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Assessed Coursework Cover Sheet for Applied Psychology Postgraduate Courses

Module Title: Forensic Psychology Research Dissertation

Coursework Title: A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife-Carrying in Adolescents and Young Adults

Word Count (excluding references and appendices): 8000

This is to confirm that I submit this piece of assessed work in the full knowledge of the published guidelines on plagiarism and its consequences

Type name: Ho Fung Lam

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Research Proposal

Application form

Application for approval of all studies involving **Healthy Human Participants only conducted by Staff and Students of the University of Nottingham which don't involve an invasive procedure**

Please complete one application form, consent form (template attached) and participant information sheet (template attached), one detailed study proposal (template attached) Please e-mail 1 copy of each as attachments

1 Title of Project: A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife Carrying in Adolescents and Young Adults.

Short title ACEs and Knife Carrying.

2 Names, Qualifications, Job Title, School/Divisional/Unit/Address, email of all Researchers:

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Other key researchers/collaborators: /

Students name and course: Ho Fung Lam, MSc (by research) Forensic and Criminological Psychology

3 Type of Project: Questionnaire Study

4 Location of study: Online

5 Description and number of participants to be studied:

Adolescents aged 13-17 years and young adults aged 18-25 years will be invited to take part in the study. A total of 870 participants will be recruited, 435 from the United Kingdom and Hong Kong respectively to explore the cause-and-effect relationship between Adverse Childhood Experiences (ACEs) and knife carrying in distinct cultures. After careful examination on the gender ratio of the targeted age-group, three hundred males and females will be recruited from each culture to generate a representative sample. There are no exclusion criteria in this study.

6 Summary of Experimental Protocol

Background: Knife crime has become a public interest due to an escalation in such offences. A recent statistic revealed that most of whom being cautioned, reprimanded or convicted for carrying a knife in England and Wales were young adults (Ministry of Justice, 2019) meanwhile research has found that around one-third of adolescents age 12-17 years reported having a knife in procession in last 12 months (McVie, 2010). Adolescents have been the focus of research on knife carrying whilst young adults are underrepresented in this field. Therefore, this study will recruit individuals aged 13-25 years to investigate the relationship between adverse childhood experience(s) and knife carrying young people. A prior study found that childhood abuse experiences, household dysfunction and exposure to violent game play are associated with knife carrying (Duke et al., 2010; Ybarra et al., 2014). However, the occurrence of each type of ACEs varies between Chinese and Western populations (Wu et al., 2002). Therefore, participants will be recruited from the United Kingdomand Hong Kong to examine where there is any cultural difference in the cause-and-effect relationship between ACEs and knife carrying.

Aim and hypothesis: This study seeks to explore the following in young people from the United Kingdom and Hong Kong:

1. **The cumulate ACE scores and prevalent of each type of ACEs**
   It is predicted that a higher proportion of Hong Kong participants will report experiencing one or more ACE than the United Kingdom participants and physical abuse will be one of the more common ACE shared among participants from two cultures.
2. **The prevalent and frequency of knife carrying in the last 12 months**
   It is predicted that around a third of adolescents aged 13-17 years will report carrying a knife and young adults aged 18-25 years are less likely to report doing so. Meanwhile most of those who admit keeping a knife in procession only did so once or twice in last 12 months
3. **The impact of demographic traits on ACEs and knife carrying**
   It is predicted that participants age 13-17 years, being a male, belongs to an ethnic minority group and from low socioeconomic status are at higher risk of ACEs and knife carrying.
4. **The effect of violent game play on knife carrying**
   it is predicted that the odds of knife carrying increases with the frequency of violent game play
5. **The cause-and-effect relationship between ACEs and knife carrying**
   it is hypothesised that the risk of knife carrying increase with the total ACEs score and the type of ACEs associated with knife carrying will be the same between two cultures.

Research protocol and method: An anonymous online self-reported questionnaire will be administrated to measure participant's demographic traits, adverse childhood experiences, violent game play and history of knife carrying. Demographic information included age, gender, race/ethnicity, care background, parental composition in home, and educational level of participant and parents will be captured. Eleven types of adverse childhood experiences from the original study will be assessed. The measure of childhood exposure will be the sum of items an individual has experienced before the age of eighteen. Violence game play are defined by questions on the frequency of playing computer/internet games and video games, the level of violence in these games and their favorite game. History of knife carrying is measured by asking if the participants have carried a knife in the last 12 months, the frequency of knife carrying, the type of knife they usually carried and the main reason for carrying a knife. Questions will also assess if the participants have used a knife to threaten, to injury another person and knowing someone who carries and uses knife.

Measurable end points/statistical power of the study: A power of 0.8 will be set for this study (n=400 for each cultural group). A total of 800 participants (400 from United Kingdom and 400 from Hong Kong) will be recruited to obtain a good power for this study.

Key references

Duke, N., Pettingell, S., McMorris, B., & Borowsky, I. (2010). Adolescent Violence Perpetration: Associations With Multiple Types of Adverse Childhood Experiences. PEDIATRICS, 125(4).

Wu, P., Robinson, C., Yang, C., Hart, C., Olsen, S., & Porter, C. et al. (2002). Similarities and differences in mothers' parenting of preschoolers in China and the United States. International Journal Of Behavioral Development, 26(6), 481-491.

Ybarra, M., Huesmann, L., Korchmaros, J., & Reisner, S. (2014). Cross-sectional associations between violent video and computer game playing and weapon carrying in a national cohort of children. Aggressive Behavior, 40(4), 345-358

McVie, S 2010, Gang Membership and Knife Carrying: Findings from the Edinburgh Study of Youth Transitions and Crime. Scottish Government Social Research.

Ministry of Justice. (2019). Knife and Offensive Weapon Sentencing Statistics, England and Wales – Year ending March 2019.

7 Lay Summary of project (in lay words):(maximum 200 words) ***Summaries which include language which is too technical for lay members of the Committee will be rejected.***

This study aims to examine the relationship between Adverse Childhood Experiences (ACEs) and knife carrying. Previous findings suggested that childhood abuse experiences, household dysfunction and violent game play were associated with knife carrying. However, the occurrence of ACEs varies between Eastern and Western populations.

In this study a total of 800 hundred young people aged 13-25 will be recruited from both the United Kingdom (n=400) and Hong Kong (n=400). An anonymous online self-reported questionnaire will be administrated to measure participant's demographic traits, adverse childhood experiences, violent game play and history of knife carrying. It is predicted that more Hong Kong participants will report experiencing ACEs than the United Kingdom participants; more participants aged 13-17 will report carrying a knife than those aged 18-25 whilst the majority of them only did so rarely; demographic traits will have an impact on ACEs and knife carrying; likelihood of knife carrying increases with the frequency of violent game play; the risk of knife carrying increases with the total ACEs score and the type of ACEs associated with knife carrying will be the same in both cultures.

The result of this study will be valuable to the psychology practitioners in developing more proactive approaches on the prevention and reduction of knife carrying in young people.

8 Will written consent be obtained from all volunteers?

Consent will be obtained from all participants by indicating their willingness to take part in the study by completing and submitting the questionnaire. On opening the link to the survey they will be presented with a participant information page outlining the study and clear instructions on how to exit the survey easily if they wish to. To take part

they will need to click on the "NEXT" option presented at the end of the Participant Information page. This takes them to a consent page with statements and tick boxes before finally entering the survey itself. The completed questionnaire will only be uploaded when the "submit button" presented at the end of the questionnaire is clicked.

9 Will an inconvenience allowance be offered: No

10 FUNDING

This research is being organised by the University of Nottingham and is being supported by the Centre for Forensic and Family Psychology, Division of Psychiatry and Applied Psychology, School of Medicine.

11 Studies involving NHS Staff, organisations, Services: No

12 How will the subjects be chosen?

Participants will be recruited online randomly to avoid sampling bias, in which samples are chosen strictly by chance. The number of male and female participants recruited will refer to the gender ratio in each culture to generate a representative sample.

13 Describe how possible participants will be approached.

Participants will complete an online questionnaire that they will respond to through Jisc Online Surveys. The questionnaire will be deployed in popular dedicated platforms (e.g., https://www.surveymonkey.co.uk/, https://www.onlinesurveys.ac.uk/about/, https://www.qualtrics.com/) because there is substantial evidence that many large cross-country studies have been completed using online questionnaire surveys through these sites (Regmi, Waithaka, Paudyal, Simkhada & Teijlingen, 2015). As the targeted population in this study is adolescent and young adults, the survey link will also be promoted through social media (e.g. Twitter, Facebook). The minimum age to sign up to these social media sites is 13 years.

14 What sources of information will be included? i.e, pre-existing research database, student records, visits to other organisation, online resource

No external sources of information will be included in this study. Data will be collected exclusively for this study.

15 Whose permission will be sought to access this information (eg GP, consultant Head of Organisation)? N/A

16 For interview/focus groups: N/A

17 Data Storage and Data management

All information which is collected about a participant during the course of the research will be anonymous and treated as confidential, stored on a password protected database saved in a Microsoft Office 365 Onedrive folder sitting on the restricted access fileserver held at the University of Nottingham. No identifiable personal data (name, address, telephone number) will be collected in this study and all research data will be kept securely for 7 years. After this time, data will be disposed of securely. During this time, only members of the research team will have access to the research data. Research data may also be stored in data archives for future researchers interested in this area.

18 What ethical problems do you foresee in this project?

This study will ask participants to provide their history of adverse childhood experience(s). In doing so, they may re-experience the sensations and/or emotions experienced at the time of the traumatic event/history from the past. Participant will be advised to stop the questionnaire immediately if they experience discomfort. The participant will be able to stop the experiment at any time if they feel that they cannot continue. A list of centres providing counselling/safeguarding service will be provided at the end of the study with their address and telephone numbers in case any participants require additional support immediately or after the study.

Knife crime became a public interest due to an escalation in such offences over year. The prevalence of knife carrying in adolescents is alarming in which study found that around one-third of people age 12-17 years reported carrying a knife in last 12 months (McVie, 2010). Prior findings have identified the association between children abuse experiences, dysfunctional household and knife carrying. However, the impact of total ACE score on knife carrying was not examined in any previous study. Therefore, the adolescent age 13-17 years will be included in this study to examine the relationship between the total ACE score and knife carrying. The result of this study will be valuable to practitioners in developing more proactive stances on the prevention and reduction of knife carrying in young people.

Parental permission is usually required when working with young people under 16. However, obtaining a parental consent is very difficult in this study due to its sensitive nature and timescale. Adolescents below the age of sixteen are able to give their full consent providing they have been counselled, do not wish to involve their parents and have sufficient maturity to understand the nature, purpose and likely outcome of the study. To accomplish the above requirements, the questions used to assess ACEs have been modified and worded into a more appropriate way for adolescents. A funnelling technique will also be used in the questionnaire where participants will encounter more general questions before more in-depth questions. Extended details with simple language regarding the purpose, procedures, risks, and benefits of participating in the study will be provided to adolescents prior to the start of questionnaire. Most adolescents have free access

to the internet nowadays which increases their likelihood to engage and complete a self-reported online questionnaire without others around. This study examines some personal and sensitive topics (ACEs and history of knife carrying), therefore, adolescents may not wish to ask their parents about their participation to avoid embarrassment. Obtaining a parental consent could also place some adolescents at increased risk of harm.

19 What are the possible limitations of the proposed design of this study?

A matched pairs design will be used in this study to control for individual differences affecting the result. Trying to match participants for similar traits is very time consuming and it is impossible to make exact matches because individual differences always exist from one person to another. However, as adverse childhood experience(s) and knife carrying share the same demographic risk factors, matching participants on demographic traits can increase internal validity in this study.

Collecting information through a self-reported questionnaire is subject to certain biases and limitations. To avoid participants not responding to a specific question in the questionnaire, all questions will be marked as required so that participants will not able to submit the questionnaire if any question is left blank. An error message will exhibit if participants try to submit the questionnaire without answering all the questions. Data will be monitored throughout the collection process to identify underrepresented targets. Specific online advertisements will be made to the population with low response rate to avoid sampling bias. Participants may also give more socially acceptable answers rather than being truthful. It will therefore be made very clear in the information sheet that the questionnaire is anonymous.

DECLARATION: I will inform the Medical School Ethics Committee as soon as I hear the outcome of any application for funding for the proposed project and/or if there are any significant changes to this proposal. I have read the notes to the investigators and clearly understand my obligations as to the rights, welfare and dignity of the subjects to be studied, particularly with regard to the giving of information and the obtaining of consent.

Signature of Lead Investigator:

(Dr E Paddock) Date: 01.12.2019

****Nb If you are student your supervisor must sign this form otherwise it will be rejected**

Name and address for correspondence with applicant:

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Please submit your completed application to:

Administrative Support
Faculty of Medicine & Health Sciences Research Ethics Committee
c/o Faculty PVC Office
B Floor, Medical School (nr Bridge)
QMC Campus, Nottingham University Hospitals
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NG7 2UH
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A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife Carrying in Adolescents and Young Adult

Knife Carrying and Adverse Childhood Experiences (ACEs)

'Knife crime' is not a specific offence; it refers to a collection of different offences in which a knife is used, as well as knife possession offences (Grimshaw & Ford, 2018). Knife carrying is the most common form of knife-related offence but creates no specific or harmed victims until the knife is used (Eades, Grimshaw, Silvestri & Solomon, 2007). People carry weapons for four main reasons. These include to increase their capacity to cause harm; because of fear of violence; to facilitate robbery; and for self-image or machismo (Arria, Borges & Anthony, 1997; Sheley & Wright, 1993; Shepherd & Brennan, 2008). In a survey of people 10–25 years old in England and Wales, 3% reported carrying a knife, and of these, 85% said they did so for protection, 7% reported using a knife to threaten someone and only 2% had used the knife to injure someone (Wilson, Sharp & Patterson, 2006). A strong association has been established between gangs and knife carrying in prior study. Young people age 13 and 16 who hung out in public places with friends most days and to report that they were a member of a 'gang' were more likely to carry a knife (McVie, 2010). A study of 10- to 19-year-olds in the United Kingdom found that of those who reported belonging to a 'gang' were three times more likely to carry a knife than those who were not in such a group (Sharp, Aldridge & Medina, 2006). However, recent data suggested that gangs were no longer responsible for the majority of knife crime in London (Khomami, 2016).

Although crime survey for England and Wales showed long-term reductions in violent crime, knife crime offences escalated by 8% over year and reached a record high since

2011 (Office for National Statistic, 2019). In terms of the frequency of knife carrying, majority of those who reported carried a knife in the last 12 months said they did so only rarely. Half had carried a knife 'once or twice', around a quarter said they had carried one 'three or four times' and less than one in five said they had carried a knife 'ten times or more' (Wilson, Sharp & Patterson, 2006). Possession of offensive weapon in public place or with intent including any type of knives is an offence in Hong Kong. However, statistic on knife crime is not published separately by the Hong Kong Police Force. Aggregate statistics cover violent and sexual offences which presumed to include almost all offences involving a knife are therefore used to estimate the prevalence of knife crime in Hong Kong. Recent data showed that violent crimes (including homicide, robbery, wounding and serious assault, criminal intimidation, blackmail, arson, rape and indecent assault) fell to a 46-year low (Hong Kong Police Force, 2019) yet it was very difficult to interpret the actual trend of knife crime in Hong Kong from the dataset.

Adverse Childhood Experiences (ACEs) were first described by Felitti et al. (1998) to examine the impact of negative life events occurring in childhood on adult health. The original ACEs study included ten types of experiences: emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, violent treatment towards mother, household substance abuse, household mental illness, parental separation or divorce, and having an incarcerated household member. The ACE score was calculated using the total number of reported ACEs an individual had experienced in first eighteen years of life. Thus, the possible number of exposure ranged from 0 (unexposed) to 10 (exposed to all categories). Previous works have established an association between ACEs and youth offending behaviours. Ford et al. (2012) found that 90% of youth offenders reported having experienced childhood trauma. Higher ACE cumulative scores have been shown to associate with an earlier age at first arrest, a greater likelihood of subsequent

arrest and a shorter time to recidivism among young offenders (Baglivio, Wolff, Piquero and Epps, 2015). The risk of becoming a serious, violent, and chronic youth offender also increased by each additional adverse experience a child experienced (Fox, Perez, Cass, Baglivio & Epps, 2015).

In term of delinquent behaviours, Maxfield & Widom (1996) found that experiencing trauma and abuse during childhood increased the odds of youth violent behaviours by more than twice. Experiencing childhood physical abuse and other forms of maltreatment led to higher rates of self-reported offending, violent offending and property offending (Teague, Mazerolle, Legosz & Sanderson, 2008). Experiencing parental divorce, parental incarceration and witnessing martial violence in childhood have also demonstrated a strong association with later delinquency and other maladaptive behaviours (Amato, 2001; Murray & Farrington, 2005; Herrera & McCloskey, 2001). Research on the relationship between ACEs and knife carrying were very limited. McVie (2010) found that parental separation/divorce, lack parental supervision and being a victim of crime increased the risk of knife carrying in adolescents. Witnessed domestic violence and household substance use, violence and sexual abusive experiences in childhood were also associated to weapon carrying including any types of knives in adolescents (Duke, Pettingell, McMorris & Borowsky, 2010).

Risk Factors for Knife Carrying

Data from self-report surveys suggested that the vast majority of people who reported to carrying a knife were under-eighteen (Anderson et al., 2010). The Youth Justice Board Youth Surveys (2005) found that 32% of children aged 11 to 16 years old in England and Wales reported they had carried a knife in the last 12 months. A similar result has been found in a study from Edinburgh, where 29% of young people had carried a knife between the age of 12 and 17 (McVie, 2010). Previous works indicated that mid-adolescence was the peak of self-reported knife carrying. McVie (2010) found that carrying of knives in the last 12 months was most common amongst 14 year olds whilst others reported knife carrying peaks around the age of 15 (Kodjo, Auinger & Ryan, 2003; Leeb, Barker & Strine, 2007). Prior research also found that the prevalence of knife carrying declined after reaching the peak in mid/late adolescent (McVie, 2010; Ozcan et al., 2008; Oksuz & Malhan, 2005). However, recent data showed that most of whom being cautioned, reprimanded or convicted for carrying a knife in England and Wales were adult (Ministry of Justice, 2019).

Males were reported at a greater risk of carrying knife and engage in knife-related violence. A study of school attendees 16–20 years old in Switzerland showed knife-carrying among 11.5% of men and 1.5% of women respectively (Thurnherr et al., 2009). A similar result has been illustrated in adolescents aged 11–16 years, where 19% of boys and 6% of girls reported carrying a knife in the United Kingdom between 1996–1998 (Mckeganey & Norris, 2006). However, a cross-

national study found that whilst the prevalent of weapon carrying in the past 30 days among boys was higher, girls aged 11-15 in Estonia, Israel, Latvia, Macedonia, Portugal and the United States of America were more likely to carry a knife or a pocket knife than boys (Pickett, Craig, Harel-Fisch & Cunningham, 2006).

Study relating to knife carrying and ethnicity were limited but suggested that there were variations in knife carrying and use across ethnic group. The Safer London Youth Survey (2004) found that the rates for knife carrying in the capital were twice as higher for white British and black Caribbean young people (12%) than for black African and South Asian young people (6%). The Youth Justice Board Youth Surveys (2004) also reported difference in weapon carrying based on ethnicity from mainstream schoolchildren (38% of white pupils, 41% of black pupils and 33% of Asian pupils reported having carried a weapon at some point). However, a more recent study indicated that there was no statistically significant difference between White and non-White ethnicity and weapon carrying (Brennan, 2018).

The risk of knife carrying with socioeconomic factors was least documented because household income was rarely well-captured in self-report surveys completed by young people (Bernnan, 2018). Previous research found no relationship between family socioeconomic status and weapon-carrying (Molnar, Miller, Azrael & Buka, 2004), nor a relationship between weapon-carrying and free school meals (Williams, Mulhall, Reis & De Ville, 2002). However, Leyland &

Dundas (2010) found that the occurrence of assaults involving sharp weapons was higher in the most deprived areas compared to the least deprived areas in Scotland suggested that deprivation was a risk factor of knife carrying. A study in Israel also found that children in schools with a high proportion of peers from socioeconomically deprived family were more likely to carry knives (Khoury-Kassabri, Astor & Benbenishty, 2006).

