviors themselves but also traditionalism that may possibly underlie them. Thus, it may also be useful to investigate relations between adherence to Confucian beliefs and authoritarian parenting, and ACE in future research.

Another important finding in this study was that the factor analysis indicated that in our sample of Vietnamese adolescents, sexual abuse was somewhat of an independent ACE. This does not in any way reduce its importance, but rather indicates that it can happen in any context, for instance among children living with low levels of family dysfunction and who are not otherwise being abused. Similarly, emotional neglect and physical neglect did not load on a factor, which suggests that these ACE also may occur in otherwise well functioning families. Such information will be important for child protective services. Finally, given the similarly high prevalence of sexual abuse for boys and girls, consideration needs to be given to protecting males no less than females.

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## CRedit authorship contribution statement

**Trang Le:** Methodology, Investigation, Formal analysis, Data curation, Writing – original draft, Writing – review & editing. **Hoang Minh Dang:** Methodology, Investigation, Formal analysis, Data curation, Writing – original draft, Writing – review & editing. **Bahr Weiss:** Formal analysis, Data curation, Writing – review & editing.

## Declaration of competing interest

None.

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