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Physical assault perpetration and victimisation among Chinese university students

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ABSTRACT

This study applies the ecological conceptual model in examining the rates and risk factors of both severe and minor physical assault perpetration and victimisation among university students in Hong Kong, Taiwan and Mainland China. Data were from the International Dating Violence Study. The analysis employed a generalised mixed effect model. Findings showed the rates of minor physical assault perpetration was 34.1% among the participants; minor victimisation was 16.2%; severe perpetration was 23.9%; and, severe physical assault victimisation was 12.5%. Female students were more likely to report minor and severe physical assault perpetration compared to males [aOR = 2.48 (1.80, 3.43), and 2.89 (1.83, 4.56), respectively, p values<0.05]. Controlling for all variables, if sexual relations were part of the dating relationship, the odds of minor and severe violence perpetration and victimisation were 1.98 and 2.23 (p values<0.05). Good anger management was associated with a 60 to 70% decrease in the odds of physical assault.

本研究运用生态概念模型考察香港、台湾和中国大陆大学生在恋爱中经历的严重和轻微的身体攻击与受暴情况的发生率和风险因素。数据来自国际约会暴力研究。该分析采用广义线性混合效应模型。研究结果显示，参与者中轻微的身体攻击率为34.1%，轻微受害者为16.2%；严重身体攻击率为23.9%，严重的身体受暴率为12.5%。与男性相比，女性更可能报告轻微和严重的身体攻击[aOR = 2.48 (1.80, 3.43) 和2.89 (1.83, 4.56)， $p < 0.05$]。控制所有变量，如果性关系是约会关系的一部分，轻微和严重的暴力犯罪和受害的几率为1.98和2.23 ($p < 0.05$)。良好的对愤怒的管理伴随着约会中60-70%的身体攻击几率下降。

KEYWORDS

Dating violence; physical assault; ecological model; China; university students

Introduction

Physical assault in dating relationships

Dating violence is a serious and prevalent social problem worldwide. Dating violence is defined as “any intentional physical, sexual or psychological assault on a person by a dating partner”, including both “casual dates and individuals in long-term dating

relationships. All three forms of abuse – physical, sexual and emotional – can coexist, or the abuse can be characterized by any one of the three.” (Kelly 2006, 1). The incidence of violence in dating relationships is almost three times higher than violence in marital relationships (Straus 2008). Between 17% to 45% of university students surveyed in 16 countries worldwide reported having at least one experience of physical assault in the preceding year (Straus 2004). Approximately 9.8% of high school students in the US report physical assault victimisation during the previous 12 months (Eaton et al. 2007). Physical dating assault raises the risk of intimate partner violence (IPV) in adulthood and can also establish a pattern of life course violent intimate relations (Cornelius and Resseguie 2007; O’Leary et al. 1989; O’Leary, Malone, and Tyree 1994). Physical dating assault is also related to adverse health behaviours and outcomes, such as unsafe sex, substance abuse (Cate et al. 1982), suicide attempts and psychological distress (Shorey, Cornelius, and Bell 2008).

While research in Western society has advanced our understanding of the nature and consequences of dating violence, dating violence is a rarely discussed social and health problem in Chinese societies (Shen, Chiu, and Gao 2012; Shen 2014). Most of the knowledge about dating violence is derived from surveys of western youth (Chan and Straus 2008). Dating violence is prevalent in Chinese societies. A study in Hong Kong reveals that the lifetime prevalence of dating violence was 56% among university students. More than 46.1% of the university students in Hong Kong reported their experiences of a physical assault in the preceding year (Chan and Straus 2008; Chan et al. 2007). In Taiwan, between 58 and 66% of university students reported experiencing at least one form of dating violence (Hsiu and Sun 2003). In Mainland China, 35.2% of university students reported perpetrating a physical assault against their partners, and 27.2% reported being a victim of a physical assault (Chan et al. 2008). Dating violence is a multi-dimensional phenomenon, and its multi-dimensional characteristics still remain unexplored in various Chinese societies (Chan et al. 2007). Due to the differences in macrosystem between Western world and Chinese societies, it is appropriate to investigate the unique risk factors of dating violence in Chinese culture. For example, Chan (2012a) discussed that cultural factors increase the risk of violence, such as the hierarchy among Chinese families, the concept of “face” (*mianzi*), and in-law conflict.

Conceptual framework applying ecological model in intimate partner violence¹ study

The ecological framework is a widely applied conceptual model for understanding intimate and family violence, including child abuse and neglect (Belsky 1980) and IPV (Carlson 1984; Dutton 1994; Heise 1998). The ecological model conceptualises violence as a multifaceted/multi-level phenomenon among personal, situational, and sociocultural factors (Heise 1998). Adapted from the work of Uri Bronfenbrenner (1992) and advanced by Belsky (1980), the ecological framework consists of ontogenic development, the microsystem, the exosystem, and the macrosystem. The model can be visualised as four concentric circles, with the innermost circle as the ontogenic factors. The inner levels of factors are embedded within and influenced by outer levels of factors (Malamuth et al. 1991). For instance, the macrosystem influences the inner three levels of factors in the ecological model (Heise 1998). The ecological model views individuals

as embedded in the nested systems, which can be leveraged to impact changes in behaviour (Hammond and Arias 2011).

Ontogenic development refers to individual traits and characteristics, and personal history factors, such as psychopathology, personality and social learning (Belsky 1980; Dutton 1994), that each individual brings to his or her behaviours and relationships. The microsystem refers to the context in which behaviour, in this case, violence, takes place – the family or other intimate or acquaintance relationships. The third level, the exosystem represents the larger units where the ontogenic and microsystem are embedded. The exosystem includes the world of work, neighbourhood, social networks and identity groups. The macrosystem refers to the general views and attitudes that permeate the culture at large, such as male supremacy, masculinity, rigid gender roles and sense of male entitlement. The macrosystem represents the larger cultural fabric into which the individual, the relationship, and the community factors are interwoven.

The ecological framework conceptualises violence as a multifaceted phenomenon that is influenced by personal, situational, and sociocultural factors (Belsky 1980; Carlson 1984; Heise 1998). The present study uses an ecological framework to organise the key variables that may be risk factors associated with physical assault among dating university students.