The relationship between weapon carrying and violent video game play was supported by research on media violence and violence behaviour. A 22-year longitudinal study indicated that males who had a preference to watch more TV violence at age 8 committed more criminal violence with weapons by age 30 (Huesmann & Miller, 1994). Previous works had found that violent games made players believe that aggression was acceptable and encoded a sequence of violent behaviours and expected responses by others involving weapons in players that promoted weapon carrying (Bargh & Pietromonaco, 1982). Violent games also provoked schemas that the world was a hostile place which increased the likelihood of weapon carrying for self-protection; and desensitised the players to negative emotions associated with violence and weapons which made weapon carrying more pleasant (Anderson & Bushman, 2001). Boxer, Huesmann, Bushman, O'Brien & Moceri (2009) found that playing violent video games in childhood predict self-reported serious criminal violence including the use of knives and guns in later adolescence. In a more recent study, Ybarra, Huesmann, Korchmaros & Reisner (2014) found that children who played violent games in

the past year were four times more likely to report carrying a weapon to school in the last month.

Risk Factors for Adverse Childhood Experiences (ACEs)

The prevalence of ACEs increased with age because older individuals had more time to 'accumulate' such experiences. A study in the United State of America found that children age 12-17 were twice more likely to had at two or more ACEs than children age 0-5 (Bethell, Davis, Gombojav, Stumbo, Powers, 2017). However, a longitudinal study found that children aged 12 were more likely to experience each type of ACE during the first 6 years of life than in the second 6 years. The children also appeared more likely to experience 5 or more ACEs during the first 6 years of life than in the second 6 years (Flaherty et al., 2009). Hardt & Rutter (2004) suggested that when reporting ACEs in older age, a lack of very early childhood memory resulted in an inability to recall what actually happened. The changes in parenting and societal norms overtime can also attribute to the differences in findings, for example, harsh corporal punishment was more acceptable historically and was more commonly use to teach misconduct young children to behavior appropriately.

ACEs were common across all races and ethnicity but works on the differential experience of adversity across racial and ethnic groups were very limited. A study in the United State of America found that Black and Latinx children in the United State of America were more likely to have experienced two or more ACEs

compared to White children Slopen et al. (2016). In more recent study, it was found that Black Children (63.7%) were most likely to experience ACEs, followed by Non-Hispanic (51.5%), White (40.9%), and the lowest for Asian children (25%) (Bethell, Davis, Gombojav, Stumbo, Powers, 2017). However, in an at-risk sample, White children showed similar or higher rates of ACEs compared to Black children (Fagan & Novak, 2018, Garcia et al., 2007). In addition to racial differences in the number of ACES experienced, prior works suggested that the types of ACES may also differ by racial group. Black children were more likely to have experienced father incarceration, become a victim of violence and witness violence at home (Pettit & Western, 2004; Cho, 2012) whilst White children were more likely to have experienced household drug and alcohol problems (Maguire-Jack, Lanier & Lombardi., 2019).

Gender differences in the prevalence of ACEs have been reported in many studies. Girls were more likely to experience sexual abuse and to be affected by parental mental illness. However, boys were more likely to report childhood verbal abuse and to be raised in a dysfunctional household (Cunningham et al., 2014; Isohookana, Riala, Hakko & Räsänen, 2013). Cumulative ACEs were more frequent among men compared to women.

Men from the Middle East are 8% more likely than women to experience four or more ACEs (Almuneef, ElChoueiry, Saleheen & Al-Eissa, 2017) and twice more likely to report experienced five or more ACEs than women (El Mhamdi et al., 2017) when using the ACE-International Questionnaire in measurement. However, studies from the United State of America and South Korea found a

higher prevalence of childhood adversity and maltreatment among women compared to men (Felitti et al., 1998; Kim, 2013 & Liu et al., 2017). The differences may be attributable to cultural and regional variations.

Some studies demonstrated a clear relationship between socioeconomic position (SEP) in childhood and the risk of experiencing ACEs. Education level was frequently used as a generic indicator of SEP as it was a strong determinant of an individual's future employment and income (Davey Smith et al., 1998). A systematic review found that lower parental SEP was associated with a greater risk of ACEs because low SEP parents were tended to be harsher and more punitive (Walsh, McCartney, Smith & Armour, 2019). Parental unemployment has been related to child neglect through its impacts on parental stress, self-esteem and parent-child relationship (Stith et al., 2009). Meanwhile, maternal employment was found to have a protective effect in the occurrence of child maltreatment (Sidebotham & Heron, 2006). The odds ratio of ACEs was highest in those who were not poor at birth and became poor at 15 years old because the worsening in the economic situation could increase parental stress, which made children more vulnerable to ACEs occurrence (Stith et al., 2009).

Association Between Adverse Childhood Experiences (ACEs) and Knife Carrying

Studies from the United States of America suggested that young people living in single-parent families were at greater risk of weapon-carrying (Forrest et al.,

2000). Knife carriers in Edinburgh were less likely to be living with both of their birth parents at age 13, and this gap increased by age 16 (McVie, 2010). However, a study in Switzerland found no independent association between weapon-carrying and living in a single parent household (Thurnherr et al., 2009). Kingery, Coggeshall & Alford (1999) also found that the risks of weapon-carrying reduced among young people in the United States of America who had a mother or female guardian living in their household; the presence or absence of a father or male guardian was not significantly associated with weapon-carrying.

Growing up in dysfunctional family with family conflict can increased the risk weapon-carrying. Duke, Pettingell, McMorris & Borowsky (2010) found that young people who witnessed domestic violence and had substance use problems in family members in their childhood were significantly more likely to carry weapons. Previous works also found that having a poor relationship with parents was associated with weapon-carrying among men aged 16- to 20-year-olds in Switzerland (Thurnherr et al., 2009). Meanwhile, the risk of carrying a knife increased amongst adolescents who were poorly supervised by their parents at age 13 in Edinburgh (McVie, 2010).

Experiencing, witnessing and fearing any forms of violence were suggested to be an underlying risk of weapon carrying (Kodjo, Auinger & Ryan, 2003; Kingery, Coggeshall & Alford, 1999). McVie (2010) found that being a victim of crime increased the risk of knife carrying by around 1.5 times. Young people with histories of physical or sexual abuse in childhood can have increased risks of

perceiving a need to carry a weapon, actually carrying a weapon and reporting having threatened someone else with a weapon (Duke et al., 2009; Leeb, Barker & Strine, 2007; Lewis et al., 2007; Casiano et al., 2009). The odds of weapon-carrying were about four times higher among people who had experienced physical abuse and about four (female) and six (male) times higher among those who had experienced sexual abuse (Duke et al., 2010). However, another study found a less robust relationship between physical abuse and weapon carrying whilst sexual abuse in early childhood only attributed to weapon carrying by girls, but not for boys (Leeb et al., 2007). A Needs Assessment commissioned by MOPAC and NHS England (London) in 2016 also did not identify the use of knives in young people as a major issue in relation to child sexual exploitation.

Cultural Variations in Adverse Childhood Experiences (ACEs)

Some studies suggested that childhood sexual abuse might be less prevalent in Chinese (Chen, Dunne, & Han, 2004; Tang, 2002) because Chinese men were less likely to cite pleasure and stress reduction as motives for sex (Tang, Bensman & Hatfield, 2011). However, Wu et al. (2002) found that compared to mothers from the West, Chinese mothers may engage in more physical coercion and threats of the withdrawal of love, they were also less likely to provide acceptance and warmth, which may be led to more childhood adversity such as emotional neglect. It has been shown that authoritarian parenting style was associated with child abuse potential and actual acts of physical abuse (Haskett, Scott, Fann., 1995; Rodrihuez, 2010). The controlling and dictatorial parenting

style appeared more likely to be practiced by parents in Chinese culture because they were strongly influenced by Confucian ideologies with emphasis on strict discipline, obedience and respect for parents and elders (Lu & Fu, 1990). Meanwhile, divorce data from nearly four decades indicated that divorce rates for the United Kingdom were about 1.7 times higher than Hong Kong (Wang & Schofer, 2018), suggested that children from the United Kingdom were more likely to be raised in a single-parent family.

A nationally representative survey in England (n = 3885) and Wales (n > 2000) found that almost half of individuals experienced at least one ACEs in which parents separated or divorced, verbal abuse and physical abuse were more prevalent in the Western population (Bellis et al., 2014; Bellis et al., 2015). In a sample of Chinese medical students (n = 2073), 67.9% of participants reported experiencing one or more types of ACEs whilst physical abuse, physical neglect and mental illness in household were more common (Xiao, Dong, Yao, Li & Ye, 2008). To my knowledge, there is only one study has systematically assessed the ten common types of ACEs in Hong Kong (Fung, Ross, Yu & Lau, 2019). In a sample of community mental health service users (n = 202), 68.3% of participants disclosed experiencing at least one ACEs meanwhile emotional abuse, emotional neglect and physical abuse had been repeatedly reported. It is difficult to compare the results from these studies due to the methodology and procedural differences. However, these findings suggested that the Chinese were more likely to experience ACEs than the Western population and the occurrence of each ACE varies between cultures.

Research Questions and Overview of The Study

Knife crime has become a public interest due to an escalation in such offences and knife carrying is the most common form of knife-related offence. Adolescents have been the focus of knife carrying research because previous works found that knife carrying in the last 12 months was highly prevalent among adolescents (McVie, 2010). Young adults are underrepresented in this area of study although a recent statistic revealed that they are most likely being cautioned, reprimanded or convicted for carrying a knife in England and Wales (Ministry of Justice, 2019). Previous research has identified violent game play as a risk factor for knife carrying and demographic trails as the risk factors for both ACEs and knife carrying. The association between knife carrying and a type of ACE has been established in many works (Duke et al., 2010). However, the impact of cumulative ACEs on knife carrying is never being addressed. Meanwhile, some studies suggested that there was a cultural variation in ACEs where the Chinese population was more vulnerable to ACEs than the Western population and the occurrence of each type of ACEs was found varies between cultures (Bellis et al., 2014; Xiao et al., 2008).

This study therefore seeks to explore and investigate the following:

1. The total ACE score and the type of ACEs commonly reported by young people

2. The prevalent and frequency of knife carrying in the last 12 months reported by young people
3. The degree to which differences in demographic traits account for ACEs and knife carrying
4. The effect of violent game play on knife carrying in young people
5. The cause-and-effect relationship between ACEs and knife carrying in two cultures

This study aims to explore the relationship between ACEs and knife carrying in adolescents and young adults aged 13-25 years. An anonymous online self-reported questionnaire will be administered in this study to measure participant's demographic trails, adverse childhood experiences, frequency and level of violent game play and history of knife carrying. Young adults will be recruited along with adolescents in this study to address the problem of missing population in knife carrying study. A comprehensive ACEs measurement will be used to examine the impact of each type of ACEs, as well as, the total ACE score on knife carrying in adolescents and young adults. This study will carry out in the United Kingdom and Hong Kong to assess the impact of cultural variation in ACEs on knife carrying.

Base on previous findings, the following hypotheses have been made in this study:

1. More Hong Kong participants will report experiencing at least one ACE than the United Kingdom participants and physical abuse will be one of the common ACE shared among participants from two cultures (Bellis et al., 2014; Fung et al., 2019).

2. Around a third of adolescents aged 13-17 years will report carrying a knife in the last 12 months and young adults aged 18-25 years are less likely to report doing so (McVie, 2010). Among those who admit carrying a knife, vast majority only did so once or twice over the year (Wilson, Sharp & Patterson, 2006).
3. Participants aged 13-17 years (Flaherty et al., 2009, Anderson et al., 2010), being a male (El Mhamdi et al., 2017; Thurnherr et al., 2009), belongs to an ethnic minority group (Bethell et al., 2017) and from low socioeconomic status (Walshet al., 2019; Letland et al., 2010) are at higher risk of experiencing ACEs and carrying a knife.
4. The odds of knife carrying increases with the frequency of violent game play (Ybarra et al. 2014).
5. The risk of knife carrying increase with the total ACEs score and the type of ACEs associated with knife carrying will be the same between two cultures (Duke et al., 2010; McVie, 2010).

This is the first study to assess the relationship between total ACEs score and knife carrying. The result of this study will provide a better understanding on the cause-and-effect relationship between ACEs and knife carrying in adolescents and young adults. It will be valuable to practitioners developing more proactive stances on the prevention and reduction of knife carrying.

Methodology and Analysis

Participants

Effect size on the basis of previous research (Fox et al., 2015) for logistic regression with a single predictor variation estimated a sample size of 435 is required from each culture to obtain a large effect size (r = 0.8). For the purposes of this study this figure will be rounded to 400 from the UK and 400 from Hong Kong making a total of 800 participants for the whole study. Adolescents and young adults aged 13-25 years will be recruited randomly from the United Kingdom and Hong Kong to avoid sampling bias. The study aims to recruit 200 males and 200 females from each culture to generate a representative sample because the gender ratio is fairly equal in the targeted age groups (Office for National Statistics, 2016; Census and Statistic Department, 2019). To avoid participants not responding to a specific question in the questionnaire, all questions will be marked as required so that participants will not able to submit the questionnaire if any question is left blank. An error message will exhibit if participants try to submit the questionnaire without answering all the questions. Data will be monitored throughout the collection process to identify underrepresented targets; specific advertisements will be made to the age-group with low response rate to avoid sample bias.

Procedure

In order to investigate the relationship between adverse childhood experience(s) and knife carrying, a matched pairs design will be used in this study to control for individual differences affecting the result. Trying to match participants for similar traits is very time consuming and it is impossible to make exact match as there will always be individual differences from one person to another. However, as adverse childhood experience(s) and knife carrying share the same

demographic risk factors, matching participants on demographic traits can increase internal validity in the study.

Participants will complete a questionnaire that they will response through Jisc Online Surveys. The questionnaire will be deployed in popular dedicated platforms (e.g. https://www.qualtrics.com/, https://www.surveymonkey.co.uk/, https://www.onlinesurveys.ac.uk/about/) because there is substantial evidence that many large cross-country studies using online questionnaire surveys have been completed through these sites (Regmi, Waithaka, Paudyal, Simkhada & Teijlingen, 2015). As the targeted population in this study is adolescents and young adults, the survey link will also be promoted through social media (e.g. Twitter, Facebook). All information regarding the study and researcher's contact details will be provided on the first page of the survey and study participants will be reminded that they have a right to withdrawal from the survey at any point with no adverse consequences. Items must be endorsed before proceeding to the questionnaire. The order of questions participants encounter will be the same. The opportunity to erase or skip questions or backtrack through the survey is provided in order to maintain ethically sound research conduct. A debrief about the purpose of the study and contact details for additional supports will be provided on the last page in case the participants feel uncomfortable after the study. Participants will also be reminded that they are not allow to withdraw their data once they have submitted the questionnaire due to the nature of anonymity. The questionnaire takes approximate 20 minutes to complete.

Measures

The anonymous self-reported online questionnaire consists of four parts: demographic information, adverse childhood experiences, violent game play and history of knife carrying. A funnel questioning technique will be used, in which the questionnaire starts with general questions, and then drilling down to more detail and personal at each level. The order of questions each participant encounter will be the same.

Demographic information including age, gender, race/ethnicity, care background, parental composition in home and educational level of participant will be measured. Demographic trails of the participants will be examined to test the degree to which differences in these factors account for adverse childhood experiences and knife carrying. Race will be categorised into five groups: White, Black/Black British, Asian/Asian British, Mixed and Other for the United Kingdom participants; Chinese, Southeast Asian, South Asian, White and Other for Hong Kong participants. Care background will be measured by asking have the participant ever been adapted into family, foster care into family, lived in a children home, a boarding school and youth offence institute/approved school. To measure parental composition in home, participants will be asked with whom they lived: mother only, father only, mother and father, or neither mother nor father. The educational level of the participants will be assessed on five response categories ranging from "primary school" to "post-graduate degree". Participants from both cultures share the same response categories on questions defined

educational level because the Hong Kong education system has been closely modeled on the one found in the United Kingdom.

Eleven categories of adverse childhood experiences will be examined in this study: abuse (emotional, physical and sexual), neglect (emotional and physical) and growing up with household substance abuse, incarceration of household members, mental illness in household members, parental separation/divorce, family violence and peer/community violence. The measure of childhood exposure is the sum of items an individual has experienced in first eighteen years of life. Thus, the possible number of exposure ranged from 0 (unexposed) to 11 (exposed to all categories). Emotional and physical abuse are defined by 2 questions from the Childhood Trauma Questionnaire (Bernstein, Fink & Handelsman et al., 1994) whilst sexual abuse by an elder person or a similar age are defined by 8 questions from Wyatt; for emotional and physical neglect, set of 5 CTQ items are used while 2 CTQ items are used to defined peer/community violence; family violence is defined by 6 items from the Conflict Tactics Scale (Straus & Gelles, 1990); parental separation or divorce and incarcerated household member was defined by an affirmative response to a single question; mental illness in household, household substance abuse is defined by an "yes" response to either one of the two questions. For questions adapt from the Conflict Tactics Scale, response categories are "never", "once or twice", "sometimes", "often", or "very often". For questions adapt from the Childhood Trauma Questionnaire, response categories are "never true", "rarely true", "sometimes true", "often true", and

"very often true" and are scored on a Likert scale (1-5), respectively. Some items from the CTQ are reverse-scored depends on the context of the question.

The frequency and the level of violence in game play will be examined in this study. The original questions used in Ybarra et al. (2014) study were crafted in 2006 when convergence of technology was at a different stage, therefore, participants were asked the number of days in an average week they played computer games with video games, rather than with internet games. To keep up with nowadays technology, computer and internet games will be clustered in the same question in this study. If they reported playing either type of games at least one day in an average week, they will then be asked how many of these games show physical fighting, shooting, or killing (Windle et al., 2004). Response categories will be none/almost none of the time, sometimes, most of the time and almost all/all the time. An open question will ask the participant to state their favourite games to assess the popularity of various violent games among young people.

Questions used to determine knife carrying was adapted from the Offending, Crime and Justice Survey (2006). Participants will be asked whether they have ever carried a knife for their own protection, for use in crimes or in case you got into a fight in the last 12 months. If an affirmative response is given, three follow-up questions will access the frequency they carrying a knife (once or twice, three or four times, between five and ten times and more than ten times); the type of knife they usually carried (pen knife, flick knife, kitchen knife or another type of

knife) and the main reason for carrying g a knife (to protect yourself, to threaten or cause harm to others, in case you got into a fight, asked to by someone else or another reason). Participants will also be asked if they have used a knife to threaten and to injury another person in the last 12 months, as well as, if they know anyone who carries/used knife.

The questionnaire will be presented in English for the United Kingdom participants and will be translated into Traditional Chinese for Hong Kong participants. Guillemin, Bombardier & Beaton (1993) suggested that the initial translation of a questionnaire from the original language to the target language should be made by at least two independent translators. Therefore, the questionnaire will first be translated by the researcher into his mother language who is aware of the concepts the questionnaire intends to measure, to provide a translation that more closely resembles the original instrument. Reviewed and edited by an Associate Professor of Practice in Social Work from The Chinese University of Hong Kong who is unaware of the objective of the questionnaire so that subtle differences in the original questionnaire may be detected. Any discrepancies between the two translations will be discussed and resolved to finalise the questionnaire.

Analytical Methods

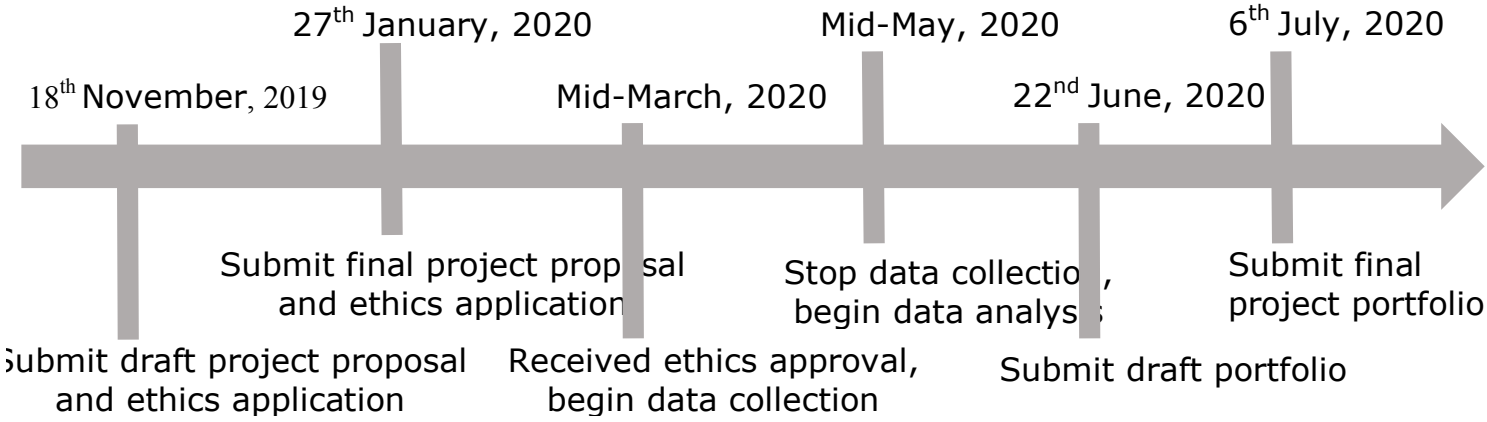
All analyses will be conducted separately for participants from the United Kingdom and Hong Kong.

Participant gender will be coded as a binary variable. Age will be defined by two age-groups: 13-17 years and 18-25 years. Ethnicity will be generated into a binary indicator, with 'White' and 'Non-White' categories for the United Kingdom participants and 'Chinese' and 'Non-Chinese' for Hong Kong participants. Care background will be categorised into 'with care history' and 'without care history'. Family composition will be defined by whether the participant is living with both their mother and father or not. Each ACE will be evaluated to generate an ACE score for every participant. The ACE score will then be categories into zero, one, two, three and four or more. The proportion of participants reported carrying a knife in the last 12 months will be assessed and the frequency of knife carrying for those who report doing so will be categories into once or twice, three or four times, between five and ten times and more than ten times. The level of violence in game play will be categories into none/almost none of the time, sometimes, most of the time and almost all/all the time.

A chi square test will be used to assess the association between demographic factor and each type of ACE, as well as, demographic factor and the odd of knife carrying. Multinomial logistic regressions will be used to calculate the odds ratios (OR) and their respective 95% confidence intervals (95% CI) for the associations between demographic factor and total ACE score, demographic factor and the frequency of knife carrying, also level of violence in game play and frequency of knife carrying. Participants from the United Kingdom and Hong Kong will be matched on demographic traits before conducting the following analyses. A chi square test will be conducted to examine the relationship between each ACEs and

the odd of knife carrying, as well as, the total ACE score and the odd of knife carrying. A series of multivariable regression will be conducted separately to examine the relationship between ACEs and knife carrying. In the first analysis, the impact of the total ACE score on the frequency of knife carrying in adolescents and young adult will be evaluated. In the second analysis, ten items that make up the total ACEs will be individually evaluate for their unique impact on the frequency of knife carrying.

Estimated Timeline



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Appendix 1: Participant Information Sheet Version 1.0: 27/04/2020

Faculty of Medicine and Health Sciences, School of Medicine
Division of Psychiatry and Applied Psychology

Title of the research project

A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife Carrying in Adolescents and Young Adult

Research Team: Mr. Ho Fung Lam, Masters of Science student supervised by Professor Kevin Browne and Dr Elizabeth Paddock, Centre for Forensic and Family Psychology.

FMHS Research Ethics Ref: 442-1912

This study is exploring the impact of adverse childhood experiences on knife carrying.

The spate of Knife crime offences in the UK during the last 12 months has sparked an increase in public interest about the high numbers of young people knife carrying. Previous research has identified an association between childhood experiences, a dysfunctional home life and knife carrying (McVie 2010). However, the impact of adverse childhood experiences on knife carrying has not been closely looked at and this study aims to investigate this.

We appreciate your interest in taking part in this online questionnaire. You are being invited to participate because you are between 13-25 years old and are living and/or growing up in either the United Kingdom (UK) or Hong Kong (HK)**.** Please read through this information sheet before volunteering to participate by clicking the 'NEXT' button below. You can ask any questions before taking part by contacting the researchers (details below). Taking part is entirely voluntary.

What will I be asked to do?

You will be given 30 questions to answer about your age, sex, race/ethnicity, if you live in UK or HK, playing video games, knife carrying, family life and adverse childhood experiences. These are adapted from validated questionnaires and should take you about 20 minutes to complete. All questions need to be answered to submit. You are free to change your mind at any point during the questionnaire by closing the browser (click X Right hand corner of screen). The data will only be uploaded on completion of the questionnaire by clicking the SUBMIT button at the end. On completion of the survey you will be presented with a Debrief sheet with more information and contact details of charities and services where you can get additional support if needed.

What are the possible risks of taking part?

There is a small risk that answering questions about your family life and adverse childhood experiences may be distressing for you and bring back traumatic events. Please do take time before deciding to take part to think carefully about whether it might be an upsetting topic for you at the moment. If you experience any distress when completing the questionnaire, please stop and exit immediately and contact the researcher or one of the organisations listed below for additional support. After you have finished and submitted the questionnaire you will also be presented with a study debrief sheet giving details of charities and services where you can seek further expert support if you need to.

Will the research be of any personal benefit to me?

The findings of this survey will not benefit you directly but your contribution together with others may help to improve understanding and inform policymakers, the National Health Service, clinicians and educators about the effect of adverse childhood experience(s) on knife carrying in young people. It may hopefully contribute towards developing more positive and helpful approaches on the prevention of knife carrying in young people in the future.

Who will know I have taken part in this study?

No one will know you have taken part in this study because we will not ask for your name or any other personal identifiers in the questionnaire. Your IP address will not be visible to or stored by the research team because an online survey tool is being used which receives and stores and IP address but enables this detail to be filtered out before it is transferred to the research team. As with any online related activity the risk of breach is possible but this risk is being minimized by using the measures described above. For further information about the online survey tool security please see https://www.onlinesurveys.ac.uk/security/

What will happen to your data?

When you have clicked the submit button at the end of the questionnaire, it will be uploaded into a password protected database with a code number. The research team will not be able to see who it is from and for this reason it will not possible to withdraw the data at this point. Your data (research data) will be stored in a password-protected folder sitting on a restricted access server at the University under the terms of its data protection policy. Data is kept for a minimum of 7 years and then destroyed.

This questionnaire is for a Masters project and the answers received from all participants will be combined in a password protected database ready for analysis. The results will be written up as a dissertation and may be used in academic publications and presentations. The overall anonymised data from this study may be shared for use in future research and teaching (with research ethics approval).

If you contact us to ask questions we will receive your e-mail address but this will be received separately from your completed questionnaire and it will not be possible to link the two sets of data. Your e-mail address will be kept separately and only for as long as needed to resolve your queries.

Who will have access to your data?

The University of Nottingham is the data controller (legally responsible for data security) and the Supervisor of this study (named above) is the data custodian (manages access to the data) and as such will determine how your data is used in the study. Your research and personal data will be used for the purposes of the research only. Research is a task that we perform in the public interest. The only personal data we will receive is your e-mail if you contact us to ask further questions or need support. For further information about how the university processes personal data please see: https://www.nottingham.ac.uk/utilities/privacy.aspx/

Responsible members of the University of Nottingham and funders may be given access to data for monitoring and/or audit of the study to ensure we are complying with guidelines, or as otherwise required by law.

If you have any questions about this project, please contact:

Lead Researcher Mr. Ho Fung Lam at Ho.Lam@nottingham.ac.uk or if you have any concerns about any aspect of this study please contact the

Research Supervisors: Professor Kevin Browne or Dr. Elizabeth Paddock at kevin.browne@nottingham.ac.uk or Elizabeth.Paddock1@nottingham.ac.uk.

If you remain unhappy and wish to complain formally, you should then contact the Faculty of Medicine and Health Sciences Research Ethics Committee Administrator: E-mail: FMHS-ResearchEthics@nottingham.ac.uk

Additional Support

United Kingdom

If you have found the discussed topic within this study distressing, there are many external organisations that can provide further support.

1. Victim support offers guidance and support to those affected by abuse. You can access support on their Freephone 08081689111, online chat or email.
2. If you are a Scottish resident, you can contact the helpline on 0800 160 1985, or to find your nearest victim support team, visit their website: https://www.victimsupport.org.uk.
3. If you are under the age of nineteen, you can access counsellor support from the NSPCC Childline, through their Freephone 0800 1111, or 1-2-1 chat or email via their website: https://www.childline.org.uk.

Hong Kong

If you have found the discussed topic within this study distressing, there are many external organisations that can provide further support. Please visit the following link

1. https://www.swd.gov.hk/storage/asset/section/228/tc/IFSC_ISC_address_list_chi_Sept_2019.pdf) and contact any Integrated Service Centre in your district. They are willing to offer professional support and arrange counselling sessions if that's necessary.
2. There are also specific counselling services on trauma: for participants age 18 or above, please visit caritas project for adult survivors of childhood trauma (http://csa.cartias.org.hk);
3. for participants below age 18, please visit Jockey Club Trauma Treatment Service for Children, The Boys' and Girls' Club Association of Hong Kong https://www.bgca.org.hk/page.aspx?corpname=bgca&i=631&locale=zh-HK

click "NEXT"

next page

I have read and understood the above information and had the opportunity to ask questions.

I confirm that I am in the age range 13-25 years old

I confirm by clicking the NEXT button to begin the online questionnaire, I indicate my willingness to voluntarily take part in the study.

Appendix 2: Data Collection Instrument

1. Age (in years)

2. Gender
    a. Male
    b. Female
    c. Other

3. Race/ethnicity
    a. White
    b. Black/Black British
    c. Asian/Asian British
    d. Mixed
    e. Other

4. Have you even been
    a. Adopted into family
    b. Foster care into family
    c. Live in a children home
    d. Lived in a boarding school
    e. Lived in a Youth Offender Institution/Approved school
    f. None of the above

5. Parental composition in home
    a. Mother Only
    b. Father Only
    c. Mother and Father
    d. Neither Mother nor Father

6. Your educational level
    a. Primary school
    b. Secondary school up to 16 years
    c. Higher or secondary or further education (A-levels, BTEC, etc.)
    d. College or university
    e. Post-graduate degree

7. The number of days in an average week you played video games?

8. The number of days in an average week you played computer and internet games?

9. When you play video, computer or internet games, how many show physical fighting, shooting, or killing?
    a. None/almost none of the time
    b. Sometimes
    c. Most of the time
    d. Almost all/all the time

10. What's your favourite game or games (please list the titles)?

11. There was someone in my family who helped me feel important or special
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

12. I felt loved
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

13. People in my family looked out for each other
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

14. People in my family felt close to each other
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

15. My family was a source of strength and support
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

16. I didn't have enough to eat
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

17. I knew there was someone there to take care of me and protect me
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

18. My parents were too drunk or too high to take care of me
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

19. I had to wear dirty clothes
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

20. There was someone to take me to the doctor if I needed it

a. Never True
b. Rarely True
c. Sometimes True
d. Often True
e. Very Often True

21. How often did anyone at school or in the community hurt you and leave marks or injures?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

22. How often did anyone at school or in the community act in a way that made you afraid that you might be physically hurt?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

23. As a child, did you ever: Live with anyone who had a problem with drink or drugs?
    a. Yes
    b. No

24. As a child, did you ever: Live with anyone who used bought drugs?
    a. Yes
    b. No

25. Was a household member depressed or mentally ill?
    a. Yes
    b. No

26. Did a household member attempt suicide?
    a. Yes
    b. No

27. Were your parents ever separated or divorced?
    a. Yes
    b. No

28. Did a household member go to prison?
    a. Yes
    b. No

29. Do you know of anyone who carries/uses knife?
    a. Yes
    b. No

30. In the last 12 months, have you ever carried a knife with you for your own protection, for use in crimes or in case you got into a fight?
    a. Yes
    b. No

31. About how many times have you done this in the last 12 months?
    a. Once or twice

b. 3 or 4 times
c. between 5 and 10 times
d. more than 10 times

32. What type of knife have you usually carried in the last 12 months?
    a. Pen knife
    b. Flick knife
    c. Kitchen knife
    d. Another type of knife

33. What was the main reason for you carrying a knife in the last 12 months?
    a. To protect yourself
    b. To threaten or cause harm to others
    c. In case you got into a fight
    d. Asked to by someone else
    e. Another reason, please specify:

34. Have you used a knife you were carrying to threaten another person in the last 12 months?
    a. Yes
    b. No

35. Have you used a knife you were carrying to injure another person in the last 12 months?
    a. Yes
    b. No

36. How often did a parent, stepparent, or adult living in your home swear at you, insult you, or put you down?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

37. How often did a parent, stepparent, or adult living in your home act in a way that made you afraid that you might be physically hurt?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

38. How often did a parent, stepparent, or adult living in your home push, grab, slap or throw something at you?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

39. How often did a parent, stepparent, or adult living in your home hurt you and leave marks or injures?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

40. Did you witness violence between others member of the family?
    a. Yes
        I. Who is the perpetrator?
            i. Grandfather
            ii. Grandmother
            iii. Father
            iv. Mother
            v. Male sibling
            vi. Female sibling
        II. Who is the victim?
            i. Grandfather
            ii. Grandmother
            iii. Father
            iv. Mother
            v. Male sibling
            vi. Female sibling
    b. No

41. Has a member of your family ever repeatedly hit over at least a few minutes?
    a. Yes
        I. Did you witness?
            i. Yes
            ii. No
    b. No

42. Has a member of your family ever threatened with or hurt by a knife or gun?
    a. Yes
        I. Did you witness?
            i. Yes
            ii. No
    b. No

43. Have you ever repeatedly hit over at least a few minutes?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

44. Have you ever threatened with or hurt by a knife or gun?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

45. Has an adult, relative, family friend, or stranger who was at least 5 years older than you had ever:
    a. Touched or fondled your body in a sexual way
        I. Yes
        II. No
    b. Made you touch his or her body in a sexual way
        I. Yes
        II. No
    c. Attempted to have any type of sexual intercourse (oral, anal, or vaginal) with you

I. Yes
II. No

d. Actually had any type of sexual intercourse (oral, anal, or vaginal) with you
I. Yes
II. No

46. Has anyone of a similar age ever:
a. Touched or fondled your body in a sexual way
I. Yes
II. No
b. Made you touch his or her body in a sexual way
I. Yes
II. No
c. Attempted to have any type of sexual intercourse (oral, anal, or vaginal) with you
I. Yes
II. No
d. Actually had any type of sexual intercourse (oral, anal, or vaginal) with you
I. Yes
II. No

Appendix 3: Debriefing Sheet

A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife Carrying in Adolescents and Young Adults

Thank you for completing and submitting the questionnaire.

This study aims to examine the cause-and-effect relationship between adverse childhood experience(s) and knife carrying in young people. Individuals aged 13-25 years from the United Kingdom and Hong Kong were invited to participate in the study. Prior works found that childhood abuse experiences, household dysfunction and violent game play were associated with knife carrying (Duke et al., 2010; Ybarra et al., 2014). However, the impact of adverse childhood experiences on knife carrying was not examined in any previous study. Meanwhile, Wu et al. (2002) suggested that the occurrence of each type of adverse childhood experiences varies between Eastern and Western populations and Chinese are more likely to have experienced adverse childhood experiences.

This is the first study to assess the relationship between adverse childhood experiences and knife carrying. The result of this study will provide a better understanding on the cause-and-effect relationship between adverse childhood experiences and knife carrying in adolescents and young adults. It will be valuable to practitioners developing more proactive stances on the prevention and reduction of knife carrying.

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database. No identifiable personal data (address, telephone number) will be collected in this study and all data will be kept securely for 7 years. After this time your data will be disposed of securely. During this time, all precautions will be taken by all those involved to maintain your confidentiality, only members of the study team will have access to your personal data. Anonymised data may also be stored in data archives for future researchers interested in this area.

Additional Support

United Kingdom

If you have found the discussed topic within this study distressing, there are many external organisations that can provide further support. Victim support offers guidance and support to those affected by abuse. You can access support on their Freephone 08081689111, online chat or email. If you are a Scottish resident, you can contact the helpline on 0800 160 1985, or to find your nearest victim support team, visit their website: https://www.victimsupport.org.uk. If you are under the age of nineteen, you can access counsellor support from the NSPCC Childline, through their Freephone 0800 1111, or 1-2-1 chat or email via their website: https://www.childline.org.uk.

Hong Kong

If you have found the discussed topic within this study distressing, there are many external organisations that can provide further support. Please visit the following link (https://www.swd.gov.hk/storage/asset/section/228/tc/IFSC_ISC_address_list_chi_Sept_2019.pdf) and contact any Integrated Service Centre in your district. They are willing to offer professional support and arrange counselling sessions if that's necessary.

There are also specific counselling services on trauma: for participants age 18 or above, please visit caritas project for adult survivors of childhood trauma (http://csa.cartias.org.hk); for

participants below age 18, please visit Jockey Club Trauma Treatment Service for Children, The Boys' and Girls' Club Association of Hong Kong (https://www.bgca.org.hk/page.aspx?corpname=bgca&i=631&locale=zh-HK)

Contact Details

If you have further questions or wish to receive the final report of the study, please feel free to contact the researcher Mr. Ho Fung Lam at Ho.Lam@nottingham.ac.uk.

If you have any complaints about your experience of taking part in this study, please contact the study supervisors Professor Kevin Browne or Dr. Elizabeth Paddock at kevin.browne@nottingham.ac.uk or Elizabeth.Paddock1@nottingham.ac.uk.

If you remain unhappy and wish to complain, you should then contact the FMHS Research Ethics Committee Administrator, c/o The University of Nottingham, Faculty PVC Office, E41, Medical School, Queen's Medical Centre Campus, Nottingham University Hospitals, Nottingham, NG7 2UH. E-mail: FMHS-ResearchEthics@nottingham.ac.uk

Ethics approval letter

University of Nottingham
UK | CHINA | MALAYSIA

Faculty of Medicine & Health Sciences
Research Ethics Committee
Faculty Hub
Room E41, E Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham, NG7 2UH
Email: FMHS-ResearchEthics@nottingham.ac.uk

01 May 2020

Mr Ho Fung Lam
MSc Student – Forensic and Criminological Psychology
c/o Dr Elizabeth Paddock
Assistant Professor in Forensic Psychology
Centre for Forensic and Family Psychology
Division of Psychiatry and Applied Psychology, School of Medicine
YANG Fujia Building, Jubilee Campus
Wollaton Road, Nottingham
NG8 1BB

Dear Mr Ho Fung Lam

Ethics Reference No: 442-192 – **please always quote**	
Study Title: A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife Carrying in Adolescents and Young Adults.	
Chief Investigator/Supervisor: Professor Kevin Browne, Director, Dr Elizabeth Paddock, Assistant Professor of Forensic Psychology, Centre for Forensic and Family Psychology	
Lead Investigators/student: Mr Ho Fung Lam, MSc- Forensic and Criminological Psychology	
Proposed Start Date: 01/05/2020	**Proposed End Date:** 31/10/2020

Thank you for submitting the above application and responding to the comments made by the Sub-committee held on 24 April 2020 and the following revised documents were received:

- FMHS REC Application form and supporting documents version 2.0: 29.04.2020

These have been reviewed and are satisfactory and the project is approved.

The project is approved on the understanding that:

1. The protocol agreed is followed and the Committee is informed of any changes using a notice of amendment form (please request a form).
2. The Chair is informed of any serious or unexpected event.
3. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely

Dr Bethan E Phillips, Associate Professor
Clinical, Metabolic & Molecular Physiology, Medical Sciences & Graduate Entry Medicine
Acting Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife-Carrying in Adolescents and Young Adult

Ho Fung Lam*, Elizabeth Paddock and Kevin Browne

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HIGHLIGHTS.

- Household mental illness and substance abuse predict knife-carrying in the UK.
- Community violence predicts knife-carrying in HK.
- The risk of knife-carrying did not increase with the ACE score
- 85% of knife-carrying youth in the UK have reported experiencing 5 or more ACEs.

ABSTRACT. There is increasing evidence linking adverse childhood experiences (ACEs) with youth offending. knife crime among young people is a major social problem in the United Kingdom (UK), and knife-carrying is the most common form. Improved understanding on the impact of ACEs on knife-carrying is needed in a national and international level. The relationship between knife-carrying and ACEs and the total number of ACEs (ACE score) were examined. A cross-cultural study of young people aged 13 to 25, who reside in the United Kingdom and Hong Kong, completed an online questionnaire about demographic; ACEs; violent gameplay; and knife-carrying. This study found that mental illness and substance abuse in household significantly predict knife-carrying in the United Kingdom, whereas, community violence significantly predict knife-carrying in Hong Kong. The risk of knife-carrying does not increase with ACE score but 85% of knife carriers in the United Kingdom have reported experiencing 5 or more ACEs. Schemes and interventions to reduce ACEs are essential to prevent children from carrying a knife later in life.