The ecological framework and dating violence

Numerous studies apply the ecological framework to identify the risk factors related to IPV (Akhter and Wilson 2016; Banyard, Moynihan, and Plante 2007; Belsky 1980; Bogat et al. 2005; Carlson 1984, 1997; Flake 2005; Heise 1998; Kanin 1985; Levendosky and Graham-Bermann 2001; Little and Kantor 2002; White 2009).

Ontogenic system

As mentioned above, the ontogenic system refers to the individual level of biological and personal factors, such as age, gender, education, income, psychological problems, personality disorders, aggressive tendencies and substance abuse that influence individual behaviours (Ali and Naylor 2013). For instance, gender is a salient individual factor in violent behaviour. Dating violence is often bidirectional, and the rates are high among both male and female students worldwide (Straus 2008). Research also indicates that male students report lower dating violence perpetration compared to female students (Chan and Straus 2008; Chan 2012b; Chan et al. 2007, 2008). Another ontogenic factor, “witness of parents’ violence in childhood” is consistently associated with victimisation of women and perpetration by men (Hotaling and Sugarman 1986). “Being abused in childhood” is also related to later relationship violence (Straus, Gelles, and Steinmetz 1980). In addition, antisocial personality disorders (Chan et al. 2007; Hines and Straus 2007; Medeiros and Straus 2006), borderline personality disorders (Chan et al. 2007; Lysova and Hines 2008; Medeiros and Straus 2006), criminal history (Chan et al. 2007; Medeiros and Straus 2006), posttraumatic stress symptoms (Chan et al. 2007; Straus 2008), and social integration and gender hostility (Chan et al. 2007) are all associated with IPV.

Microsystem

The microsystem, also known as relationship factors, represents relationships between intimate partners, friends and family members (Ali and Naylor 2013). For example, youth is more likely to be victimised or perpetrate violence if he or she has friends involved in violence (Thornberry, Huizinga, and Loeber 1995). Heise (1998) reports that the microsystem refers to the immediate context and site of the abuse. For example, “home” is the context where different types of violence occur, such as spousal violence and child abuse (Heise 1998). The power structure of the family may be associated with family violence. “Male dominance in the family”, such as economic decision-making authority, is a strong predictor for violence against women (Heise 1998; Levinson 1989; Straus, Gelles, and Steinmetz 1980). In addition, the level of relationship conflict is positively related to the risk of domestic violence (Hotaling and Sugarman 1990). Conflict in marriages or intimate relationships includes disagreement over labour divisor, husband’s alcohol abuse, and wife’s higher education level than the husband (Hotaling and Sugarman 1990).

Exosystem

Exosystem factors associated with higher rates of domestic violence include unemployment, low socioeconomic status and the community context such as the existence of local drug stores (Krug et al. 2002). For instance, “male unemployment” increases the likelihood of domestic violence (Heise 1998; Straus, Gelles, and Steinmetz 1980). Moreover, unemployment is related to other factors that are associated with domestic violence, such as experience living in poverty, crowded environments and inconsistent education or income levels between couples (Heise 1998). Low family income is a consistent risk factor of severe violence toward women (Hotaling and Sugarman 1986). Families living below the poverty line are more than five times more likely to report marital violence (Straus, Gelles, and Steinmetz 1980). Social isolation, including low frequency of interaction with family, friends, neighbours or public activities, is both a risk factor and consequence of domestic violence (Gelles 1972; Nielsen, Endo, and Ellington 1992).

Macrosystem

The macrosystem represents societal level factors, such as economic, political, social structures, criminal justice system and culture affecting people’s lives, and more specifically the context regarding the meaning and acceptability of punishment for domestic violence (Slep, Foran, and Heyman 2014). Macrosystem factors can create a climate that can inhibit or promote violence (Krug et al. 2002). For instance, men adhering to traditional gender roles are more likely to be involved in committing sexual aggression against women than men with egalitarian beliefs (Koss et al. 1985; Lisak and Roth 1988; Malamuth 1986; Muehlenhard and Linton 1987; Rapaport and Burkhart 1984).

Regarding the macrosystem factors in the present study, we used a sample from three different sites in China, including Hong Kong, Taiwan, and Mainland China (Beijing and Shanghai). Chinese populations in Hong Kong and Taiwan are genetically comparable to their counterparts in Mainland China because of homogenous cultural heritage

(Wong and Wang 2006). However, Hong Kong was exposed earlier than Mainland China and Taiwan to Western influences (Tang et al. 2002). The substantial political, economic and social changes that Taiwan and Mainland China have experienced over the past decades (Lu et al. 2003) have influenced the different stages of policy formation regarding domestic violence. Changes in social policy may shape the social attitudes and services related to IPV. In terms of macrosystem factors, Hong Kong and Taiwan are more similar compared to Mainland China.

Study aim

The study employs the ecological conceptual framework to examine dating violence in Hong Kong, Taiwan and Mainland China. The study uses the ecological framework to identify ontogenic, microsystem, exosystem, and macrosystem factors associated with physical assault perpetration and victimisation among university students. Notwithstanding this, the current study tends to explain the research questions:

What are the report rates of physical assault perpetration and victimisation among Chinese university students?

What are the risk factors of physical assault perpetration and victimisation?

Methods

Sample

This study performs a secondary analysis of data from the International Dating Violence Study – IDVS, 2001–2006 (Straus 2004). The IDVS collected data from university students to assess the rates and risk factors of dating violence worldwide. The survey collected data from students either in introductory sociology or psychology classes through administering questionnaires or a web-based survey. The study assured students' anonymity and confidentiality (Straus and Ramirez 2007). The total sample of IDVS was 17,404 from 32 nations. Of those surveyed, 14,252 respondents had been in a relationship for at least one month by the survey time. IDVS employed well-validated instruments, the Conflict Tactics Scales-2 (CTS-2, Straus et al. 1996) to assess dating violence and the Personal and Relationships Profile (PRP; (Straus et al. 1999) to measure a number of risk factors related to dating violence (Chan et al. 2007). The questionnaires asked students to report the behaviour of both partners and thus tested the prevalence and risk factors of dating violence perpetration and victimisation worldwide.

For the present study, we analysed responses from 1,391 undergraduate students from: ten universities in Beijing ($n = 1,052$); four universities in Shanghai ($n = 678$); one university in Hong Kong ($n = 874$); and, one university in Taiwan ($n = 258$). The overall response rate was higher than 90%. All the university students in the sample indicated that they were in or had been in a dating relationship for a month or more when they participated in the survey.