KEYWORD. Adverse Childhood Experience, Knife Crime, Adolescents, Young Adults

ABBREVIATIONS. ACEs - Adverse Childhood Experience(s)
UK – United Kingdom
HK – Hong Kong

FUNDING. This research is being organised by the University of Nottingham and is being supported by the Centre for Forensic and Family Psychology, Division of Psychiatry and Applied Psychology, School of Medicine.

ACKNOWLEDGEMENTS. I would like to express my deep gratitude to Prof. Yuk-ki, Timothy Leung, and Ms. Yee-lin, Ho, for providing translation assistant.

1. INTRODUCTION

Statistics about knife crime and knife-carrying among adolescent and young adults are arousing attention in the UK. Knife crime is a major social problem in the UK. England and Wales Police recorded a 7% rise in knife crime by year and reached a record high (Office for National Statistic, 2020). The scale of knife-carrying in England and Wales assessed by the Home Office's Offending, Crime and Justice Survey showed that among five thousand young people aged 10 to 25, 4% of them reported carrying a knife in the last 12 months. Carrying of knives was most common amongst 16 to 17-year-olds (7%). There were no statistically significant differences in carrying of knives between 10 to 17 years old and 18 to 25 years old (Wilson, Sharp & Patterson, 2006).

Experiencing, witnessing, and fearing any forms of violence were suggested to be an underlying risk of weapon-carrying (Kodjo, Auinger & Ryan, 2003; Kingery, Coggeshall & Alford, 1999). Young people with histories of physical or sexual abuse have increased risks of perceiving a need to carry a weapon, actually carrying a weapon and reporting having threatened someone else with a weapon (Duke et al., 2009; Leeb, Barker & Strine, 2007; Lewis et al., 2007; Casiano et al., 2009). A study found that Chinese mothers compare to Western mothers engage in more physical coercion and threats of the withdrawal of love, meanwhile less likely to provide acceptance and warmth, which lead to more childhood adversity (Wu et al., 2002). Cultural differences in parenthood and childhood adversity seem to be important factors to consider.

This research is specially designed to understand how childhood adversity affects knife-carrying. As knife-carrying is most common among adolescents, the study will focus on the age group of 13 to 25. Comparison is made between the culture in HK and the UK.

2. Knife-carrying

'Knife crime' refers to a collection of different offences in which a knife is used and possessed (Grimshaw & Ford, 2018). Knife-carrying is the most common form of knife crime but creates no specific or harmed victims (Eades, Grimshaw, Silvestri & Solomon, 2007). People carry weapons for four main reasons: to increase their capacity to cause harm; because of fear of violence; to facilitate robbery; and for self-image or machismo (Arria, Borges & Anthony, 1997; Sheley & Wright, 1993; Shepherd & Brennan, 2008).

In terms of the frequency of knife-carrying, half of those who reported carrying a knife in the last 12 months said they carried a knife 'once or twice', around a quarter said they had carried one 'three or four times' and less than one in five said they had carried a knife 'ten times or more' (Wilson, Sharp & Patterson, 2006).

Knife crime has not been singled out so far by the authorities of HK as being a particular problem. There were less than five hundred cases relating to such provision in the population between 2013-2015 each year. However, the number of recorded cases increased by 13% over the same period (HKSAR, 2016).

In this study, knife-carrying is measured instead of knife crime as a whole. Knife-carrying is measured in terms of the frequency of carrying.

2.1. Risk Factors for Knife-carrying

2.1.1. Age

McVie (2010) found that 30% of young people with offending background in Edinburgh, Scotland had carried a knife between the age of 12 and 17. The peak age for knife-carrying was 14, at which point a quarter of them reported doing so in the last year. Her finding diverges sharply from Wilson et al. (2006)

The two surveys are not directly comparable because of the different methodology and age groups included. In addition to the recent data showing that 80% of whom being cautioned, reprimanded, or convicted for carrying a knife in England and Wales were adults, aged over 18

(Ministry of Justice, 2019), this research is taking samples from the age of 13 to 25 in order to understand how adverse childhood relates with knife-carrying.

2.1.2. Gender

Males were reported at a greater risk of knife-carrying and engage in knife-related violence. Studies in Switzerland and UK both supported that male had a significantly high tendency of knife-carrying (Thurnherr et al., 2009 and Mckeganey & Norris, 2006). A qualitative research drawing on interviews with young white British men illustrated that knife-carrying was constructed as a protection to potential threats and to the lack of management of such threats by authority; it is also related to aggressive masculinity, where the young men must present themselves as 'hard' to gain respect and prevent potential physical harm (Palasinski & Riggs, 2012). Yet, the findings were still not conclusive as there was another study finding that girls aged 11-15 were more likely to carry a knife or a pocket knife for self-protection than boys (Pickett, Craig, Harel-Fisch & Cunningham, 2006).

2.1.3. Ethic/Race

The racial breakdown of knife crime from the Safer London Youth Survey 2004 and Mayor of London's office for Policing and Crime 2018 indicated a difference in prevalence across racial groups. Black and ethnic minorities are more likely to involve in the knife crime.

However, national wide statistics from the Youth Justice Board Youth Survey (2004) indicated that black and ethnic minorities were not the majority of youth knife offenders. Across England and Wales in 2017, two-third of knife possession convictions among under 25s self-defined as White (Ministry of Justice, 2018).

2.1.4. Violent Video Game

The relationship between weapon carrying and violent video gameplay was supported by research on media violence and violent behaviours (Huesmann & Miller, 1994). The psychological and behavioural effects of exposure to violent media were explained with priming theory (Bargh & Pietromonaco, 1982) and social learning theory (Ybarra, Huesmann, Korchmaros & Reisner, 2014). Violent game stimulated aggression by prime or activate aggressive scripts and schemes in one's memory. Consequently, increase the risk of subsequent hostile response to adversity. Meantime, by repeated contact and identification with violent characters, a child is more likely to develop a hostile world view, set the violent characters as their models and generate belief that rationalise violence. In a laboratory setting, children who played a video game with guns or swords violence were also reported more likely to touch a real, disabled handgun, handle a handgun longer, and pull the trigger more times (Chang & Bushman, 2019).

Although theoretical frameworks support the hypothesis that violent gameplay increases the risk of weapon carrying, there are a handful of past publications looking at this association. This study, hence, tried to find a relationship between playing violent games and carrying a knife among young people.

2.1.5. Community Violence

Community violence includes direct victimisation, witnessing, and hearing about violent acts in the community (MacDonald, Deatrick, Kassam-Adams & Richmond, 2011). Bullying and other types of peer victimisations are proposed to be related to knife-carrying. Bully-Victims are more likely to bear the need for self-protection (Sheley & Wright, 1993) and the "hostile-world" perceptions (Gerbner, Gross, Morgan, Signorielli & Shanahan, 2002) which increase their risk of knife-carrying to protect themselves from harms. However, the impact of community violence on knife-carrying has not been closely investigated presently. Community violence was added as one of the ACEs categories in this study.

3. Adverse Childhood Experiences (ACEs)

ACEs were first described by Felitti et al. (1998) to examine the impact of negative life events occurring in childhood on adult health. ACEs refer to some of the most intensive and frequently occurring sources of stress that a person may suffer before the age of 18. The original ACEs study included ten types of events: emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, violent treatment towards mother, household substance abuse, household mental illness, parental separation or divorce, and incarcerated household member.

ACEs are very common in the general population, with a global estimation that around six in ten people have been exposed to at least one ACE (Brown, Thacker & Cohen, 2013). The impacts of ACEs are well documented and are found to have a strong, graded relationship between the numbers of ACEs and physical and mental health problems (Kalmakis & Chandler, 2015).

Prior research on adversity and trauma reported that 90% youth offenders have experienced trauma in childhood and they have a greater likelihood of having multiple forms of trauma (Abram et al., 2004; Ford, Chapman, Connor & Cruise, 2012). The more ACEs a youth offender has experienced, the more likely he/she is first arrested in an earlier age, has subsequent arrests, and a shorter time to recidivism (Baglivio, Wolff, Piquero & Epps, 2015). There is higher risk of becoming a serious, violent, and chronic offender with each additional adverse childhood experience (Fox, Perez, Cass, Baglivio & Epps, 2015).

This research, though not aiming at understanding the impact of ACEs on serious crime and chronic offenders, would like to understand the impact of ACEs on knife-carrying among adolescents from age 13 to 25.

3.1. Risk Factors for ACEs

3.1.1. Age

The prevalence of ACEs increased with age because older individuals had more time to 'accumulate' such experiences. A study in the United State of America (US) found that children age 12-17 were twice more likely to have at two or more ACEs than children age 0-5 (Bethell, Davis, Gombojav, Stumbo, Powers, 2017). However, a longitudinal study found that children aged 12 were more likely to experience each type of ACE during the first 6 years of life than in the second 6 years. The children also appeared more likely to experience 5 or more ACEs during the first 6 years of life than in the second 6 years (Flaherty et al., 2009).

3.1.2. Race/Ethnicity

Many works found a differential experience of adversity across racial and ethnic groups. Prior works reported that Black, Latin and non-Hispanic children were more likely to have experienced ACEs compared to White children (Slopen et al., 2016; Bethell, Davis, Gombojav, Stumbo, Powers, 2017). However, in an at-risk sample, White children showed similar or higher rates of ACEs compared to Black children (Fagan & Novak, 2018, Garcia et al., 2007). Regarding to the types of ACEs experienced, Black children were found more likely to have experienced father incarceration, became a victim of violence and witnessed violence at home (Pettit & Western, 2004; Cho, 2012). White children were found more likely to have experienced household drug and alcohol problems (Maguire-Jack, Lanier & Lombardi., 2019).

3.1.3. Gender

Gender variations in the types of reported ACEs were well documented. Girls were more likely to experience sexual abuse and to be affected by parental mental illness, whereas, boys were more likely to report childhood verbal abuse and to be raised in a dysfunctional household (Cunningham et al., 2014; Isohookana, Riala, Hakko & Räsänen, 2013). Differences had been seen in the cumulative

ACEs between men and women. Men from Middle East were 8% more likely than women to have experienced four or more ACEs (Almuneef, ElChoueiry, Saleheen & Al-Eissa, 2017). Whilst, men from North Africa were twice more likely than women to have experienced five or more ACEs (El Mhamdi et al., 2017). However, studies from North America and East Asia found a higher prevalence of childhood adversity and maltreatment among women compared to men (Felitti et al., 1998; Kim, 2013 & Liu et al., 2017). The contradicted results may be attributable to cultural and regional variations.

3.1.4. Culture

In comparing the studies in the UK and HK, a nationally representative survey in England (n = 3885) and Wales (n > 2000) found that almost half of individuals experienced at least one ACEs, in which parents separated or divorced, verbal abuse and physical abuse were more common (Bellis et al., 2014; Bellis et al., 2015). In a sample of community mental health service users in HK (n = 202), 68.3% of participants reported experiencing at least one ACEs, in which the prevalent of emotional abuse, emotional neglect, and physical abuse were highlighted (Fung, Ross, Yu & Lau, 2019). These results suggest that residents of HK are more likely to experience ACEs than residents of the UK.

4. Association Between ACEs and Knife-carrying

There are very few previous studies considering the relationship between ACEs and knife-carrying. Among the limited studies, one found in the US (Forrest et al., 2000) and another in the UK (McVie, 2010) shared similar findings that young people living in single-parent families were at higher risk of weapon-carrying. However, another study illustrated that the risks of weapon-carrying reduced among young people in the US who had a mother or female guardian living in their household. (Kingery, Coggeshall & Alford, 1999).

The odds of weapon-carrying were found about four times higher among people who had experienced physical abuse and about four (female) and six (male) times higher among those who had experienced sexual abuse (Duke et al., 2010). However, another study found a less robust relationship between physical abuse and weapon carrying, while sexual abuse in early childhood only attributed to weapon carrying by girls, but not for boys (Leeb et al., 2007).

In view of the limited literature on the relationship between ACEs and knife-carrying among young people, this research aimed to close the knowledge gap and enrich the existing understandings. This research also considers risks factors such as age and gender, violent gameplay, community violence and cultural difference between the UK and HK.

5. OVERVIEW OF THE STUDY

Despite previous study identified an association between ACEs, a dysfunctional home life and knife-carrying (McVie 2010), the impact of ACEs on knife-carrying has not been closely looked at. The relationship of ACEs on knife-carrying is the major objective of this study. ACEs and knife-carrying being independent from each other is the null hypothesis.

As previous cultural studies show that there are cultural differences in ACEs, this study also examined the cultural differences of the west and the east. HK, as a city highly representative of British colonial rule in the east, can eliminate the impact of government style, allows a better understanding on the cultural difference of ACEs and the impact of ACEs on knife-carrying. Young people from HK and the UK were recruited to investigate the cultural variation in ACEs and its relationship between ACEs and knife-carrying. Other risks factors that may affect knife-carrying were also examined. Those factors included violent gameplay and community violence.

An anonymous online self-reported questionnaire was administered in this study to measure participant's demographic traits, adverse childhood experiences, violent gameplay and knife-carrying. A comprehensive ACEs measurement was used to

examine the impact of each type of ACEs, as well as, the total ACE score on knife-carrying in adolescents and young adults. Young people aged 13-25 residing in HK were recruited along with similar age in the UK to assess the impact of cultural variation in ACEs on knife-carrying.

This study explored and investigated the below in both samples:

1. The prevalence of each category of ACE and ACE score
2. The prevalence and frequency of knife-carrying in the last 12 months
3. The impact of demographic risk factors on ACEs and knife-carrying
4. The impact of violent gameplay on knife-carrying
5. The relationship between ACEs and knife-carrying

The result of this study can help to improve understanding and inform policymakers, the National Health Service, clinicians and educators about the effect of ACEs on knife-carrying in young people. It may hopefully contribute towards developing more positive and helpful approaches on the prevention of knife-carrying among young people in the future.

Base on previous findings, the following hypotheses were made for this study:

H_1. It is predicted that more HK participants will report experiencing at least one ACEs than the UK participants
H_2. It is predicted that physical abuse is a dominant type of ACEs among the UK and HK sample.
H_3. It is predicted that around 4% of participants from the UK and HK sample will report carrying a knife in the last 12 months
H_4. It is predicted that the among the UK and HK sample, most knife carriers only carry a knife once or twice in the last 12 months.
H_5. It is predicted that participants aged 13-17 years are having greater risk of experiencing ACEs and carrying a knife.
H_6. It is predicted that males are at greater risk of experiencing ACEs and carrying a knife.
H_7. It is predicted that ethnic minorities are at greater risk of experiencing ACEs and carrying a knife.
H_8. it is predicted that higher frequency of violent gameplay increases the likelihood of knife carrying
H_9. It is predicted that higher ACE score increases the likelihood of knife-carrying
H_{10}. It is predicted that the type of ACEs associated with knife carrying are the same among the UK and HK sample.

6. METHOD AND MATERIALS

Targeted samples in this study, aged between 13 to 25, were recruited through social media. A website with research information was built to promote the survey link. Random sampling was used in which participants took part strictly by chance. On opening the link to the survey, they were presented with a Participant Information Page outlining the study, the contact details of the research team and additional support. Information of additional support was specially provided in view of the fact that traumatic responses can be triggered by the questionnaire. They were reminded of the right to withdraw from the survey at any point, with clear instructions on how to exit the survey. They were not able to withdrawal their data once they submitted the questionnaire due to the nature of anonymity. To take part, they needed to click on the "Next" button presented at the end of the Participant Information Page. By clicking the button, they were brought to a Consent Page with declaration statement. Informed consent was obtained from each participant to indicate their willingness taking part in the study by completing and submitting the questionnaire.

A funnel questioning technique was used in the questionnaire and the order of questions each participant encounter was the same. The opportunity to erase or backtrack were available through the questionnaire. The completed questionnaire will only be uploaded when the "Submit" button presented at the end of the questionnaire was clicked.

A debrief about the purpose of the study and contact details of additional support were provided on the last page. The questionnaire took approximately 10 minutes to complete.

The anonymous self-reported online questionnaire consisted of four parts: demographic information, adverse childhood experiences, violence in gameplay and knife-carrying. Participants completed the questionnaire through JISC Online Surveys.

The questionnaire was presented in English for the UK participants and was translated into Traditional Chinese for HK participants. A culturally adapted English version was also available for HK participants who cannot read Traditional Chinese. The Questionnaire was translated by the lead researcher, reviewed and edited by Prof. Yuk-ki, Timothy Leung, Associate Professor of Practice in Social Work, The Chinese University of Hong Kong and Ms. Yee-lin Ho, Clinical Supervisor, Caritas Family Service, Caritas Hong Kong. All discrepancies between the translations were discussed and resolved to finalize the questionnaire.

Demographic information included age, gender, race/ethnicity, care background, parental composition in home and educational level of participant. Demographic risk factors were included as control measure in the analysis because demographic correlates of ACEs and knife-carrying are the same.

The Adverse Childhood Experiences (ACE) included the ten categories of ACEs descripted in the original study (Felitti et al., 1998). Community violence was added as a category of ACEs in this study, making up a total of eleven categories. All questions about ACEs referred to the experiences taken place at participants' first 18 years of life. Questions used to define emotional, physical abuse and community violence were adapted from the Conflict Tactics Scale (CTS; Straus & Gelles, 1990). Response categories were "never," "once or twice," "sometimes," "often," or "very often." Questions used to define emotional and physical neglect were adapted from the Childhood Trauma Questionnaire (CTQ; Bernstein, Fink & Handelsman et al., 1994). Response categories were "never true," "rarely true," "sometimes true," "often true," and "very often true" and were scored on a Likert scale (1–5), respectively. Some items from the CTQ were reverse-scored on the basis of the context of the question. Dichotomous questions (yes/no) were used to define household dysfunction categories and sexual abuse adapted from Wyatt (1985). A full list of ACEs used in this study is outlined in table 1.

Violence in gameplay was assessed by asking respondents the average number of days in a week they played video; and computer and internet games. If they reported playing either type of games at least one day in a week, they were asked how many of these games show physical fighting, shotting, or killing (Windle et al., 2004). The respondents were asked to name their favourite game(s) as well.

Knife-carrying was measured with questions adapted from the Offending, Crime and Justice Survey (2006). The participants were asked if they know anyone who carries/uses knife and if they have carried a knife in the last 12 months. If they reported carrying a knife over the year, five follow-up questions were asked to determine the frequency of knife-carrying; the type of knife usually carried; the main reason for knife-carrying, and whether the knife was used to threaten and to injure another person.