Measures

Dependent variable

Physical assault. The Revised Conflict Tactics Scales (CTS-2, Straus et al. 1996) measures the prevalence of both physical assault perpetration and victimisation in participants' most recent intimate relationship. The measure asks respondents to report on behaviour that occurred in the year prior to responding to the questionnaire on a Likert scale,² ranging from 0 (This has never happened) to 7 (Not in the past year, but it did happen before). Physical assault perpetration refers to whether the respondents reported engaging in any of the acts toward their dating partners in the previous 12 months, while physical assault victimisation refers to whether the respondents were victimised by any of the acts by respondents' current or former partner.

The CTS-2 demonstrates cross-cultural validity and reliability and has been translated into Chinese with a satisfactory reliability alpha (Straus 2004). In the present study, we analysed data from the physical assault scale, including the severe physical assault subscale (seven items) and the minor assault scale (five items). The severe assault scale included acts such as "attacking with objects or weapons", "choking my partner", "burning or scalding my partner on purpose", and, "slamming my partner against a wall". Minor assault items included acts such as "slapping my partner", "throwing something at the partner", "pushing or shoving my partner", and "grabbed my partner."

Independent variables

Variables within ontogenic system. The IDVS measured demographic variables as individual factors in the ontogenic system including participants' gender, age, year in school, parent's marital status, cohabitation status, relationship type, sexual orientation, sexually activeness in their relationship, father's and mother's education and average family income. In addition, the Personal and Relationship Profile (PRP; Straus et al. 1999) included 17 subscales that examined individual risk factors for family violence. The Personal and Relationship Profile (PRP) assesses individuals' characteristics, including Antisocial personality (Cronbach's $\alpha = 0.635$), Borderline Personality Symptoms (Cronbach's $\alpha = 0.634$), Criminal History (Cronbach's $\alpha = 0.782$), Depressive Symptoms (Cronbach's $\alpha = 0.751$), Hostility to Men, Hostility to Women, Limited Disclosure (Cronbach's $\alpha = 0.515$), Neglect History (Cronbach's $\alpha = 0.641$), Post-Traumatic Stress Symptoms (Cronbach's $\alpha = 0.602$), Sexual Abuse History (Cronbach's $\alpha = 0.795$), Self-Control (Cronbach's $\alpha = 0.509$), Social Integration (Cronbach's $\alpha = 0.585$), Stressful Conditions (Cronbach's $\alpha = 0.605$), Substance Abuse (Cronbach's $\alpha = 0.650$), Violence Approval (Cronbach's $\alpha = 0.586$), and Violent Socialisation (Cronbach's $\alpha = 0.669$). Straus's earlier research demonstrated that PRP was associated with dating violence. The PRP has satisfactory validity and reliability. In the current analysis of the IDVS, Hostility to Men and Hostility to Women were combined into a new variable Gender Hostility (combined Cronbach's $\alpha = 0.637$) by combining the two scales together. Each item on the scale was rated from 1 ("strongly disagree") to 4 ("strongly agree"). As suggested by Straus (2011), we computed the mean of the items for which at least 75% of the items were answered in each subscale. We used the itemised scores (i.e. the total score of a scale dividing by the total number of items used to calculate the total score) in our analyses.

Variables at the microsystem level. Demographic characteristics including participants' relationship type, cohabitation status, sex as a part of the relationship and parents' marital status were measured as relationship factors in the microsystem. In addition, we also used eight subscales in the Personal and Relationship Profile (PRP; Straus et al. 1999) to examine the relationship risk factors for dating violence. The PRP included characteristics of partners' relationship, including items that refer to acts or attitudes towards the partner, Anger Management (Cronbach's $\alpha = 0.557$), Communication Problems (Cronbach's $\alpha = 0.498$), Conflict (Cronbach's $\alpha = 0.598$), Dominance (Cronbach's $\alpha = 0.509$), Jealousy (Cronbach's $\alpha = 0.778$), Negative Attribution (Cronbach's $\alpha = 0.363$), Relationship Commitment (Cronbach's $\alpha = 0.533$) and Relationship Distress (Cronbach's $\alpha = 0.661$). Each item on these factors was rated from 1 ("strongly disagree") to 4 ("strongly agree"). We computed the mean for each item for analyses.

Variables at the exosystem level. The socioeconomic status scale (SES) was used to measure respondents' socioeconomic status (Straus 2004) by measuring fathers' and mothers' number of years of education and family income. For each respondent, mother's education, father's education, and family income were standardised (z-scored) separately and then summed. The sum was transformed into a z-score. The z-score of each respondent indicated the number of standard deviations above or below the mean of all respondents in the sample.

Variables at the macrosystem level. The variable SITE was used to compare the regional differences in terms of the prevalence of physical assault. The sites were categorised as: Beijing, Shanghai, Hong Kong, and Taiwan. Participants in Beijing and Shanghai were combined as the category Mainland China.

Data analysis

Convenience sampling was used in the present study. The demographic characteristics and rates of severe and minor physical assault perpetration and victimisation in the preceding year were presented as percentages (rate per 100) or means and standard deviation. Chi-square and t tests and ANOVA were used to compare the sample characteristics between males and females, among students from Mainland, Hong Kong and Taiwan, between perpetrators and non-perpetrators, and finally, between victims and non-victims. We used generalised mixed effect model with random intercept of site (i.e. Mainland, Hong Kong, and Taiwan) to examine of the adjusted association between physical assault perpetration/victimisation (presence vs. absence) and the factors of the ecological model, including ontogenic development, the microsystem, the exosystem and the macrosystem. We used adjusted odds ratio to interpret the results: an odds ratio greater (lower) than 1.00 indicates that the independent variable is associated with an increase (decrease) in the odds of the dependent variable. We used Software STATA version 13.0 for the statistical analyses.