Table 1. Adverse Childhood Experiences (ACEs)

All ACE questions were preceded by the statement "In your childhood, before the age of 18…" Responses listed are those categorised here as an ACE

ACE	Question(s)	Response
Emotional Abuse	47. How often did a parent, stepparent, or adult living in your home swear at you, insult you, or put you down? 48. How often did a parent, stepparent, or adult living in your home act in a way that made you afraid that you might be physically hurt?	Often or very often to question 1 or sometimes, often, or very often to question 2
Physical Abuse	1. How often did a parent, stepparent, or adult living in your home push, grab, slap or throw something at you? 2. How often did a parent, stepparent, or adult living in your home hurt you and leave marks or injures?	Sometimes, often or very often to question 1 or any response other than never to question 2
Sexual Abuse	Has an adult, relative, family friend, or stranger who was at least 5 years older than you had ever: 1. Touched or fondled your body in a sexual way 2. Made you touch his or her body in a sexual way 3. Attempted to have any type of sexual intercourse (oral, anal, or vaginal) with you 4. Actually had any type of sexual intercourse (oral, anal, or vaginal) with you	Yes, to any of the four questions
Community Violence	1. How often did anyone at school or in the community act in a way that made you afraid that you might be physically hurt? 2. How often did anyone at school or in the community hurt you and leave marks or injures?	sometimes, often, or very often to question 1 or any response other than never to question 2
Emotional Neglect	1. There was someone in my family who helped me feel important or special 2. I felt loved 3. People in my family looked out for each other 4. People in my family felt close to each other 5. My family was a source of strength and support	All items were reverse-score and added up. Score of 15 or higher
Physical Neglect	1. I didn't have enough to eat 2. I knew there was someone there to take care of me and protect me 3. My parents were too drunk or too high to take care of me 4. I had to wear dirty clothes 5. There was someone to take me to the doctor if I needed it	Items 2 and 5 were reverse-scored, and all scores are added up. Score of 10 or higher
Family Violence	1. Did you witness violence between others member of the family?	Yes
Household Substance Abuse	1. As a child, did you ever: Live with anyone who had a problem with drink or drugs? 2. As a child, did you ever: Live with anyone who used bought drugs?	Yes, to either question
Household Mental Illness	1. Was a household member depressed or mentally ill? 2. Did a household member attempt suicide?	Yes, to either question
Parental Separation/Divorce	1. Were your parents ever separated or divorced?	Yes
Incarcerated Household Member	1. Did a household member go to prison?	Yes

Table 2. Demographic Traits Breakdown of The Full Sample by Culture

Demographic traits	Prevalence (%)	
	The United Kingdom (n = 305)	Hong Kong (n = 362)
Gender		
Male	52.5% (160)	42.0% (152)
Female	47.5% (145)	58.0% (210)
Other	0% (0)	0% (0)
Race/Ethnicity*		
White	40.7% (124)	/
Black/Black British	25.9% (79)	/
Asian/Asian British	20% (61)	/
Mixed	13.4% (41)	/
Other	0% (0)	/
Chinese	/	91.4% (331)
South East Asian	/	2.8% (10)
South Asian	/	3.6% (13)
White	/	0% (0)
Mixed	/	2.2% (8)
Other	/	0% (0)
Care background		
Adopted into family	2% (6)	0.6% (2)
Foster care into family	2% (6)	1.1% (4)
Lived in a children home	3% (9)	0.6% (2)
Lived in a boarding school	8.5% (26)	3.04% (11)
Lived in a Youth Offender Institution/ Approved School	1% (3)	1.4% (5)
None of the above	83.6% (255)	94.2% (341)
Parental composition in home		
Mother only	9.2% (28)	9.1% (33)
Father only	3.6% (11)	2.2% (8)
Mother and Father	85.6% (261)	81.2% (294)
Neither Mother and Father	1.6% (5)	7.5% (27)
Educational Level**		
Primary school	0% (0)	0% (0)
Secondary school up to 16 years	30.5% (93)	12.4% (45)
Higher or secondary or further education	20.7 (63)	38.4% (139)
College or University	43.3% (132)	44.2% (160)
Post-graduate degree	5.6% (17)	5.0% (18)

Note: *different response category for the UK and HK respondent; ** different but comparable response category for the UK and HK respondents

7. RESULTS

7.1. Participants

A total of N = 362 (mean age = 19.2, SD = 3.43) were recruited from HK. 42.0% were male, 91.4% were Chinese, 94.2% with no care background history, 81.2% lived with both parents and 44.2%. A total of N = 305 (mean age = 18.9, SD = 3.36) were recruited from the UK. 52.5% were male, 40.7% were White, 83.6% with no care background history and 85.6% lived with both parents. Table 2 shows the demographic traits breakdown of the full sample.

Table 3. Prevalence of Each Category of ACE and ACE Score by Culture

Category of ACE	Prevalence (%)	
	The United Kingdom (n = 305)	Hong Kong (n = 362)
Abuse		
Emotional	18.0% (55)	14.1% (51)
Physical	20.0% (61)	21.0% (76)
Sexual	17.4% (53)	15.5% (56)
Neglect		
Emotional	18.4% (56)	24.0% (87)
Physical	26.6% (81)	13.3% (48)
Household Dysfunction		
Family violence	18.7% (57)	19.9% (72)
Parental separation/divorce	14.4% (44)	12.4% (45)
Metal illness in household	17.4% (53)	12.4% (45)
Household substance abuse	18.7% (57)	7.7% (28)
Incarcerated household member	4.92% (15)	3.6% (13)
Community Violence	43.3% (132)	32.6% (118)
ACE score		
0	32.1% (98)	32.0% (116)
1	23.0% (70)	24.0% (87)
2	12.1% (37)	17.7% (64)
3	8.6% (27)	9.9% (36)
4	7.2% (22)	6.6% (24)
5 or more	16.7% (51)	9.7% (35)

7.2. The Prevalence of Each Category of ACE and ACE Score

According to table 3, the prevalence of each specific ACE was found higher for young people in the UK except for physical abuse, emotional neglect and family violence. The most prevalent ACE for the UK respondents were community violence (43.3%), physical neglect (26.6%) and physical abuse (20.0%), whereas, for HK respondents were community violence (32.6%), emotional neglect (24.0%) and physical abuse (21.0%). The number of ACEs was summed for each respondent (ACE score range: 0-11). In line with past literature, ACE scores of 5 or more were combined due to the small sample sizes (Dube et al., 2003). The percentage among HK and the UK respondents experienced the number of ACEs were alike except those experienced 5 or more ACEs, with 9.7% in HK and 16.7% in the UK. These results indicated young people in the UK were more likely to have experienced multiple traumas.

7.3. The Prevalent and Frequency of Knife-carrying in The Last 12 Months

From table 4, 26.9% of respondents in the UK and 11.0% in HK reported knowing someone who carries or uses a knife. In the UK, 6.6% of young people reported carrying a knife in the last 12 months and 40% of them did so for more than 10 times. In HK, 3.6% of young people reported carrying a knife over the year and 53.8% of them did so for once or twice. Of those that admitted carrying a knife in both samples, most of them had carried a pen knife. The main reason reported for them to carry knife was self-protection. The use of a knife to threaten or to injure someone was very rare.

Table 4. Details of Knives-carried in Last 12 Months

Knife-carrying	Prevalence (%)	
	The United Kingdom (n = 305)	Hong Kong (n = 362)
Have knowledge of anyone carries/uses knife	26.9% (82)	11.0% (40)
Carried a knife in the last 12 months	6.6% (20)	3.6% (13)
Among those who reported carrying a knife		
How often carried a knife		
Once or Twice	10.0% (2)	53.8% (7)
3 or 4 times	25.0% (5)	15.4% (2)
Between 5 and 10 time	25.0% (5)	15.4% (2)
More than 10 times	40.0% (8)	15.4% (2)
Type of knife carried*		
Pen Knife	65% (13)	69.2 (9)
Flick Knife	35% (7)	23.1% (3)
Kitchen Knife	0% (0)	0%
Another type of Knife	0% (0)	23.1% (3)
Main reason for carrying knife*		
To protect yourself	80% (16)	84.6% (11)
To threaten or cause harm to others	5% (1)	0% (0)
In case you got into a fight	25% (5)	0% (0)
Asked to by someone else	5% (1)	0% (0)
Another reason	20% (4)	23.1% (3)
Used knife to threaten someone	5% (1)	0% (0)
Used knife to injure someone	5% (1)	0% (0)

*Note: multi responses are available for the questions

7.4. The Impact of Demographic Traits on Each Category of ACEs

There were only a few responses to some categories of demographic traits due to the small sample size in this study. Therefore, all demographic traits were coded as binary variables, and a series of chi-square tests were used to analysis the impact of demographic risk factors on ACEs. Consequently, the true relationship between each category of demographic traits and ACE cannot be reflected in this study.

In this analysis, race/ethnicity was coded as either white or minority in the UK sample and Chinese or minority in HK sample. Age was coded as either 13- to 17-year-old or 18- to 25-year-old. The parental composition was coded as either lived or not lived with both parents. The care background was coded as either had or had no such experiences. Educational level was coded as either age or not age corresponding. In the UK, the corresponding response for pupils age 13 to 16 was secondary school up to 16, for pupils age 17 and 18 was Higher or secondary or further education, for pupils age 19 to 25 was College or University. In HK, the correspondent response for pupils age 13 to 15 was junior secondary school, for age 16-18 was senior secondary school, for age 19 to 25 was college or university. Respondents who were one year out of the age range for each education level were considered as age corresponding due to the chance of delayed enrollment in childhood. The education level between the two samples was comparable because the education system of HK was closely modeled from the UK.

The results in table 5 (see Appendix 1) indicated that in HK, age was not a significant risk factor for any category of ACEs. Male (x^2 (1, N = 362) = 15.7, p < .001) and ethnic minorities (x^2 (1, N = 362) = 10.0, p < .05) was a significant risk factor for community violence. Care background was a significant risk factor for physical abuse (x^2 (1, N = 362) = 3.39, p < .05), sexual abuse (x^2 (1, N = 362) = 5.44, p < .05), emotional neglect (x^2 (1, N = 362) = 4.33, p < .05),

family violence (x^2 (1, N = 362) = 4.64, p < .05), household substance abuse (x^2 (1, N = 362) = 4.00, p < .05), and incarcerated household member (x^2 (1, N = 362) = 7.37, p < .05). The absence of parent(s) at home was a significant risk factor for physical neglect (x^2 (1, N = 362) = 3.91, p < .05), parental separation/divorce (x^2 (1, N = 362) = 10.2, p < .05), mental illness in the household (x^2 (1, N = 362) = 117, p < .001), and incarcerated household member (x^2 (1, N = 362) = 18.5, p < .001). School exclusion was a significant risk factor for emotional abuse (x^2 (1, N = 362) = 16.2, p < .001).

The results in table 6 (see Appendix 2) indicated that in the UK, age 18-25 was a significant risk factor for community violence (x^2 (1, N = 305) = 5.35, p < .05). Male was a significant risk factor for emotional abuse (x^2 (1, N = 305) = 4.54, p < .05), physical abuse (x^2 (1, N = 305) = 4.03, p < .05), emotional neglect (x^2 (1, N = 305) = 5.10, p < .001), physical neglect (x^2 (1, N = 305) = 10.5, p < .05), family violence (x^2 (1, N = 305) = 4.36, p < .05), household substance abuse (x^2 (1, N = 305) = 28.3, p < .001), and community violence (x^2 (1, N = 305) = 18.8, p < .001), whereas, female was a significant risk factor of sexual abuse (x^2 (1, N = 305) = 25.9, p < .001). White ethnic was a significant risk factor for sexual abuse (x^2 (1, N = 305) = 6.76, p < .05). Care background was a significant risk factor for all ACEs categories except sexual abuse (x^2 (1, N = 305) = .890, p > .05) and incarcerated household member (x^2 (1, N = 305) = 1.22, p > .05). The absence of parent(s) at home was a significant risk factor all ACEs categories except sexual abuse (x^2 (1, N = 305) = .339, p > .05). School exclusion was a significant risk factor of all ACEs categories except sexual abuse (x^2 (1, N = 305) = .948, p > .05), family violence (x^2 (1, N = 305) = .298, p > .05), and incarcerated household member (x^2 (1, N = 305) = .816, p > .05).

7.5. The Impact of Demographic Traits on The Knife-carrying

A chi square test was used to examine the association between demographic traits and the risk of knife-carrying (table 7). In HK, significantly more males, ethics minorities, respondents aged 13-17 years, or had care background reported carrying a knife over the past 12 months. In the UK, significantly more young people having care background, not living with both parents, or excluded from school reported carrying a knife in the past year.

Table 7. Relationship Between Knife-carrying and Demographic Traits in The UK Samples (n = 305) and HK sample (n = 362)

KC	Age				Gender				Race/Ethics				Care Background				Parental Composition				Educational level			
	13-17	18-25	χ 2	Φ	M	F	χ 2	Φ	Chi	Min	χ 2	Φ	Y	N	χ 2	Φ	B	S/N	χ 2	Φ	NC	C	χ 2	Φ
UK																								
Y	7	13	.223	.027	12	8	.488	.040	7	13	.284	.031	10	10	17.6	.240	12	8	11.3*	.193	6	14	28.8	.307
	(-.5)	(.5)			(.7)	(-.7)			(-.5)	(.5)			(4.2)	(-4.2)	***		(-3.4)	(3.4)			(5.4)	(-5.4)	***	
N	115	170			148	137			117	168			40	245			249	36			9	276		
	(.5)	(-.5)			(-.7)	(.7)			(.5)	(-.5)			(-4.2)	(4.2)			(3.4)	(-3.4)			(-5.4)	(5.4)		
HK																								
Y	9	4	4.58	.112	9	4	4.11	.107	9	4	8.49	.153	3	10	7.37	.143	9	4	1.27	.059	0	13	.957	.051
	(2.1)	(-2.1)	*		(2.0)	(-2.0)	*		(-2.9)	(2.9)	*		(2.7)	(-2.7)	*		(-1.1)	(1.1)			(-1.0)	(1.0)		
N	138	211			143	206			322	27			18	311			285	64			24	325		
	(-2.1)	(2.1)			(-2.0)	(2.0)			(2.9)	(-2.9)			(-2.7)	(2.7)			(1.1)	(-1.1)			(.1.0)	(-.1.0)		

Note. * = p < .05, *** = p < .001. Adjusted standardized residuals appear in parentheses below group frequencies.
KC = Knife-carrying; M = male' F- female; Chi = Chinese; Min – Minority, Y = yes; N = No; B = both parents, S/N = single/neither parent; NC = not correspondent, C = correspondent

7.6. The Impact of Demographic Traits on ACE Score

An ordinary logistic regression was used to assess the relationship between demographic traits and ACE scores. This study (table 8) found that male, young people not lived with both parents, with care background, and excluded from school were significantly at-risk for multiple ACEs in the UK. Whereas, only the absent of parent(s) from home was found significantly raising the risk for multiple ACEs in HK.

Table 8. Relationship Between ACE Score and Demographic Traits

	The United Kingdom (n – 305)					Hong Kong (n = 362)				
	Estimate	SE	95% CI		p	Estimate	SE	95% CI		p
Demographic traits			LL	UL				LL	UL	
Age	-.299	.220	-.730	.132	.174	-.126	.197	-.512	.260	.521
Gender	.619	.214	.200	1.04	.004	.247	.198	-.142	.535	.213
Race/Ethnicity	.065	.215	-.356	.486	.762	.030	.349	-.654	.714	.931
Care Background	1.33	.308	.721	1.93	<.001	.665	.405	-.129	1.46	.101
Parental Composition	1.31	.326	.771	2.05	<.001	1.042	.245	.562	1.52	<.001
Education Level	1.78	.558	.688	2.88	.001	.027	.383	-.723	.777	.944

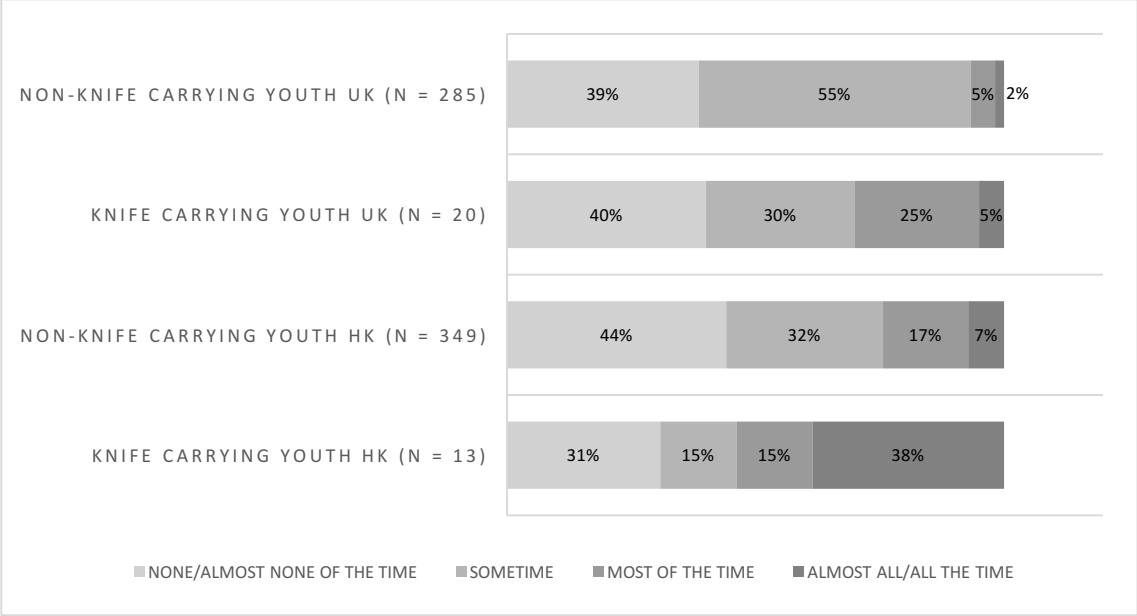

Figure 1: A comparison of the amount of violence in video, computer, or internet game played among knife- and non-knife carrying adolescents and young adults in the UK and HK.

7.7. The Impact of Violent Gameplay on Knife-carrying

Referring to figure 1, 30% of respondents in the UK and 53% in HK who reported carrying a knife in last 12 months said the games they played involved violence most of the time or almost all/all the time, compared to 6.2% of non-knife carrying respondents in the UK and 25% from HK. The amount of violent gameplay differed significantly between knife- and non-knife-carrying youth in HK ($t(361) = 11.1$, $p < .001$) and the UK ($t(304) = 5.21$, $p < .001$). These results indicated knife-carrying youth played violent games more frequently than non-knife carrying youth.

7.8. The Relationship Between ACEs and Knife-carrying

To determine if ACEs scores can successfully distinguish between knife- and non-knife carriers, a series of multivariate logistic regressions were conducted. In the first model, block entry was use to evaluate the impact of the ACE score on the likelihood of carrying a knife, regardless the effect of relevant demographic covariates (table 9). In the second analysis, all the items that make up the total ACE score were individually evaluated for their unique impact on the risk of knife-carrying, when controlling for all demographic covariates (table 10).

Table 9. Total ACE Score Predicting Knife-carrying

	The United Kingdom (n = 305)			Hong Kong (n = 362)		
	B	SE	OR	B	SE	OR
Age	-.050	.642	.951	1.13	.658	3.09
Gender	-.229	.590	.796	.869	.644	2.38
Race/Ethics	-.056	.603	.946	-1.25	.699	.285
Care Background	.790	.657	2.20	.1.66	.782	5.27*
Family Composition	-.251	.658	.778*	.634	.682	1.89
Education Level	1.66	.782	5.26*	-18.1	7430.0	.000
ACE score	-1.36	.372	.258***	-.055	.176	.946

Note: OR = odds ratio; the UK: Nagelkerke R2 = .491, p <.001; HK: Nagelkerke R2 = .184, p = .011

Table 10. Each Category of ACE Predicting Knife-carrying

	The United Kingdom (n = 305)			Hong Kong (n = 362)		
	B	SE	OR	B	SE	OR
Abuse						
Emotional	1.14	.997	.253	-1.88	1.60	.153
Physical	1.42	1.10	4.14	.661	1.10	.516
Sexual	.259	1.02	1.30	.739	.829	2.09
Neglect						
Emotional	-.236	.883	.790	.291	1.10	1.34
Physical	-.296	1.05	.744	-.031	1.20	.969
Household Dysfunction						
Family violence	-.442	.770	.643	.954	.861	2.60
Parental separation/divorce	-.842	1.27	.431	-1.68	1.31	.187
Mental illness in household	2.10	.863	8.16*	-1.83	1.68	.161
Household substance abuse	1.95	.752	7.04*	.446	1.05	1.56
Incarcerated household member	-18.1	9054	.000	1.15	1.71	3.15
Community Violence	-.916	1.04	.400	1.87	.760	6.47*
Age	-.137	.810	.872	1.19	.746	3.30
Gender	-.507	.935	.602	.583	.693	1.79
Race/Ethic	.074	.716	1.08	-.759	.787	.468
Care Background	1.084	.780	2.96	2.12	.910	8.35*
Family composition	1.51	1.23	4.51	1.64	.866	5.17
Education level	1.21	.994	3.34	-18.0	7330	.000

Note: OR = odds ratio; the UK: Nagelkerke R2 = .563, p < .001; HK: Nagelkerke R2 = .301, p = .024

The result showed that the ACE score was a strong and significant predictor of knife-carrying in the UK after control for all other risk factors in the model. For each additional ACE, the likelihood of knife-carrying decrease by 74%. However, after careful examination on the raw data of the respondents, seventeen out of twenty knife carriers scored 5 or above in ACEs. The extreme responses had greatly interrupted the significance tests and could be a result of the small sample size involved in this study. Meanwhile, ACE score was not a strong and significant predictor of knife-carrying after control for all other risk factors in the model in HK.

In the UK, mental illness in household and household substance abuse were found to be significant predictors of knife-carrying. The likelihood of carrying knife increased by 8.2 and 7.0 times even when controlling for all demographic covariates and items in the ACE score. In HK, community violence was a significantly predictor knife-carrying. The likelihood of carrying a knife increased by 6.5 times even when controlling for all demographic covariates and items in the ACE score. The results indicated that a majority of ACE items were not significant predictors of knife-carrying.

8. DISCUSSION

8.1. The Prevalence of Each Category of ACE and ACE Score

The percentage of participants who reported experiencing one or more ACEs among the UK (32.1%) and HK (32.0%) sample were very similar. Therefore, H_1 is rejected.

Community violence was found to be the most prevalent ACE in the UK and HK in this study. The perpetrator of community violence can be of a similar age to the victims, which is classified as peer-on-peer abuse. There is evidence that peer influence and pressure are a major contributing factor to adolescent's risky behaviour (Gardner & Steinberg, 2005), which suggests that many perpetrators may not aware of the consequences of engaging in physical abuse. Therefore, the impact of peer-on-peer abuse should be discussed with and educated to young people in an age-appropriate way so that they can learn to respect others while being able to assert personal feelings and needs. Youngster can learn to express anger in a non-harmful and non-explosive way.

Violence in school or community can also be a result of parental trust on authority figures (Falkenhain, Duckro, Hughes, Rossetti & Gfeller, 1999). Many cases remain unreported because the position of authority diminishes children's willingness or ability to disclose their sufferings. They may think that there will be further penalty if they disclose. (Hyman, Zelikoff & Clarke, 1988). Therefore, policy and protocol development for managing disclosures ought to be more children friendly and victim-centered. Collaboration between police and child protection services should monitor children who are at-risk and provide support to those who are in need proactively. Education programs to parents are also suggested to teach them protect children from authority abuse.

Emotional neglect was found to be the second most common ACE in HK. A study uncovered that parents in HK are least aware of emotional neglect (Chan & Chung, 2011). Parents lacking understanding on emotional neglect will risk a higher tendency of continuing emotional neglect. Low awareness and sensitivity to emotional neglect will hinder spontaneous help by relatives and neighbors, as well as seeking assistance from social services. The cultural tendency of saving face also hinders parents in HK to seek support and assistance. Parent educations programs on the importance of containing emotional needs of children as well as impact of emotional neglect to child's growth are crucial. Those programs may also need to deal with the cultural rigidity of avoiding humiliation and the balance between the authority and caring role.

In line with the H_2, physical abuse was prevalent among the two samples. In this study, respondents in the UK were twice more likely to have reported experiencing parental substance abuse than those in HK. Parental substance abuse has a strong association with child physical neglect. Substance abuse parents are less likely to prioritize looking after their children. They are less likely to recognize physical neglect as a problem, which increases the risk of leaving their children alone, with an inadequate caregiver without adequate care (Coohey, 2008). In the short-run, trainings are required to increase the awareness of physical neglect on substance abuse parents, and improve their parenting practice. In the long-run, substance abuse parents are subject to enrollment into treatment along with supervision with social workers to stop drug taking. However, many parents, particularly mothers, who do not have an adequate alternative caregiver for their children are significantly less likely to enter treatment (Stewart, Gossop, & Trakada, 2007). Therefore, child care services ought to be provided to increase parent's incentive and feasibility to receive treatment and reduce their risk of drop-out.

This study also discovered that respondents in the UK who are not living with both parents are more likely subject to physical abuse. Single-parenthood adding emotional and physical stress on parents leading to fatigue and reduces parental capacity, increasing the risk of parent-child emotional distance. Abuse and neglect can happen in extreme

cases. Therefore, education on parenting practice is crucial in combating physical abuse. More resources and support are also necessary to alleviate the stress of single parents.

Authoritarian parenting style is traditional among HK Chinese and was a contributing factor to physical abuse (Haskett, Scott, Fann., 1995; Rodrihuez, 2010). Parents who believe in strict discipline think that children are raised to be affiliated by beating. Parent education programs to help Chinese parents equip with a more open value in relationship with their children is necessary.

8.2. The Prevalence and Frequency of Knife-carrying in The Last 12 Months

In HK, 3.6% of participants reported carrying a knife in the last 12 months, among them, around 53.8% only did so once or twice over the year. In the UK, 6.6% of participants reported carrying a knife in the last 12 months, and 40% of them did so more than ten times over the year. As a result, H_3 and H_4 are not accepted.

There are no previous studies on knife crime in HK. Therefore, more studies in this area is recommended to understand this phenomenon.

In the UK, a strong association between gang-related crimes and knife crime was well established in past publications (Sharp, Aldridge & Medina, 2006; McVie, 2010). Recent data suggested that gangs were no longer responsible for the majority of knife crime in London. Some may attribute the increased knife-carrying behavior and higher frequency of knife-carrying to the lack of trust in the police (Brennan, 2018; Barlas & Egan, 2006). However, the overall percentage of people age 16 or over who had confidence in their local police stayed 75% or above between the year ending March 2013 to 2019 even the number of knife crimes rose over the same period (Office of National Statistics, 2020).

The increase of knife-carrying can be an effect of not having significantly deterring punishment. Statistic from Ministry of Justice 2019 indicated most adolescents aged 10-17 caught with a knife receive a community sentence or warning. Only 10% were sentenced youth custody. The low rate of custodial sentence was widespread among young people (Marfleet, 2008). They believe that they are not seriously punished. Home office statistics 2017-2018 indicated that only 16% of stop and searches lead to an arrest for an offensive weapon. The low uncover rate also makes young people believe that they are unlikely to be caught carrying a knife, therefore diminishing the deterrent effect.

In order to be able to deter knife-carrying effective, custodial sentence is recommended as the last resort because imprisonment alone significantly increase the risk of reoffending (Marsh, Fox & Sarmah, 2009). Community-based measures are considered as better alternative for youth offenders. Programmes aid to change attitudes and behaviours towards knives should be offered to youth offenders to reduce the risk of reoffending (Silvestri, Oldfield, Squires & Grimshaw, 2009). Community and educational interventions should provide youth offenders with anger control, conflict resolution, emotional communication skills, and diversionary social activities (Barry, Clarke, Morreale, & Field, 2018).

8.3. The Impact of Violent Gameplay on Knife-carrying

This study found that the more frequent a young person plays violent games, the more likely he/she will carry a knife in the last 12 months. H_9 is accepted. Significantly more respondents from HK reported playing violent game routinely than those from the UK.

The differences between two cultures may attribute to the fact that a compulsory rating system for games was implemented in the UK but not in HK. All games in the UK are rated under the Pan European Game Information System (PEGI) since 2012. The system rates game according to their degree of violence. Selling restricted games to under-age children could face hefty fines and a prison sentence. However, 47% and 27% of British adults admitted playing and buying an 18-rated

video game when they were still an underage five years after the PEGI system was enforced (YouGov, 2017). This suggested a loophole in law enforcement. More effort and resources should be allocated to the gaming industry to dilute underage's access to violent games.

On the other hand, there is no pre-sale censorship and classification system for video games in HK. Relatively easy access to violent game explains why significantly more young people in HK reported playing games with violent contents. Policymakers in HK should, therefore, consider introducing a compulsory rating system for video games with appropriate penalties to those who sell restricted games to reduce underage contacts with violent games.

However, this study could not conclude that playing violent games is the only necessary or sufficient cause for knife-carrying. knife-carrying is possibly a result of a combination of variable.

8.4. The Impact of Demographic Traits on Knife-carrying

In both samples, history of care background was found to have significant impact on knife-carrying over the past 12 months. Other influential factors included being male and ethnic minorities in HK while not living with both parents and school exclusion in the UK. H_5, H_6 and H_7 are rejected.

Young people aged 13 and 16 who hung out in public places with friends are more likely to carry a knife as a gang member (McVie, 2010). Past publication reported a strong association between ethnic minorities, delinquent behaviors and gang involvement (van Germert, Peterson & Lien, 2008). A 115% increase in arrests for possession of arms and ammunition was recorded among ethnic minorities youth between 2005 and 2014 in HK (Paryani, 2015). More resources should be granted to the Outreaching Teams to support the at-risk population, and to train up outreaching workers in supporting ethnic minorities.

Most children had been abused or neglected prior to entry into foster and residential Care (Hobbs, Hobbs & Wynne, 1999). However, it is estimated that there are around 450-550 and 250-300 confirmed cases of abuse and neglect in foster and residential care across the UK each year (Biehal, Cusworth, Wade & Clarke, 2014). Most residences refuse to disclose being abused during their placement because of fear which results in under-reporting of cases. Therefore, social workers must meet with children alone regularly, to create a positive relationship and safe space for disclosure. Social workers should also provide after-care services for children with a history of care background, and offer appropriate interventions as necessary.

The presence of a father in family and a close father-child kinship reduce the risk of delinquency (Johnson, 1987). The impact of fathers on the development of delinquency is greater than mothers (Shwalb, Nakazawa, Yamamoto & Hyun, 2010). Nonetheless, the impact of absent mothers on the development of delinquency was supported by research on maternal employment and delinquency. A close relationship between working mothers and delinquency was found because mother's ability to interact with, monitor, and supervise children is reduced by her employment. (Lee, Jang & Bouffard, 2011). Policymakers ought to increase resources for the social welfare department to proactively provide more in-depth support and outreaching service to the hard-to-reach single- or absent-parent families in need. Whilst, training social workers to be more sensitive to the emotional problems of children from the adverse background, and provide appropriate support based on their condition or make referrals based on assessment outcomes are necessary.

8.5. The Relationship Between ACEs and Knife-carrying

The result indicated the risk of knife-carrying did not increase with an added ACEs, which reject H_9. A marked cultural difference in the types of ACE contributing to knife-carrying is found, and rejected H_{10}. One significant point about the findings is that after careful examination of the raw data, 85% of

the knife carriers in the UK reported scored 5 or more in ACE score. Therefore, it is clear that policies and interventions that help prevent the occurrence of ACE in early life should be introduced, to reduce the likelihood that children with multiple ACEs will engage in knife crime later in life. More resources should be granted to clinicians, which allow them to keep track of the at-risk children and provide supervision to the household in-needed proactively.

In UK, living with parents with mental illness and substance abuse were found to be significant risk factors for knife-carrying. Many individuals who subject to substance abuse also experience mental illness, and vice versa (Ross & Peselow, 2012; Kelly & Daley, 2013). Parents with problems of substance abuse or mental illness are found to have higher possibility of having experienced adversity in their childhood (Min, Farkas, Minnes & Singer, 2007). They have a higher tendency of being overwhelmed by their adversity, thus reducing their availability to their children. The reduction of their capacity in providing enough care and guidance to their children brings adversity to their children in turn and creates intergenerational trauma (Dekel, Goldblatt, 2008). A lack of supervision and poor parent-child relationship is one of the contributing factors to knife-carrying (McVie, 2010; Thurnherr et al., 2009). Clinician-facilitated intervention should be introduced to parents with mental illness or substance abuse to prevent their children from risk taking behaviours (Beardslee, Gladstone, Wright & Cooper, 2003). Support groups for children of mental illness and substance abuse parents has to be launched to provide a safe space to share their difficulties, coping strategies, giving a sense of community, empowering them to prevent engagement in criminal activities out of peer influence and pressure.

In HK, community violence is a significant risk factor for knife-carrying. For the discussion on community violence, please refer to paragraph 8.1.

8.6. Limitations and Future Recommendation

Like other investigations on ACEs, this study relied on retrospective recall. Respondents may have difficulty recalling certain events (Edward, 2001) and consequently creating recall errors. Respondents may also refuse to be truthful due to personal and sensitive topics discussed in this study. Their tendency to give more socially acceptable answers would undermine the true strength of ACEs on knife-carrying, resulting in misclassification and bias results toward the null (Rothman & Greenland, 1998).

A structured interview to reduce data collection bias on ACEs is recommended for future studies. A face-to-face interview allows the researchers to follow-up and clarify important non-verbal. Future researches should also work with authorities to gain access to the child abuse registry database, which allows the researchers to cross-check records if they suspect the respondents being untruthful.

This study was subject to sample selection bias because of the small sample size which skewed the representation of the full population. Therefore, results of this study should be interpreted with caution. The limited sample size also affected the choice of analytical methods. All demographic traits were coded into and analysed as binary variables. The impact of each category of demographic traits on ACEs and knife-carrying remained unclear in this study.

Future research should take a larger sample size to give more reliable results with greater precision and power. Similar research should be conducted on knife crime offenders specifically to give a better understanding of the relationship between ACEs and knife-carrying.

9. CONCLUSIONS

The results of this study indicated that the prevalence of ACEs and knife-carrying are different between the two samples. The impact of demographic risk factors on ACEs and knife-carrying are different. Frequent exposure to violent

games increases the risk of knife-carrying in both samples. Finally, there is a cultural difference between the relationship between ACEs and knife-carrying after control for all demographic risk factors. However, further research should address the limitations of this study.

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11. APPENDIX

Appendix 1: Table 5. Relationship Between Each Category of ACE and Demographic Traits in HK Samples

Table 5. Relationship Between Each Category of ACE and Demographic Traits in HK Samples (n = 362)

ACE	Age				Gender				Race/Ethics				Care Background				Parental Composition				Educational level			
	13-17	18-25	χ 2	Φ	M	F	χ 2	Φ	Chi	Min	χ 2	Φ	Y	N	χ 2	Φ	B	S/N	χ 2	Φ	NC	C	χ 2	Φ
EA																								
Y	16	35	2.10	.076	27	24	2.92	.090	50	1	3.31	.096	5	46	1.74	.069	14	37	2.92	.090	0	51	4.22*	.108
	(-1.4)	(1.4)			(1.7)	(-1.7)			(1.8)	(-1.8)			(1.3)	(-1.3)			(1.7)	(-1.7)			(-2.1)	(2.1)		
N	131	180			125	186			281	30	.		16	295			54	257			24	287		
	(1.4)	(-1.4)			(-1.7)	(1.7)			(-1.8)	(1.8)			(-1.3)	(1.3)			(-1.7)	(1.7)			(2.1)	(-2.1)		
PA																								
Y	26	50	.753	.046	37	39	1.77	.070	72	4	1.34	.061	8	68	3.93*	.104	19	57	2.44	.082	3	73	1.12	.056
	(-1.3)	(1.3)			(1.3)	(-1.3)			(1.2)	(-1.2)			(2.0)	(-2.0)			(1.6)	(-1.6)			(-1.1)	(1.1)		
N	121	165			115	171			259	27			13	273			49	237			21	265		
	(1.3)	(-1.3)			(-1.3)	(1.3)			(-1.2)	(1.2)			(-2.0)	(2.0)			(-1.6)	(1.6)			(1.1)	(-1.1)		
SA																								
Y	19	37	1.23	.058	23	33	.023	.008	51	5	.011	.006	7	49	5.44*	.123	12	44	.304	.029	3	53	.173	.022
	(-1.1)	(1.1)			(-.2)	(.2)			(-.1)	(.1)			(2.3)	(-2.3)			(.6)	(-.6)			(-.4)	(.4)		
N	128	178			129	177			280	26			14	292			56	250			21	285		
	(1.1)	(-1.1)			(.2)	(-.2)			(.1)	(-.1)			(-2.3)	(2.3)			(-.6)	(.6)			(.4)	(-.4)		
EN																								
Y	32	55	.695	.044	39	48	.379	.032	83	4	2.30	.080	9	78	4.33*	.109	22	65	3.17	.094	4	83	.764	.046
	(-.8)	(.8)			(.6)	(-.6)			(1.5)	(-1.5)			(2.1)	(-2.1)			(1.8)	(-1.8)			(-.9)	(.9)		
N	115	160			113	162			248	27			12	263			46	229			20	255		
	(.8)	(-.8)			(-.6)	(.6)			(-1.5)	(1.5)			(-2.1)	(2.1)			(-1.8)	(1.8)			(.9)	(-.9)		
PN																								
Y	19	29	.024	.008	24	24	1.46	.063	46	2	1.37	0.61	5	43	2.16	.077	14	34	3.91*	.104	2	46	.542	.039
	(-.2)	(.2)			(1.2)	(-1.2)			(1.2)	(-1.2)			(1.5)	(-1.5)			(2.0)	(-2.0)			(-.7)	(.7)		
N	128	186			128	186			285	29			16	298			54	260			22	292		
	(.2)	(-.2)			(-1.2)	(1.2)			(-1.2)	(1.2)			(-1.5)	(1.5)			(-2.0)	(2.0)			(.7)	(-.7)		
FV																								
Y	26	46	.753	.046	26	46	1.28	.059	68	263	1.04	.054	8	64	4.64*	.113	23	49	10.2*	.168	3	69	.881	.049
	(-.9)	(.9)			(-1.1)	(1.1)			(1.0)	(-1.0)			(2.2)	(-2.2)			(3.2)	(-3.2)			(-.9)	(.9)		
N	121	169			126	164			4	27			13	277			45	245			21	269		
	(.9)	(-.9)			(1.1)	(-1.1)			(-1.0)	(1.0)			(-2.2)	(2.2)			(-3.2)	(3.2)			(.9)	(-.9)		
PS/D																								
Y	17	28	.171	.022	19	26	.001	.002	42	3	.236	.026	5	40	2.65	.086	35	10	117	.569	4	41	.424	.034
	(-.4)	(.4)			(.0)	(-.0)			(.5)	(-.5)			(1.6)	(-1.6)			(10.8)	(-10.8)	***		(.7)	(-.7)		
N	130	187			133	184			289	28			16	301			33	284			20	297		
	(.4)	(-.4)			(-.0)	(.0)			(-.5)	(.5)			(-1.6)	(1.6)			(-10.8)	(10.8)			(-.7)	(.7)		
MI																								
Y	15	30	1.13	.056	17	28	.374	.032	43	2	1.11	.055	4	41	.897	.050	19	26	18.5*	.226	5	40	1.67	.068
	(-1.1)	(1.1)			(-.6)	(.6)			(1.1)	(-1.1)			(.9)	(-.9)			(4.3)	(-4.3)	**		(1.3)	(-1.3)		
N	132	185			135	182			288	29			17	300			49	268			19	298		
	(1.1)	(-1.1)			(.6)	(-.6)			(-1.1)	(1.1)			(-.9)	(.9)			(-4.3)	(4.3)			(-1.3)	(1.3)		
DA																								
Y	12	16	.064	.013	12	16	.009	.005	24	4	1.27	.059	4	17	4.00*	.105	7	21	.768	.046	4	24	2.87	.089
	(.3)	(-.3)			(.1)	(-.1)			(-1.1)	(1.1)			(2.0)	(-2.0)			(.9)	(-.9)			(1.7)	(-1.7)		
N	135	199			140	194			307	27			24	317			61	273			20	314		
	(-.3)	(.3)			(-.1)	(.1)			(1.1)	(-1.1)			(-2.0)	(2.0)			(-.9)	(.9)			(-1.7)	(1.7)		
IM																								
Y	5	8	.026	.008	5	8	.069	.014	11	2	.801	.047	3	10	7.37*	.143	8	5	16.2*	.211	2	11	1.67	.068
	(-.2)	(.2)			(-.3)	(.3)			(-.9)	(.9)			(2.7)	(-2.7)			(4.0)	(-4.0)	**		(1.3)	(-1.3)		
N	142	207			147	202			320	29			18	331			60	289			22	327		
	(.2)	(-.2)			(.3)	(-.3)			(.9)	(-.9)			(-2.7)	(2.7)			(-4.0)	(4.0)			(-1.3)	(1.3)		
CV																								
Y	56	62	3.41	.097	67	51	15.7*	.208	100	231	10.0*	.166	9	109	1.07	.054	27	91	1.93	.073	12	106	3.54	.099
	(1.8)	(-1.8)			(4.0)	(-4.0)	**		(-3.2)	(3.2)			(1.0)	(-1.0)			(1.4)	(-1.4)			(1.9)	(-1.9)		
N	91	153			85	159			18	13			12	232			41	203			12	232		
	(-1.8)	(1.8)			(-4.0)	(4.0)			(3.2)	(-3.2)			(-1.0)	(1.0)			(-1.4)	(1.4)			(-1.9)	(1.9)		

Note. * = p < .05, *** = p < .001. Adjusted standardized residuals appear in parentheses below group frequencies.
EA = emotional abuse; PA = physical abuse; SA = sexual abuse; EN = emotional neglect; PN = physical neglect; FV = family violence; PS/D = parental separation/divorce; MI = mental illness in household; DA = household substance abuse; IM = Incarcerated household member; CV = community violence; M = male' F- female; Chi = Chinese; Min – Minority, Y = yes; N = No; B = both parents, S/N = single/neither parent; NC = not correspondent, C = correspondent

Appendix 2: Table 6. Relationship Between Each Category of ACE and Demographic Traits in The UK Samples

Table 6. Relationship Between Each Category of ACE and Demographic Traits in The UK Samples (n = 305)