Results

Sample characteristics

Among the 2,682 participants, 65.6% were female. The average age was 22.49 (SD = 4.27) years old. The divorce rates of the students' parents were 5.4%, 8.7% and 11.7% in Mainland China, Hong Kong and Taiwan, respectively. The majority of students in Mainland China live with roommates, about two-thirds of Hong Kong students (62.2%) live with parents, and about an equal proportion of Taiwanese students live with roommates (40.7%) or with parents (43.2%). About 96.6% of the participants were involved in heterosexual relationships. Only one third of the participants (33.1%) were sexually active, which did not differ between female and male ($\chi^2 = 0.28, p > 0.05$), but differed across sites, with the lowest rate (26.2%) among Mainland students and relatively higher rates in Hong Kong (39.1%) and Taiwanese students (48.2%, $\chi^2 = 40.56, p < 0.001$). See [Table 1](#).

Report rates of physical assault

[Table 2](#) shows that the report rates of physical assault among the entire university sample in China were: minor perpetration 34.1%; severe perpetration 16.2%; minor victimisation 23.9%; severe victimisation 12.5%. There is significant co-existence of perpetration and victimisation. For example, 62.5% university students who perpetrated minor physical assault also were victims of physical assault, compared to that only 3.6% of students who did not perpetrate minor physical assault were victims of physical assault ($\chi^2 = 324.65, p < 0.001$).

[Table 2](#) illustrates the bivariate association between physical assault perpetration/victimisation and sociodemographic variables. There were statistically significant differences between genders in both minor and severe perpetration. Compared with male counterparts, female students reported higher rates of minor physical assault perpetration against their partners (41% vs. 21.1%, $\chi^2 = 54.89, p < 0.001$), as well as higher rates of severe physical assault perpetration (20.0% vs. 8.8%, $\chi^2 = 29.32, p < 0.001$). The gender differences in victimisations are not statistically significant. Perpetrators and victims of minor physical assault were younger compared with their counterparts who were not perpetrators or victims of such experience ($p < 0.05$). Respondents who reported that they lived in their own place reported the highest rates of severe violence perpetration and victimisation ($p < 0.05$). Respondents in the cohabiting relationship reported the highest rate of severe violence perpetration ($p < 0.001$) and victimisation ($p < 0.05$). Relationships that involved sexual activity had the highest rates of minor and severe violence offending and victimisation (p values < 0.001). The rates of physical assault perpetration and victimisation are not statistically different across the three sites (p values: 0.098–0.946).

Bivariate association between physical assault and PRP factors

Perpetrators and victims of physical assault showed different psychological and behavioural profiles ([Table 3](#)). Compared with their counterparts without physical assault experience, respondents with physical assault experiences regardless perpetration or victimisation showed consistently higher Antisocial Personality Symptoms (p values < 0.05), Borderline

Table 1. Demographic characteristics (N = 1391).

Characteristics	Total n(%) / M \pm SD	Male %/M \pm SD	Female %/M \pm SD	t/X ²	Mainland (n = 756) %/M \pm SD	Hong Kong (n = 473) %/M \pm SD	Taiwan (n = 162) %/M \pm SD	F/X ²
Sex								
Male	478 (34.4)				38.1	31.9	24.1	13.52***
Female	913 (65.6)				61.9	68.1	75.9	
Year in School (mean)	15.16 \pm 1.26	15.35 \pm 1.31	15.06 \pm 1.23	4.04***	15.05 \pm 1.18	15.52 \pm 1.36	14.62 \pm 1.27	37.92***
Age in years (mean)	22.49 \pm 4.27	23.04 \pm 4.64	22.21 \pm 4.03	3.48***	21.63 \pm 2.93	24.64 \pm 5.59	20.24 \pm 1.89	113.70***
Parent's marital status								
Married	1235 (88.8)	90.0	88.2	4.02	93.4	85.2	77.8	51.75***
Separated or divorced	101 (7.3)	7.5	7.1		5.4	8.7	11.7	
One or both have died	55 (3.9)	2.5	4.7	46.62***	1.2	6.1	10.5	500.92***
Cohabitation status								
With partner	58 (4.1)	6.3	3.1		4.1	3.6	6.2	
Own place	70 (5.0)	8.6	3.2		2.6	7.2	9.9	
Roommate	778 (55.9)	58.4	54.6		81.2	20.7	40.7	
Parents	450 (32.3)	23.4	37.0		11.4	62.2	43.2	
Other	35 (2.5)	3.4	2.1		0.7	6.3	0	
Relationship Type				1.06				37.46***
Dating	1219 (87.6)	86.6	88.2		88.2	84.6	93.8	
Engaged	119 (8.5)	9.0	8.3		9.0	10.8	0	
Married	27 (1.9)	2.1	1.9		1.5	3.2	0.6	
Cohabitation	26 (1.9)	2.3	1.6		1.3	1.5	5.5	
Sexual Orientation				0.79				7.58*
Heterosexual	1344 (96.6)	96.0	96.9		97.5	96.4	93.2	
Homosexual	47(3.4)	4.0	3.1		2.5	3.6	6.8	
Sexually active				0.28				40.56***
No	930 (66.9)	67.8	66.4		73.8	60.1	51.8	
Yes	461 (33.1)	32.2	33.6		26.2	39.1	48.2	
Father's year of education	11.36 \pm 4.39	11.33 \pm 4.39	11.38 \pm 4.41	0.20	12.67 \pm 4.05	9.44 \pm 4.61	10.84 \pm 2.94	90.42***
Mother's year of education	10.31 \pm 4.31	10.25 \pm 4.31	10.34 \pm 4.31	0.33	11.62 \pm 4.10	8.28 \pm 4.25	10.11 \pm 2.83	100.48***
Average Family income^a					12,375.84 \pm 16,117.67	28,074.83 \pm 24,786.27	57,830.19 \pm 41,826.65	
Socioeconomic Status (z score)	0.13 \pm 0.98	0.13 \pm 1.01	0.13 \pm 0.98	0.02	0.21 \pm 0.96	0.19 \pm 1.02	0.06 \pm 1.00	

Notes: a, family income in different sites had different unit and thus cannot apply ANOVA test; currency exchange rate in 2002–2003
M \pm SD, mean \pm standard deviation; *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$



Table 2. The rates and bivariate analysis of minor and severe physical assault, perpetration and victimisation.