ACE	Age				Gender				Race/Ethics				Care Background				Parental Composition				Educational level			
	13-17	18-25	χ 2	Φ	M	F	χ 2	Φ	W	Min	χ 2	Φ	Y	N	χ 2	Φ	B	S/N	χ 2	Φ	NC	C	χ 2	Φ
EA																								
Y	25	30	.832	.052	36	19	4.54	.122	22	33	.012	.006	19	36	16.1	.230	15	40	8.97*	.171	7	48	8.75	.169
	(.9)	(-.9)			(2.1)	(-2.1)	*		(-.1)	(.1)			(4.0)	(-4.0)	***		(3.0)	(-3.0)			(3.0)	(-3.0)	*	
N	97	153			124	126			102	148			31	219			29	211			8	242		
	(-.9)	(.9)			(2.1)	(2.1)			(.1)	(-.1)			(-4.0)	(4.0)			(-3.0)	(3.0)			(-3.0)	(3.0)		
PA																								
Y	26	35	.219	.027	39	22	4.03	.115	21	40	1.23	.063	22	39	21.5	.266	16	45	8.61*	.168	8	53	11.0	.190
	(.5)	(-.5)			(2.0)	(-2.0)	*		(-1.1)	(1.1)			(4.6)	(-4.6)	***		(2.9)	(-2.9)			(3.3)	(-3.3)	*	
N	96	148			121	123			103	141			28	216			28	216			7	237		
	(-.5)	(.5)			(-2.0)	(2.0)			(1.1)	(-1.1)			(-4.6)	(4.6)			(-2.9)	(2.9)			(-3.3)	(3.3)		
SA																								
Y	18	35	.974	.057	11	42	25.9	.291	30	23	6.76	.149	11	42	.890	.054	9	44	.339	.033	4	49	.948	.056
	(-1.0)	(1.0)			(-5.1)	(5.1)	***		(2.6)	(-2.6)	*		(.9)	(-.9)			(.6)	(-.6)			(1.0)	(-1.0)		
N	104	148			149	103			94	158			39	213			35	217			11	241		
	(1.0)	(-1.0)			(5.1)	(-5.1)			(-2.6)	(2.6)			(-.9)	(.9)			(-.6)	(.6)			(-1.0)	(1.0)		
EN																								
Y	26	30	1.18	.062	37	19	5.10	.129	22	34	.053	.013	25	31	39.9	.362	19	37	21.1*	.263	10	46	24.6	.284
	(1.1)	(-1.1)			(2.3)	(-2.3)	*		(-.2)	(.2)			(6.3)	(-6.3)	***		(4.6)	(-4.6)	**		(5.0)	(-5.0)	***	
N	96	153			123	126			102	147			25	224			25	224			5	244		
	(-1.1)	(1.1)			(-2.3)	(2.3)			(.2)	(-.2)			(-6.3)	(6.3)			(-4.6)	(4.6)			(-5.0)	(5.0)		
PN																								
Y	28	53	1.36	.067	55	26	10.5	.186	29	52	1.08	.059	28	53	26.6	.295	25	56	24.1*	.281	11	70	17.7	.241
	(-1.2)	(1.2)			(3.2)	(-3.2)	*		(-1.0)	(1.0)			(5.2)	(-5.2)	***		(4.9)	(-4.9)	**		(4.2)	(-4.2)	***	
N	94	130			105	119			95	129			22	202			19	205			4	220		
	(1.2)	(-1.2)			(-3.2)	(3.2)			(1.0)	(-1.0)			(-5.2)	(5.2)			(-4.9)	(4.9)			(-4.2)	(4.2)		
FV																								
Y	26	31	.921	.055	37	20	4.36	.120	18	39	2.39	.089	17	40	9.23	.174	14	43	5.83*	.138	2	55	.298	.031
	(1.0)	(-1.0)			(2.1)	(-2.1)	*		(-1.5)	(1.5)			(3.0)	(-3.0)	*		(2.4)	(-2.4)			(-.5)	(.5)		
N	96	152			123	125			106	142			33	215			30	218			13	235		
	(-1.0)	(1.0)			(-2.1)	(2.1)			(1.5)	(-1.5)			(-3.0)	(3.0)			(-2.4)	(2.4)			(.5)	(-.5)		
PS/D																								
Y	18	26	.018	.008	24	20	.090	.017	18	26	,001	.002	19	25	26.9	.297	38	6	216*	.841	6	38	8.36	.166
	(.1)	(-.1)			(.3)	(-.3)			(.0)	(-.0)			(5.2)	(-5.2)	***		(14.7)	(-14.7)	**		(2.9)	(-2.9)	*	
N	104	157			136	125			106	155			31	230			6	225			9	252		
	(-.1)	(.1)			(-,3)	(.3)			(-.0)	(.0)			(-5.2)	(5.2)			(-14.7)	(14.7)			(-2.9)	(2.9)		
MI																								
Y	21	32	.004	.004	33	20	2.47	.090	20	33	.227	.027	17	36	11.5	.194	16	37	12.9*	.206	11	42	24.4	.336
	(-.1)	(.1)			(1.6)	(-1.6)			(-.5)	(.5)			(3.4)	(-3.4)	*		(3.6)	(-3.6)	**		(5.9)	(-5.9)	***	
N	101	141			127	125			104	148			33	219			28	224			4	248		
	(.1)	(-.1)			(-1.6)	(1.6)			(.5)	(-.5)			(-3.4)	(3.4)			(-3.6)	(3.6)			(-5.9)	(5.9)		
DA																								
Y	17	40	3.02	.100	48	9	28.3	.305	23	34	,003	,003	21	36	21.4	.265	15	42	8.03*	.162	6	51	4.72	.124
	(-1.7)	(1.7)			(5.3)	(-5.3)	***		(-.1)	(.1)			(4.6)	(-4.6)	***		(2.8)	(-2.8)			(2.2)	(-2.2)	*	
N	105	143			112	136			101	147			29	219			29	219			9	239		
	(1.7)	(-1.7)			(-5.3)	(5.3)			(.1)	(-.1)			(-4.6)	(4.6)			(-2.8)	(2.8)			(-2.2)	(2.2)		
IM																								
Y	6	9	.000	.000	6	9	.982	.057	3	12	2.79	.096	4	11	1.22	.063	5	10	4.57*	.122	0	15	.816	.052
	(.0)	(.0)			(-1.0)	(1.0)			(-1.7)	(1.7)			(1.1)	(-1.1)			(2.1)	(-2.1)			(-.9)	(.9)		
N	116	174			154	136			121	169			46	244			39	251			15	275		
	(.0)	(.0)			(1.0)	(-1.0)			(1.7)	(-1.7)			(-1.1)	(1.1)			(-2.1)	(2.1)			(.9)	(-.9)		
CV																								
Y	43	89	5.35	.132	88	44	18.8	.249	54	78	.006	.005	33	99	12.6	.203	29	103	10.7*	.188	13	119	12.1	.199
	(-2.3)	(2.3)	*		(4.3)	(-4.3)	***		(.1)	(-.1)			(3.5)	(-3.5)	***		(3.3)	(-3.3)			(3.5)	(-3.5)	*	
N	79	94			72	101			70	103			17	156			15	158			2	171		
	(2.3)	(-2.3)			(-4.3)	(4.3)			(-.1)	(.1)			(-3.5)	(3.5)			(-3.3)	(3.3)			(-3.5)	(3.5)		

Note. * = p < .05, *** = p < .001. Adjusted standardized residuals appear in parentheses below group frequencies.
EA = emotional abuse; PA = physical abuse; SA = sexual abuse; EN = emotional neglect; PN = physical neglect; FV = family violence; PS/D = parental separation/divorce; MI = mental illness in household; DA = household substance abuse; IM = Incarcerated household member; CV = community violence; M = male' F- female; W = White; Min – minority, Y = yes; N = No; B = both parents, S/N = single/neither parent; NC = not correspondent, C = correspondent

Appendix 3: Participant Information Sheet Version 1.0: 27/04/2020

Faculty of Medicine and Health Sciences, School of Medicine
Division of Psychiatry and Applied Psychology

Title of the research project

A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife Carrying in Adolescents and Young Adult

Research Team: Mr. Ho Fung Lam, Masters of Science student supervised by Professor Kevin Browne and Dr Elizabeth Paddock, Centre for Forensic and Family Psychology.

FMHS Research Ethics Ref: 442-1912

This study is exploring the impact of adverse childhood experiences on knife carrying.

The spate of Knife crime offences in the UK during the last 12 months has sparked an increase in public interest about the high numbers of young people knife carrying. Previous research has identified an association between childhood experiences, a dysfunctional home life and knife carrying (McVie 2010). However, the impact of adverse childhood experiences on knife carrying has not been closely looked at and this study aims to investigate this.

We appreciate your interest in taking part in this online questionnaire. You are being invited to participate because you are between 13-25 years old and are living and/or growing up in either the United Kingdom (UK) or Hong Kong (HK)**.** Please read through this information sheet before volunteering to participate by clicking the 'NEXT' button below. You can ask any questions before taking part by contacting the researchers (details below). Taking part is entirely voluntary.

What will I be asked to do?

You will be given 30 questions to answer about your age, sex, race/ethnicity, if you live in UK or HK, playing video games, knife carrying, family life and adverse childhood experiences. These are adapted from validated questionnaires and should take you about 20 minutes to complete. All questions need to be answered to submit. You are free to change your mind at any point during the questionnaire by closing the browser (click X Right hand corner of screen). The data will only be uploaded on completion of the questionnaire by clicking the SUBMIT button at the end. On completion of the survey you will be presented with a Debrief sheet with more information and contact details of charities and services where you can get additional support if needed.

What are the possible risks of taking part?

There is a small risk that answering questions about your family life and adverse childhood experiences may be distressing for you and bring back traumatic events. Please do take time before deciding to take part to think carefully about whether it might be an upsetting topic for you at the moment. If you experience any distress when completing the questionnaire, please stop and exit immediately and contact the researcher or one of the organisations listed below for additional support. After you have finished and submitted the questionnaire you will also be presented with a study debrief sheet giving details of charities and services where you can seek further expert support if you need to.

Will the research be of any personal benefit to me?

The findings of this survey will not benefit you directly but your contribution together with others may help to improve understanding and inform policymakers, the National Health Service, clinicians and educators about the effect of adverse childhood experience(s) on knife carrying in young people. It may hopefully contribute towards developing more positive and helpful approaches on the prevention of knife carrying in young people in the future.

Who will know I have taken part in this study?

No one will know you have taken part in this study because we will not ask for your name or any other personal identifiers in the questionnaire. Your IP address will not be visible to or stored by the research team because an online survey tool is being used which receives and stores and IP address but enables this detail to be filtered out before it is transferred to the research team. As with any online related activity the risk of breach is possible but this risk is being minimized by using the measures described above. For further information about the online survey tool security please see https://www.onlinesurveys.ac.uk/security/

What will happen to your data?

When you have clicked the submit button at the end of the questionnaire, it will be uploaded into a password protected database with a code number. The research team will not be able to see who it is from and for this reason it will not possible to withdraw the data at this point. Your data (research data) will be stored in a password-protected folder sitting on a restricted access server at the University under the terms of its data protection policy. Data is kept for a minimum of 7 years and then destroyed.

This questionnaire is for a Masters project and the answers received from all participants will be combined in a password protected database ready for analysis. The results will be written up as a dissertation and may be used in academic publications and presentations. The overall anonymised data from this study may be shared for use in future research and teaching (with research ethics approval).

If you contact us to ask questions we will receive your e-mail address but this will be received separately from your completed questionnaire and it will not be possible to link the two sets of data. Your e-mail address will be kept separately and only for as long as needed to resolve your queries.

Who will have access to your data?

The University of Nottingham is the data controller (legally responsible for data security) and the Supervisor of this study (named above) is the data custodian (manages access to the data) and as such will determine how your data is used in the study. Your research and personal data will be used for the purposes of the research only. Research is a task that we perform in the public interest. The only personal data we will receive is your e-mail if you contact us to ask further questions or need support. For further information about how the university processes personal data please see: https://www.nottingham.ac.uk/utilities/privacy.aspx/

Responsible members of the University of Nottingham and funders may be given access to data for monitoring and/or audit of the study to ensure we are complying with guidelines, or as otherwise required by law.

If you have any questions about this project, please contact:

Lead Researcher Mr. Ho Fung Lam at Ho.Lam@nottingham.ac.uk or if you have any concerns about any aspect of this study please contact the

Research Supervisors: Professor Kevin Browne or Dr. Elizabeth Paddock at kevin.browne@nottingham.ac.uk or Elizabeth.Paddock1@nottingham.ac.uk.

If you remain unhappy and wish to complain formally, you should then contact the Faculty of Medicine and Health Sciences Research Ethics Committee Administrator: E-mail: FMHS-ResearchEthics@nottingham.ac.uk

Additional Support

United Kingdom

If you have found the discussed topic within this study distressing, there are many external organisations that can provide further support.

4. Victim support offers guidance and support to those affected by abuse. You can access support on their Freephone 08081689111, online chat or email.
5. If you are a Scottish resident, you can contact the helpline on 0800 160 1985, or to find your nearest victim support team, visit their website: https://www.victimsupport.org.uk.
6. If you are under the age of nineteen, you can access counsellor support from the NSPCC Childline, through their Freephone 0800 1111, or 1-2-1 chat or email via their website: https://www.childline.org.uk.

Hong Kong

If you have found the discussed topic within this study distressing, there are many external organisations that can provide further support. Please visit the following link

4. https://www.swd.gov.hk/storage/asset/section/228/tc/IFSC_ISC_address_list_chi_Sept_2019.pdf) and contact any Integrated Service Centre in your district. They are willing to offer professional support and arrange counselling sessions if that's necessary.
5. There are also specific counselling services on trauma: for participants age 18 or above, please visit caritas project for adult survivors of childhood trauma (http://csa.cartias.org.hk);
6. for participants below age 18, please visit Jockey Club Trauma Treatment Service for Children, The Boys' and Girls' Club Association of Hong Kong https://www.bgca.org.hk/page.aspx?corpname=bgca&i=631&locale=zh-HK

click "NEXT"

next page

I have read and understood the above information and had the opportunity to ask questions.

I confirm that I am in the age range 13-25 years old

I confirm by clicking the NEXT button to begin the online questionnaire, I indicate my willingness to voluntarily take part in the study.

Appendix 4: Data Collection Instrument

49. Age (in years)

50. Gender
    a. Male
    b. Female
    c. Other

51. Race/ethnicity
    a. White
    b. Black/Black British
    c. Asian/Asian British
    d. Mixed
    e. Other

52. Have you ever been
    a. Adopted into family
    b. Foster care into family
    c. Live in a children home
    d. Lived in a boarding school
    e. Lived in a Youth Offender Institution/Approved school
    f. None of the above

53. Parental composition in home
    a. Mother Only
    b. Father Only
    c. Mother and Father
    d. Neither Mother nor Father

54. Your educational level
    a. Primary school
    b. Secondary school up to 16 years
    c. Higher or secondary or further education (A-levels, BTEC, etc.)
    d. College or university
    e. Post-graduate degree

55. The number of days in an average week you played video games?

56. The number of days in an average week you played computer and internet games?

57. When you play video, computer or internet games, how many show physical fighting, shooting, or killing?
    a. None/almost none of the time
    b. Sometimes
    c. Most of the time
    d. Almost all/all the time

58. What's your favourite game or games (please list the titles)?

59. There was someone in my family who helped me feel important or special
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True

e. Very Often True

60. I felt loved
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

61. People in my family looked out for each other
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

62. People in my family felt close to each other
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

63. My family was a source of strength and support
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

64. I didn't have enough to eat
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

65. I knew there was someone there to take care of me and protect me
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

66. My parents were too drunk or too high to take care of me
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

67. I had to wear dirty clothes
    a. Never True
    b. Rarely True
    c. Sometimes True

d. Often True
e. Very Often True

68. There was someone to take me to the doctor if I needed it
    a. Never True
    b. Rarely True
    c. Sometimes True
    d. Often True
    e. Very Often True

69. How often did anyone at school or in the community hurt you and leave marks or injures?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

70. How often did anyone at school or in the community act in a way that made you afraid that you might be physically hurt?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

71. As a child, did you ever: Live with anyone who had a problem with drink or drugs?
    a. Yes
    b. No

72. As a child, did you ever: Live with anyone who used bought drugs?
    a. Yes
    b. No

73. Was a household member depressed or mentally ill?
    a. Yes
    b. No

74. Did a household member attempt suicide?
    a. Yes
    b. No

75. Were your parents ever separated or divorced?
    a. Yes
    b. No

76. Did a household member go to prison?
    a. Yes
    b. No

77. Do you know of anyone who carries/uses knife?
    a. Yes
    b. No

78. In the last 12 months, have you ever carried a knife with you for your own protection, for use in crimes or in case you got into a fight?

a. Yes
b. No

79. About how many times have you done this in the last 12 months?
    a. Once or twice
    b. 3 or 4 times
    c. between 5 and 10 times
    d. more than 10 times

80. What type of knife have you usually carried in the last 12 months?
    a. Pen knife
    b. Flick knife
    c. Kitchen knife
    d. Another type of knife

81. What was the main reason for you carrying a knife in the last 12 months?
    a. To protect yourself
    b. To threaten or cause harm to others
    c. In case you got into a fight
    d. Asked to by someone else
    e. Another reason, please specify:

82. Have you used a knife you were carrying to threaten another person in the last 12 months?
    a. Yes
    b. No

83. Have you used a knife you were carrying to injure another person in the last 12 months?
    a. Yes
    b. No

84. How often did a parent, stepparent, or adult living in your home swear at you, insult you, or put you down?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

85. How often did a parent, stepparent, or adult living in your home act in a way that made you afraid that you might be physically hurt?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

86. How often did a parent, stepparent, or adult living in your home push, grab, slap or throw something at you?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

87. How often did a parent, stepparent, or adult living in your home hurt you and leave marks or injures?

a. Never
b. Once or Twice
c. Sometimes
d. Often
e. Very Often

88. Did you witness violence between others member of the family?
    a. Yes
        I. Who is the perpetrator?
            vii. Grandfather
            viii. Grandmother
            ix. Father
            x. Mother
            xi. Male sibling
            xii. Female sibling
        II. Who is the victim?
            vii. Grandfather
            viii. Grandmother
            ix. Father
            x. Mother
            xi. Male sibling
            xii. Female sibling
    b. No

89. Has a member of your family ever repeatedly hit over at least a few minutes?
    a. Yes
        I. Did you witness?
            i. Yes
            ii. No
    b. No

90. Has a member of your family ever threatened with or hurt by a knife or gun?
    a. Yes
        I. Did you witness?
            i. Yes
            ii. No
    b. No

91. Have you ever repeatedly hit over at least a few minutes?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

92. Have you ever threatened with or hurt by a knife or gun?
    a. Never
    b. Once or Twice
    c. Sometimes
    d. Often
    e. Very Often

93. Has an adult, relative, family friend, or stranger who was at least 5 years older than you had ever:
    a. Touched or fondled your body in a sexual way

I. Yes
II. No

b. Made you touch his or her body in a sexual way
I. Yes
II. No

c. Attempted to have any type of sexual intercourse (oral, anal, or vaginal) with you
I. Yes
II. No

d. Actually had any type of sexual intercourse (oral, anal, or vaginal) with you
I. Yes
II. No

94. Has anyone of a similar age ever:

a. Touched or fondled your body in a sexual way
I. Yes
II. No

b. Made you touch his or her body in a sexual way
I. Yes
II. No

c. Attempted to have any type of sexual intercourse (oral, anal, or vaginal) with you
I. Yes
II. No

d. Actually had any type of sexual intercourse (oral, anal, or vaginal) with you
I. Yes
II. No

Appendix 5: Debriefing Sheet

A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife Carrying in Adolescents and Young Adults

Thank you for completing and submitting the questionnaire.

This study aims to examine the cause-and-effect relationship between adverse childhood experience(s) and knife carrying in young people. Individuals aged 13-25 years from the United Kingdom and Hong Kong were invited to participate in the study. Prior works found that childhood abuse experiences, household dysfunction and violent game play were associated with knife carrying (Duke et al., 2010; Ybarra et al., 2014). However, the impact of adverse childhood experiences on knife carrying was not examined in any previous study. Meanwhile, Wu et al. (2002) suggested that the occurrence of each type of adverse childhood experiences varies between Eastern and Western populations and Chinese are more likely to have experienced adverse childhood experiences.

This is the first study to assess the relationship between adverse childhood experiences and knife carrying. The result of this study will provide a better understanding on the cause-and-effect relationship between adverse childhood experiences and knife carrying in adolescents and young adults. It will be valuable to practitioners developing more proactive stances on the prevention and reduction of knife carrying.

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database. No identifiable personal data (address, telephone number) will be collected in this study and all data will be kept securely for 7 years. After this time your data will be disposed of securely. During this time, all precautions will be taken by all those involved to maintain your confidentiality, only members of the study team will have access to your personal data. Anonymised data may also be stored in data archives for future researchers interested in this area.

Additional Support

United Kingdom

If you have found the discussed topic within this study distressing, there are many external organisations that can provide further support. Victim support offers guidance and support to those affected by abuse. You can access support on their Freephone 08081689111, online chat or email. If you are a Scottish resident, you can contact the helpline on 0800 160 1985, or to find your nearest victim support team, visit their website: https://www.victimsupport.org.uk. If you are under the age of nineteen, you can access counsellor support from the NSPCC Childline, through their Freephone 0800 1111, or 1-2-1 chat or email via their website: https://www.childline.org.uk.

Hong Kong

If you have found the discussed topic within this study distressing, there are many external organisations that can provide further support. Please visit the following link (https://www.swd.gov.hk/storage/asset/section/228/tc/IFSC_ISC_address_list_chi_Sept_2019.pdf) and contact any Integrated Service Centre in your district. They are willing to offer professional support and arrange counselling sessions if that's necessary.

There are also specific counselling services on trauma: for participants age 18 or above, please visit caritas project for adult survivors of childhood trauma (http://csa.cartias.org.hk); for participants below age 18, please visit Jockey Club Trauma Treatment Service for Children, The Boys' and Girls' Club Association of Hong Kong (https://www.bgca.org.hk/page.aspx?corpname=bgca&i=631&locale=zh-HK)

Contact Details

If you have further questions or wish to receive the final report of the study, please feel free to contact the researcher Mr. Ho Fung Lam at Ho.Lam@nottingham.ac.uk.

If you have any complaints about your experience of taking part in this study, please contact the study supervisors Professor Kevin Browne or Dr. Elizabeth Paddock at kevin.browne@nottingham.ac.uk or Elizabeth.Paddock1@nottingham.ac.uk.

If you remain unhappy and wish to complain, you should then contact the FMHS Research Ethics Committee Administrator, c/o The University of Nottingham, Faculty PVC Office, E41, Medical School, Queen's Medical Centre Campus, Nottingham University Hospitals, Nottingham, NG7 2UH. E-mail: FMHS-ResearchEthics@nottingham.ac.uk

Appendix 6: Poster for Recruitment

A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife Carrying in Adolescents and Young Adults

JUST CARRYING A KNIFE COULD PUT YOU IN PRISON.

PICK ME UP AND I'LL TAKE YOU DOWN

You don't own the knife. The knife owns you.

YOU CAN EscapeTheKnife.gov.uk

PARTICIPANTS NEEDED!!!

Are you between 13-25 years old?

20 min(s) to complete

Living and/or growing up in either…

Online Questionnaire

The United Kingdom?

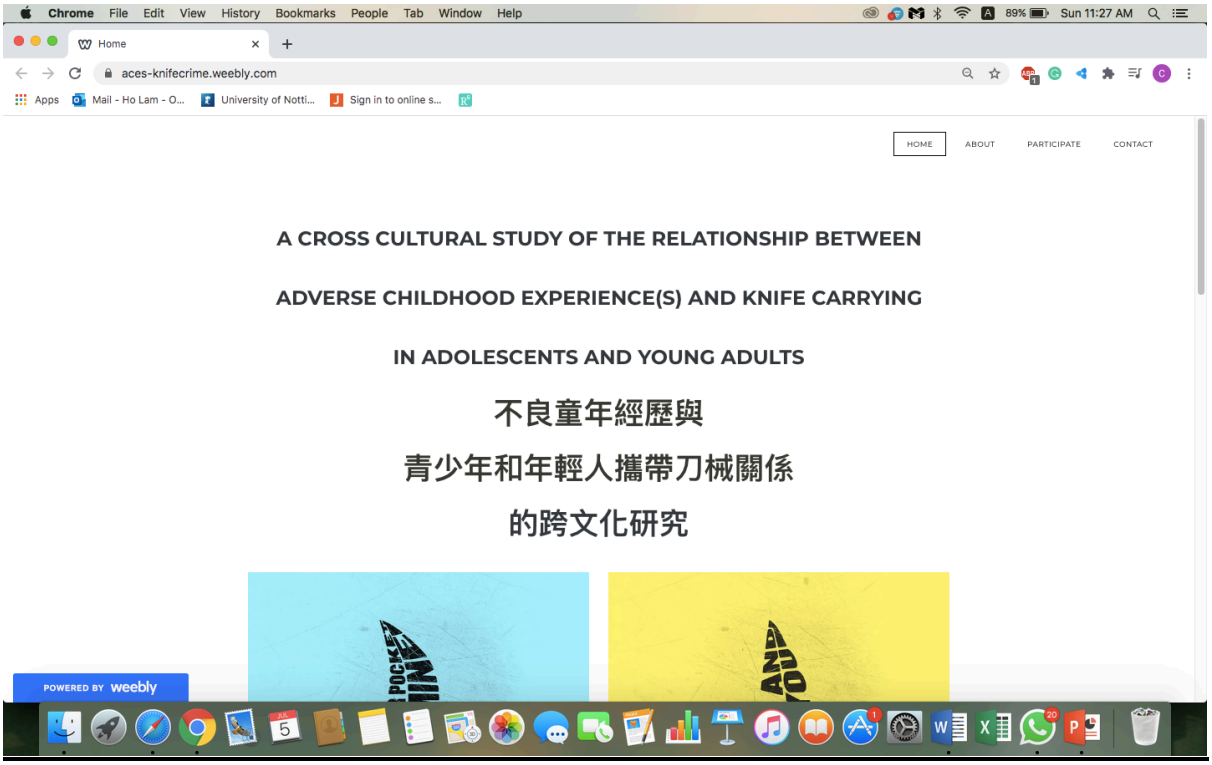
https://nottingham.onlinesurveys.ac.uk/ace-and-knife-crime-uk

Or Hong Kong?

https://nottingham.onlinesurveys.ac.uk/ace-and-knife-crime-hk

Appendix 7: Website for Recruitment

https://aces-knifecrime.weebly.com



Executive Summary

Target Audience: Policymakers

Background

Knife crime is a major social problem in the United Kingdom. England and Wales Police recorded a historic high in knife crime since comparable recording began a decade ago. Knife carrying is the most common form of knife-related offence but creates no specific or harmed victims until the knife is used (Eades, Grimshaw, Silvestri & Solomon, 2007). Apart from demographic correlates of offending such as age, gender, race/ethnicity, there is growing evidence indicating the impact of adverse childhood experiences (ACEs) on offending. ACEs refer to some of the most intensive and frequently occurring sources of stress that a person may suffer in childhood. The original ACEs study by Felitti et al. (1998) included the ten types of stressful events occurring prior to the age of 18: abuse (emotional, physical and sexual); neglect (emotional and physical); and household dysfunctions (family violence, household substance abuse, household mental illness, parental separation or divorce, and incarcerated household member). ACE score was the sum of the number of ACEs reported by an individual. Prior research on adversity and trauma reported that nine in ten youth offenders having experienced trauma in childhood and they have a greater likelihood of having experienced multiple forms of trauma (Abram et al., 2004; Ford, Chapman, Connor & Cruise, 2012).

Rationale of The Study

Previous study identified an association between childhood abusive experiences, a dysfunctional home life and knife carrying (McVie 2010). However, the impact of ACEs on knife-carrying has not been closely looked at. Therefore, the major objective of this study is to close this knowledge gap. As prior works demonstrated cultural differences in ACEs, this study also tries to examine the impact of cultural differences on the relationship between ACEs and knife-carrying. Hong Kong is a city in the east that is highly representative of British colonial rule. Therefore, adolescents and young adults aged 13-25 from Hong Kong was recruited along with similar age in the United Kingdom to examine the cultural difference between knife-carrying and ACEs (Bellis et al., 2014; 2015; Fung, Ross, Yu & Lau, 2019)

Base on previous research, adolescents, male and ethnic minorities were at greater risk of experiencing ACEs and knife carrying. Demographic risk factors are included as control measure in the analysis because demographic correlates of ACEs and knife-carrying were the same.

Violent gameplay and community violence were put forward as a risk factor of weapon-carrying in prior works (Ybarra, Huesmann, Korchmaros & Reisner, 2014; Sheley & Wright, 1993; Gerbner, Gross, Morgan, Signorielli & Shanahan, 2002). However, their impact specifically on knife-carrying were not yet well-established. Therefore, this study also aimed at examining and providing more evidences on their relationship.

Research Aims

The prime goal of the research is to study the cultural differences between the UK and Hong Kong on the relationship between ACEs and knife carrying. The study included

community violence as one of the ACEs. The study on the impact of violent game play is also included.

Along with the major goal, the research also provides the following findings:

1. The prevalence of each category of ACE and ACE score
2. The prevalence and frequency of knife carrying in the last 12 months
3. The impact of demographic traits on ACEs and knife carrying

How Data Was Collected and Analysed

Targeted samples in this study, aged between 13 to 25, were recruited through social media. A random sampling was used. An anonymous online self-reported questionnaire consisted of four parts: demographic information, adverse childhood experiences, violence in gameplay and knife-carrying was administered. The questionnaire was presented in English for the United Kingdom respondents and was translated into Traditional Chinese for Hong Kong respondents. A culturally adjusted English version was available for Hong Kong respondents who cannot read Traditional Chinese fluently. The questionnaire was translated by the researcher, reviewed and edited by two independence professionals to avoid translation bias.

A total of 362 participants were recruited in Hong Kong, and a total of 305 participants were recruited in United Kingdom.

All demographic risk factors were coded as binary variables. A series of chi-square tests were used to analyse the impact of demographic risk factors on each category of ACEs and the likelihood of knife-carrying. An ordinary logistic regression was used to assess

the relationship between demographic risk factors and ACE scores. A one-sample t-test was used to look at the difference between the level of violence in gameplay in knife- and non-knife carrying youth. A series of multivariate logistic regression were used to determine if ACEs scores can distinguish between knife- and non-knife carrying youth, and the unique impact of each category of ACEs on the risk of knife-carrying. All demographic risk factors were included as control measures in the multivariate logistic regression models.

Key Findings

1. Community violence was the most prevalent ACE in both populations. Respondents resided in the United Kingdom were more likely to have experienced more ACEs.
2. The demographic risk factors that predict ACEs and knife-carrying were different among two populations
3. Knife-carrying youth played violent games more frequently than non-knife carrying youth.
4. In the United Kingdom, mental illness and substance abuse in the household were significant predictors of knife carrying. In Hong Kong, community violence was a significantly predictor knife carrying.
5. The risk of knife-carrying did not increase with the ACE score, but 85% of knife-carrying youth in the UK scored 5 or more in ACEs.

Implications

It is clear that authorities should introduce policies and interventions to help preventing the occurrence of ACEs in early life, to reduce the risk of future engagement in knife crime on children with multiple ACEs. More resources should be granted to clinicians, services providers, and legal system which allow them to keep track of the at-risk children and provide supervision to the household in-need more proactively.

Recommendation

A structured interview to reduce collection bias on adverse childhood experiences should be considered in future research. Future research should be conducted on knife crime offenders specifically to give a better understanding of the relationship between ACEs and knife-carrying.

PowerPoint Presentation Slide

A Cross-Cultural Study of The Relationship Between Adverse Childhood Experience(s) and Knife-Carrying in Adolescents and Young Adult

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AIM OF THE RESEARCH

The cultural differences between the UK and Hong Kong on the relationship between ACEs and knife carrying is the major goal. The study included community violence as one of the ACEs. The impact of violent game play on knife carrying is also included.

RATIONALE OF THE RESEARCH

1. Previous study identified an association between childhood abusive experiences, a dysfunctional home life and knife carrying (McVie 2010). However, the impact of ACEs on knife-carrying has not been closely looked at.
2. There is a cultural differences in ACEs (Bellis et al., 2014; 2015; Fung, Ross, Yu & Lau, 2019)
3. Violent gameplay and community violence were put forward as a risk factor of weapon-carrying in previous work.(Ybarra, Huesmann, Korchmaros & Reisner, 2014; Sheley & Wright, 1993; Gerbner, Gross, Morgan, Signorielli & Shanahan, 2002). However, their impact was not yet well-established.

METHODS

- Targeted samples in this study, aged between 13 to 25, were recruited in the United Kingdom and Hong Kong through social media.
- A random sampling was used in which participants took part strictly by chance.
- An anonymous online self-reported questionnaire consist of four parts was administered: demographic information, ACEs (including community violence), violent gameplay and knife carrying.
- The questionnaire was presented in English for respondents residing in the United Kingdom, traditional Chinese or English for respondents residing in Hong Kong.
- The questionnaire was translated by the researcher, reviewed and edited by two independent professional.

RESULTS OF THE RESEARCH

- Community violence was the most prevalent ACE in both populations. Respondents resided in the United Kingdom were more likely to have experienced more ACEs.
- The demographic risk factors that predict ACEs and knife-carrying were different among two populations.
- Knife-carrying youth played violent games more frequently than non-knife carrying youth.
- In the United Kingdom, mental illness and substance abuse in the household were found to be significant predictors of knife carrying. In Hong Kong, community violence was found to be a significantly predictor knife carrying.
- The risk of knife-carrying was not found increase with the ACE score, but 85% of knife-carrying youth in the UK scored 5 or more in ACEs.

IMPLICATIONS OF THE RESEARCH

1. Introduce schemes and interventions to help preventing the occurrence of ACEs in early life, to reduce the risk of future engagement in knife crime on children with multiple ACEs.
2. More resources should be granted to clinicians, which allow them to keep track on the at-risk children and provide supervision to the household in-need more proactively.

RECOMMENDATION FOR FUTURE RESEARCH

1. A structured interview to reduce collection bias on adverse childhood experiences.
2. Take a larger sample size and conduct similar study on knife crime offenders specifically to gain a give a better understanding of the relationship between ACEs and knife carrying.

REFERENCE AND ADDITIONAL INFORMATION

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Reflective Report of Research Activities

Conceptualisation

I had to write up two research proposals in the summer prior to the start of term. It was a big challenge for me because I had to create two practical research questions entirely on my own without much. It was very different from what I did in undergraduate, in which I was assigned to work with my dissertation tutor who had prepared all materials to walk me through step-by-step. Despite of the challenge of working independently, the experience raises my confidence and prepares me for self-directed learning that is essential for postgraduate study. Moreover, I have more space to think freely, expand my perspective. The process of realizing a gap in knowledge and finding out the answer is found to be a real learning process which is enjoyable and fruitful.

Preparation

My original research proposal was to examine the relationship between adverse childhood experiences and delinquent behaviours in adolescents and young adults. My supervisors, Professor Kevin Browne and Dr Elizabeth Paddock were in line with this research proposal in our first supervision. However, after I presented them with the materials for the proposed research in our second supervision, they recommended me to focus on studying the impact of ACEs on a specific type of crime. Knife crime was put forward as it was a major social problem in the United Kingdom at present. My supervisors also proposed working this study in a cross-cultural level, because I have connections both in the UK and HK. I was a bit uncertain whether I should take their recommendation because, to my knowledge, knife crime was not pronounced in Hong

Kong. I had raised my worry about the outcome of the study in the supervision, and had an in-depth discussion on their recommendation.

One of my major concerns was conducting a cross-cultural study at the postgraduate level was overwhelming because it was time- and effort-consuming. However, I decided to take up the recommendation because there was a lack of publications in the area, which indicated a knowledge gap that needs to be filled. I had learned to take up a challenge with self-confidence and be responsible for the process no matter how difficult it would be. Though taking up the challenge is filled with anxiety and uncertainty, I learned to live up with it. I found that it is something I need to learn in life process and it is about life in which anxiety and uncertainties are always along. To stay positive and hopeful in face of adversity seems to be something essential in the present social world.

Design

There was no existing material I could adopt directly in investigating the relationship between ACEs and knife crime. I had to mix and match materials from different sources to compose a questionnaire for my research project. It was frustrating in finding useful materials because most of the researchers did not include their materials in their publications and I often ended up nothing even I spent hours looking at pieces of literature. I learned how to select and include the most appropriate materials from prior works to set my questionnaire. I had to convince my supervisors on the choice of materials, which enhanced my critical thinking and presentation skills. However, I should have prepared some back-up materials, in case my supervisors disfavour the materials I put forward.

Since most materials reviewed were in English, I had to translation questionnaire materials into Traditional Chinese for Hong Kong participants. It was a huge task for me because many of these terms are not well established and defined in Chinese culture. I was very anxious if I had correctly translated the terms without diminishing their meaning. Therefore, I had contacted the professionals in Hong Kong in advance and asked for their help. They had kindly offered their advice to avoid misunderstandings in my translation. I have learned how to be precise on translation, and the impact of poor translation on the research result. I also found a good experience of asking for professional support and assistance. The process of asking for support from professionals gives me the courage and skills looking for collaboration among professionals in the future.

I started the material translation before I received my ethics approval to ensure a good enough time for data collection. However, the materials were subject to multiple adjustments because of template that I used for information presentation was not accurate. I needed to re-translate the materials. Therefore, I will only start my translation after everything is settled and confirmed in future studies if the time frame allows. Anyway, I think it is a process of facing adversity and uncertainties. Staying positive and hopeful give me the resilience and energy to go forward.

My supervisors had encouraged me to submit my ethics application in December, a few days before the deadline for another piece of assignment. I pushed myself very hard to achieve the task in a wish to receive my ethics approval as soon as possible. However, I felt extremely overwhelmed and stressful at that time. I was thrilled when I met the deadline and received some very positive feedback from my supervisor. It is a confirmation on my ability. I realized that I have more potential than I think when I work

with full concentration. I will continue to challenge myself, but will also notify my supervisor with my difficulties and seek for support whenever required to avoid unnecessary distress.

Data collection

I returned to Hong Kong at the end of March due to COVID-19 pandemic. The unexpected situation added the difficulty to communicate with my supervisors and the ethics committee. I had not heard back from the ethics committee until early May. I was requested to build a website specifically to promote my study and was not allowed to promote my study on personal social media account due to safeguarding reason. I was extremely stressful because there was only two months left before submission deadline of the final report. I constructed the website immediately and sent the URL to the ethics committee the same day. The response rate for the questionnaire was far slower than I expected. I had to extend my data collection period by two weeks to maximise the number of responses. Even so, the number of responses is far less than the set target. I understand the COVID-19 pandemic had disturbed many plans, but I was upset by the severe delay in data collection. Luckily, I returned home in this frustrating period and was well support by my family. I learned how to face frustration and adversity over the period. I also learned that an immediate and flexible response is more efficient and effective than only staying with frustration. Keep patience while maintaining the incentive to work is highly important.

Data analysis

I was relatively confused during that time because I had to perform several statistical tests for my set of data. I sought support from a family friend who studied statistics and works as a data analyst in Hong Kong. He had run a short tutorial to walk me through the most appropriate statistical test for my set of data and how to interpret the result. I received a lot of help from him and I appreciated his assistant. A lack of knowledge in statistical analysis indicates that I need to work harder and put more effort to enrich my knowledge in this area. I had learned to face my weakness but not devaluating myself in this process, and be able to seek for advice when facing any sort of troubles.

Write up

A cross-cultural study with multiple objectives poses a remarkable disadvantage in writing up my research project within the word limit. I spent hours to cut the word count, and it was particularly challenging at the beginning. I was overly concerned about the negative impacts on the report structure if I removed and re-arrange the paragraphs. However, I had found many overlap and lengthy paragraphs in the write up after reading through the report several times, I learned how to write in a focused, precise, and coherent way through revising my report.

Supervision

Supervision offered me an opportunity to express my concerns and struggles around the research project. I had learned how to present myself and be critical in the reflective process. However, I should be more proactive in arranging meetings with my supervisors to update the process of my research project more frequently.

Whole experience

Overall, the process was challenging due to the short time frame, and I found that upcoming unpredicted circumstances had created difficulties in following through the original time schedule of the project. I realised how important to be both resilient and flexible when conducting a research project as well as in the workplace in the future. Back-up and contingency plans are always important and be able to reduce stress and confusion. Meanwhile, being courageous enough to admit personal limitations and seek for professional support is essential and be able to enrich personal growth.