Characteristics	Minor perpetration (%)		t/X ²	Severe perpetration (%)		t/X ²	Minor victimisation (%)		t/X ²	Severe victimisation (%)		t/X ²
	no	yes		no	yes		no	yes		no	yes	
Total		34.1		16.2		29.32***		23.9		3.00		12.5
Sex			54.89***									0.98
Male	78.9	21.1		8.8			78.9	21.1			88.7	11.3
Female	59.0	41.0		20.0			74.7	25.3			86.9	13.1
Years in school (mean ±SD)	15.23 ± 1.34	15.03 ± 1.10	2.79**	15.06 ± 1.10	1.33		15.21 ± 1.31	14.98 ± 1.09	3.01**		15.17 ± 1.28	15.11 ± 1.14
Respondent Age (mean ±SD)	22.75 ± 4.73	22.01 ± 3.16	3.06**	22.21 ± 3.73	1.08		22.66 ± 4.56	21.97 ± 3.16	2.57*		22.51 ± 4.30	22.40 ± 4.10
Parent's marital status			2.75		0.88				1.04			1.45
Married	65.8	34.2		15.9			75.9	24.1			87.3	12.7
Separated/divorced	61.4	38.6		17.8			75.2	24.3			91.1	8.9
One or both have died	74.6	25.4		20.0			81.8	18.2			85.4	14.6
Cohabitation status			9.86*		12.63*				14.59***			16.03**
With partner	63.8	36.2		22.4			70.7	29.3			84.5	15.5
Own place	55.7	44.3		27.1			32.3	37.1			72.7	27.1
Roommate	68.9	31.1		14.1			79.3	20.7			87.8	12.2
Parents	63.3	36.7		16.4			74.7	25.3			89.6	10.4
Other	54.3	45.7		25.7			60.0	40.0			88.6	11.4
Relationship Type			4.05		18.57***				5.40			8.82*
Dating	66.5	33.5		15.3			76.6	23.4			88.1	11.9
Engaged	62.2	37.8		18.5			72.3	27.7			85.7	14.3
Married	70.4	29.6		18.5			85.2	14.8			85.2	14.8
Cohabitation	50.0	50.0		46.2			61.5	38.5			69.2	30.8
Sexual Orientation			0.11		0.03				0.38			0.25
Heterosexual	65.8	34.2		46.2			76.3	23.7			87.6	12.4
Homosexual	68.1	31.9		17.0			72.3	27.7			85.1	14.9
Was sex part of relationship?			38.38***		35.34***				24.74***			23.80***
No	71.4	28.6		12.0			80.2	19.8			90.5	9.5
Yes	54.7	45.4		24.5			67.9	32.1			81.3	18.7
Socioeconomic Status (mean±SD)	0.15 ± 1.00	0.88 ± 0.96	1.14	0.13 ± 1.07	0.01		0.14 ± 0.98	0.09 ± 0.99	0.87		0.14 ± 0.98	0.06 ± 1.05
Site			0.11		4.65				2.55			3.03
Mainland	65.5	34.5		16.1			76.1	23.9			86.4	13.6
Hong Kong	66.4	33.6		14.4			77.8	22.2			89.6	10.4
Taiwan	66.0	34.0		21.6			71.6	28.4			86.4	13.6

Notes. *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$

Table 4. The relationship between the ecological factors and the occurrence of minor and severe physical assault perpetration and victimisation.

	minor perpetration OR (95% CI)	Severe perpetration OR (95% CI)	Minor victimisation OR (95% CI)	Severe victimisation OR (95% CI)
Ontogenic factors				
Gender				
Male	ref	Ref	ref	Ref
Female	2.48 (1.80, 3.43)	2.89 (1.83, 4.56)	1.23 (0.87, 1.73)	1.45 (0.94, 2.26)
Years in school	1.05 (0.92, 1.21)	1.06 (0.88, 1.26)	0.99 (0.85, 1.15)	1.04 (0.87, 1.26)
Respondent age	0.93 (0.89, 0.98)	0.97 (0.92, 1.03)	0.95 (0.90, 1.00)	0.97 (0.91, 1.03)
Antisocial personality Symptoms	0.52 (0.27, 1.00)	0.78 (0.35, 1.78)	0.64 (0.32, 1.31)	0.71 (0.29, 1.72)
Borderline Personality Symptoms	1.24 (0.75, 2.06)	0.93 (0.49, 1.76)	1.25 (0.73, 2.14)	0.54 (0.27, 1.09)
Criminal History	1.44 (0.95, 2.20)	1.92 (1.14, 3.24)	1.64 (1.05, 2.55)	2.64 (1.51, 4.61)
Depressive Symptoms	0.70 (0.47, 1.04)	0.96 (0.58, 1.59)	0.87 (0.57, 1.34)	1.41 (0.82, 2.41)
Gender Hostility	1.26 (0.74, 2.13)	0.87 (0.45, 1.70)	0.98 (0.56, 1.72)	0.78 (0.38, 1.60)
Limited Disclosure	0.71 (0.37, 1.38)	0.60 (0.26, 1.41)	1.53 (0.74, 3.18)	1.23 (0.48, 3.14)
Neglect History	0.84 (0.56, 1.27)	0.93 (0.55, 1.56)	0.78 (0.50, 1.21)	0.66 (0.37, 1.16)
Post-Traumatic Stress Symptoms	1.85 (1.24, 2.75)	1.45 (0.86, 2.44)	2.33 (1.51, 3.61)	2.10 (1.20, 3.66)
Sexual Abuse History	0.87 (0.60, 1.26)	0.80 (0.50, 1.27)	0.59 (0.40, 0.89)	0.72 (0.44, 1.19)
Self-Control	0.96 (0.52, 1.75)	0.71 (0.33, 1.52)	1.31 (0.68, 2.53)	1.01 (0.44, 2.31)
Social Integration	0.91 (0.54, 1.53)	1.71 (0.88, 3.35)	0.76 (0.44, 1.34)	1.51 (0.74, 3.09)
Stressful Conditions	0.91 (0.51, 1.61)	0.89 (0.43, 1.83)	0.65 (0.35, 1.21)	1.01 (0.47, 2.20)
Substance Abuse	0.60 (0.39, 0.93)	0.75 (0.44, 1.28)	0.53 (0.33, 0.84)	0.80 (0.45, 1.43)
Violence Approval	1.21 (0.79, 1.85)	1.22 (0.70, 2.11)	1.94 (1.22, 3.09)	1.20 (0.67, 2.17)
Violent Socialization	1.25 (0.88, 1.78)	1.98 (1.26, 3.12)	1.64 (1.12, 2.40)	1.84 (1.13, 3.00)
Microsystem factors				
Parent marital status				
Married	Ref	Ref	ref	Ref
Separated/Divorced	1.15 (0.71, 1.88)	0.98 (0.52, 1.84)	0.85 (0.50, 1.45)	0.56 (0.25, 1.22)
One or both have died	0.47 (0.23, 0.96)	1.18 (0.53, 2.62)	0.49 (0.22, 1.08)	1.05 (0.44, 2.50)
Cohabitation status				
Roommate	Ref	Ref	ref	Ref
With a partner	1.18 (0.56, 2.50)	0.95 (0.37, 2.47)	1.63 (0.75, 3.55)	0.73 (0.27, 2.01)
Own place	3.12 (1.70, 5.72)	3.31 (1.64, 6.67)	2.98 (1.63, 5.47)	3.35 (1.68, 6.69)
Parents	1.57 (1.13, 2.20)	1.50 (0.97, 2.30)	1.65 (1.15, 2.37)	1.06 (0.66, 1.71)
Other	3.23 (1.39, 7.50)	3.72 (1.35, 10.25)	4.15 (1.75, 9.83)	1.06 (0.31, 3.56)
Relationship Type				
Dating	Ref	Ref	ref	Ref
Engaged	1.00 (0.63, 1.58)	0.97 (0.55, 1.73)	1.17 (0.71, 1.92)	0.96 (0.51, 1.79)
Married	1.30 (0.44, 3.88)	1.48 (0.41, 5.36)	0.76 (0.21, 2.75)	1.35 (0.35, 5.22)
Cohabitation	2.67 (0.96, 7.43)	8.40 (2.78, 25.36)	1.86 (0.67, 5.14)	4.03 (1.30, 12.48)
Sexual Orientation				
Heterosexual	Ref	ref	ref	ref
Homosexual	0.86 (0.43, 1.74)	1.01 (0.41, 2.49)	1.10 (0.53, 2.30)	1.01 (0.41, 2.52)
Was sex part of relationship?				
No	Ref	ref	ref	ref
Yes	2.22 (1.66, 2.97)	2.03 (1.42, 2.91)	1.98 (1.45, 2.70)	1.98 (1.35, 2.90)
Anger Management	0.40 (0.25, 0.63)	0.30 (0.17, 0.54)	0.40 (0.24, 0.65)	0.40 (0.21, 0.75)
Communication problems	1.60 (0.95, 2.71)	1.45 (0.73, 2.84)	1.00 (0.56, 1.76)	1.36 (0.66, 2.81)
Conflict	1.59 (1.00, 2.52)	0.95 (0.52, 1.74)	1.64 (0.99, 2.72)	2.15 (1.11, 4.14)
Dominance	2.57 (1.57, 4.20)	3.23 (1.75, 5.95)	1.67 (0.99, 2.80)	1.18 (0.62, 2.25)
Jealousy	0.92 (0.68, 1.25)	1.17 (0.79, 1.72)	0.90 (0.65, 1.25)	1.14 (0.75, 1.74)
Negative attributions	1.37 (0.92, 2.03)	2.28 (1.38, 3.76)	2.22 (1.46, 3.40)	2.64 (1.55, 4.52)
Relationship Commitment	0.74 (0.51, 1.07)	0.57 (0.35, 0.94)	1.08 (0.72, 1.62)	1.02 (0.61, 1.73)
Relationship Distress	0.45 (0.29, 0.71)	0.34 (0.19, 0.61)	0.86 (0.54, 1.38)	0.57 (0.31, 1.06)
Exosystem	0.93 (0.82, 1.07)	1.02 (0.86, 1.21)	0.96 (0.83, 1.11)	0.91 (0.76, 1.09)
Macrosystem				
Site				
Mainland	Ref	ref	ref	ref
Hong Kong	0.67 (0.46, 0.98)	0.53 (0.32, 0.87)	0.70 (0.46, 1.06)	0.60 (0.35, 1.03)
Taiwan	0.33 (0.20, 0.53)	0.44 (0.24, 0.79)	0.51 (0.31, 0.85)	0.38 (0.20, 0.74)

Notes. Bolded numbers were statistically significant at 0.05 level.

Personality Symptoms (p values <0.001), Gender Hostility (p values <0.001), Post-Traumatic Stress Symptoms (p values <0.001), Stressful Conditions (p values <0.001), Violence Approval (p values <0.001), Violent Socialisation (p values <0.001), Communication Problems (p values <0.001), Conflict (p values <0.001), Dominance (p values <0.001), Jealousy (p values <0.001) and Negative Attribution (p values <0.001), as well as consistently lower scores on Limited Disclosure (p values <0.01) and Anger Management (p values <0.001).

Adjusted association of physical assault and ecological factors

Ontogenic system factors

Controlling for other variables, female students reported higher rates of minor and severe physical assault perpetration compared to males [aOR = 2.48 (1.80, 3.43), $p < 0.001$, and 2.89 (1.83, 4.56), $p < 0.001$, respectively] (Table 4). Gender was not related to reported minor [aOR = 1.23 (0.87, 1.73), $p = 0.24$] or severe physical assault victimisation [aOR = 1.454 (0.94, 2.26), $p = 0.10$]. Young age significantly increased the risk of minor physical offending [aOR = 0.93 (0.89, 0.98), $p = 0.005$]. Having a criminal history (aOR = 1.64–2.64, p values < 0.05) significantly increased the risk of severe physical assault offending as well as both minor and severe physical assault victimisation. Having post-traumatic stress symptoms (aOR = 1.85–2.33, p values <0.05) significantly increased the risk of minor physical offending, and both minor and severe physical assault victimisation. A one unit increase in Violent Socialisation score was associated with a 64–98% (p values <0.05) increases in the odds of severe physical offending, and both minor and severe physical assault victimisation. Violence Approval score was positively associated with minor physical assault victimisation [aOR = 1.94 (1.22, 3.09), $p = 0.005$]. Having a history of sexual abuse [aOR = 0.59 (0.40, 0.89), $p = 0.01$] decreased significantly the risk of minor physical assault victimisation.

Microsystem factors

Controlling for all other independent variables in the models, sex as part of the relationship (aOR = 1.98–2.22, p values <0.001) increased significantly the likelihood of minor and severe physical assault perpetration and victimisation in comparison to relationships without sex. Cohabitation status was associated with physical assault. Living in own place or with parents was associated with a 57% to 212% (p values < 0.01) increases in the odds of minor physical offending compared to the odds of minor physical offending when living with roommates. Students who were in a cohabiting relationship were more likely (300–740% times, p values < 0.05) to experience severe physical assault, including offending and victimisation compared to those who were just dating.

A one unit increase in Anger Management score was associated with a 60–70% (p values <0.01) decrease in the odds of both physical assault offending and victimisation. A one unit increase in Conflict score was associated with higher rates of minor physical offending [aOR = 1.59 (1.00, 2.52), $p = 0.05$] and severe physical victimisation (aOR = 2.15 (1.11, 4.14), $p = 0.02$). A one unit increase in Dominance score in a dating relationship was associated with a 157% – 223% (p values < 0.05) increase in the odds of physical assault offending. Negative Attributions (aOR = 2.22–2.64, p values <0.05)

significantly increased the risk of severe physical offending and both minor and severe physical assault victimisation.

Exosystem factor

In the present study, the only factor examined in the exosystem, socioeconomic status was not significantly associated with any type of physical assault perpetration and victimisation (aOR = 0.91–1.02, p values = 0.302–0.818).

Macrosystem factor

Compared with their counterparts in the Mainland, respondents who attended universities in Hong Kong were less likely to report minor [aOR = 0.67 (0.46, 0.98), $p = 0.04$] and severe physical assault offending [aOR = 0.53 (0.32, 0.87), $p = 0.01$], and respondents in Taiwan were less likely to perpetrate or be victimised by minor or severe physical assault (aOR = 0.33–0.51, p values <0.05).

Discussion

Risk factors of physical assault perpetration

The ontogenic level factors that raise the risk of minor physical assault perpetration are being females, younger age, with post-traumatic stress symptoms. Microsystem factors include living with a roommate or parents, relationships involving sex, poor anger management, strong conflict and dominance in the relationships. Exosystem factor region reveals lower rates of perpetration in Hong Kong and Taiwan. In the case of severe physical assault, the risk factors are ontogenic factor of female, criminal history, and violence socialization, microsystem factors of sex in a relationship, poor anger management, and dominance in a relationship, cohabitating with a partner, negative attributions, and bad relationship commitment. Lower rates of severe perpetration are found in Hong Kong and Taiwan compared to universities in Mainland China.

This study found that the female university students than male students in Mainland China reported higher rate of dating violence (both minor and severe), which is consistent with previous research among the college and university students in the U.S. as well as the data worldwide (Chan 2012a; Chan et al. 2007, 2008; Chan and Straus 2008; Straus 2004, 2008). Dominance, regardless of whether it is male dominance or female dominance in the relationships, significantly increases the risk of violence (Kim and Emery 2003; Straus 2008; Straus, Gelles, and Steinmez 1980). Some research reveals that severe physical violence is more prevalent in male-dominant relationships while minor physical violence is most prevalent in female-dominant relationships (Tang, Lee, and Cheung 1999). Even though the present study does not compare male dominance to female dominance associated with physical assault, findings in the present study are consistent with previous research that dominance, of any kind, is a risk factor for minor physical assault perpetration (Lasley and Durtschi 2015). In addition, the present study also shows that more dominance in the relationship significantly increases the likelihood of severe physical assault perpetration among all Chinese participants. Findings confirm that male dominance is the foundation for any realistic theory of violence.

However, due to its inadequate as a single explanation, it suggests taking an ecological approach to explain the etiology of dating violence (Heise 1998).

Risk factors of physical assault victimisation

Compared to the risk factors for physical assault offending, we find different ontogenic level risk factors for physical assault victimisation, including sexual abuse history and violence approval. More specifically, ontogenic level factors including criminal history, post-traumatic stress symptoms, violence approval, and violence socialisation increase the risk of minor physical assault victimisation. Microsystem factors including involving sex in the relationship, poor anger management, and negative attributions are all associated with higher rates of minor physical assault victimisation. For severe victimisation, the ontogenic level of risk factors includes criminal history, post-traumatic stress symptoms and violence socialisation; microsystem level of factors include cohabitation, involving sex in the relationship, poor anger management, conflict, and negative attribution. For both minor and severe victimisation, the macrosystem factor of a region reveals that lower rate of physical assault victimisation is found in Taiwan compared to universities in Mainland China and Hong Kong.

Violence socialisation is associated with higher rates of physical assault victimisation. Violence socialisation was measured using the scale from the Personal Relationships Profile (PRP) instrument (Straus et al. 1999), referring to the extent an individual witnesses or experiences violence and receives pro-violence advice during childhood from family members. For example, “When I was a kid, I saw my mother or father kick, punch, or beat up their partner” and “When I was a kid, I saw an adult in my family who was not my mother or father push, shove, slap, or throw something at someone.” Our study is consistent with previous research on the correlation between higher rates of minor and severe physical assault victimisation and higher scores on violence socialisation among Chinese students (Lasley and Durtschi 2015).

Post-traumatic stress symptoms are an important risk factor associated with physical assault. Findings in the present study show that participants who have PTSD symptoms report higher levels, both minor and severe physical assault victimisation. Shen (2014) shows that people who report psychological dating violence victimisation experience higher level of PTSD symptoms compared to those who have not been victimised; but, that study does not find an association between PTSD symptoms and physical assault victimisation. In terms of PTSD symptoms and violence victimisation, it is not clear what the time order is for the relationship. Post-traumatic stress symptoms are likely a consequence of victimisation. On the other hand, individuals with PTSD could be at risk of victimisation. The time order question will have to be sorted out with future longitudinal research.

The present study does not find an association between stronger dominance and higher rates of physical assault victimisation, which is inconsistent with Lasley and Durtschi’s (2015) research findings that dominance predicts minor physical assault victimisation among participants from Taiwan and Mainland China.

Regional differences in IPV-related factors and effects

Due to the similarities of culture heritage, the study combined samples from Beijing, Shanghai, Hong Kong and Taiwan as a whole under the ecological framework to examine the effects of different levels of factors on physical dating violence. However, considering the political and socioeconomic changes that these three modern societies have experienced in the past several decades, we use a *region* to represent the macro-system level of factor, to explore the differences in physical assault across the three regions. More specifically, we use Mainland China as a reference group, to compare its distinction with Hong Kong and Taiwan respectively.

Significant differences exist between Mainland China and Hong Kong regarding both minor and severe physical assault offending: university students from Hong Kong report less physical assault offending. Compared to the students from Mainland China, participants from Taiwan are less likely to report both physical assault offending and victimisation. These findings imply that even though sharing a similar cultural heritage in common, the three regions have undergone different societal changes and Western influences, which may affect people's perception and experience of dating violence. Research that compared definitions of violence against women in the three Chinese societies show that service professionals (e.g. psychologists, social workers, nurses) in Taiwan endorse more liberal gender attitudes than those in Mainland China. Service professionals from Hong Kong are between those from Mainland China and Hong Kong in their gender attitudes (Tang et al. 2002).

In particular, both Hong Kong and Taiwan enacted legislation proscribing domestic violence decades before Mainland China enacted its first legislation. By the time of data collection (2001), the *Domestic Violence Prevention Act* 1998 has been enacted in Taiwan for years. Taiwan is the first nation in Asia that implements civil protection orders. In Hong Kong, the *Domestic Violence Ordinance* (Cap 189) (DVO) was enacted in 1986 to provide civil relief to the victims of domestic violence in Hong Kong (Barrow and Scully-Hill 2016). In contrast, there was no national domestic violence law in Mainland China by the time of data collection (2001–2006) because the national *Domestic Violence Law* was not enacted until December 2015. Time variation in policy-making of domestic violence across three regions likely impacts different rates of reported physical assault among university students because legal sanctions for family violence increase perpetrators' fear of negative consequences, and thereby impact the rates of abuse (Dutton et al. 1992).

Limitations

The study has certain limitations. The study uses secondary data from the *International Dating Violence Study*. Because we were restricted to the variables included in the IDVS, we could not examine some possible risk factors associated with violence, such as child abuse experience in childhood, or social isolation of the family. For example, the macrosystem level of factor – region is used to compare and present the different rates of physical assault across universities in Mainland China, Hong Kong and Taiwan. However, the study is limited by having no findings of social norms and social attitudes toward dating violence, which are important factors in the macrosystem of the model.

In addition, the study has a limitation that restricts the generalisability of the research findings. The participants were recruited using a convenience sampling method, which limits the representativeness of the sample and the generalisability of study findings. In addition, the samples were living in urbanised environment, which limited the study results to represent the physical assault situation among university students living in rural areas or small cities in China. The rates of dating violence in those areas are expected to be much higher than their counterparts in urban areas of China. Another limitation of the study is the use of self-report measure, which may lead to the self-report response bias (e.g. social desirability) and thus impact the results. Moreover, the parent study was a cross-sectional designed and, therefore, all relationships in the study are associations and should be interpreted cautiously.

Conclusions and implications

The study contributes to the understandings of physical dating violence among Chinese university students in several ways. First, the study presents findings of both physical assault victimisation and perpetration. Second, we contribute to the understandings about different risk factors at various levels using the ecological framework. In addition, we provide insights on what physical assault behaviours by levels of severity (minor and severe) would occur under particular levels of factors. Fourth, the study compares and contrasts the report rates of physical assault across universities in Mainland China, Hong Kong and Taiwan, to inform the impact of social and legal sanctions on the rates of violence.

For the purpose of primary prevention, the study contributes to the recognition of risk factors associated with physical assault. The findings can point to steps to make dating relationships free of violence, such as sex education, good anger management and formal social sanctions. This study provides insight into many different factors at various levels of promoting physical assault offending and victimisation among Chinese students. The ecological model is useful as a framework for prevention (Krug et al. 2002). Findings inform the design of interventions and suggest some common directions for violence preventions across universities.

First, this study provides the understanding that it is necessary to promote sex education among university students regarding healthy intimate relationships involving sex life. We find that “relationship involving sex” contributes significantly to higher rates of all levels of physical assault offending and victimisation across universities in this study. Our findings suggest the high-risk nature of sex life in a dating relationship to physical dating assault. Results shed light for future studies about the implementations of “healthy sexual behaviours programme” on Chinese campus to reduce the likelihoods of dating violence among young adults in Chinese societies.

Second, “good anger management” is associated with less physical assault among students. The present study reveals that poor anger management was associated with more physical assault perpetration and victimisation, which is consistent with previous research findings that anger is a trigger to perpetrate physical aggression (Shorey, Meltzer, and Cornelius 2010). In addition, victim anger and victim-perpetrated aggression can also be cues of partner violence (Dutton 1995). The anger management programme on campus can be highly cost-effective in violence prevention (Howells

et al. 2002). This study would support the utility of anger management programmes targeting campus students. The study suggests future studies testing the cross-cultural adaptation and effectiveness of existing anger management programmes in western society, such as problem-solving skill as alternative strategies to control angry impulses (Margolin 1979). Since dating relationship stress increases the likelihood of physical assault offending, future research can explore more about the association between relationship stress and dating violence by employing measures as *The Relationship Anxiety Inventory* (Jouriles et al. 2005).

Lastly, the present study compares the rates and risk factors of physical assault across three Chinese societies. For societies with earlier social and legal sanctions, we found lower rates of victimisation and offending. Even though we find students in Mainland China report higher rates of physical assault than their counterparts in Hong Kong and Taiwan, we predict lower rates of physical assault if future research replicates the studies in Mainland China. We hypothesise that the implementation of the *National Domestic Violence Law* 2015 in Mainland China will impact the rates of intimate violence, and thereby, we suggest future studies to assess dating violence among universities to test the likelihood of changes in Mainland China.

Notes

1. In the literature review session, the article used the term intimate partner violence (IPV) rather than the term dating violence because the cited work used the term IPV.
2. 1 = Once in the past year; 2 = Twice in the past year; 3 = 3 ~ 5 times in the past year; 4 = 6 ~ 10 times in the past year; 5 = 11 ~ 20 times in the past year; 6 = More than 20 times in the past year; 7 = Not in the past year, but it did happen before; 0 = This has never happened.

Disclosure statement

No potential conflict of interest was reported by the authors.

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