



THE UNIVERSITY OF QUEENSLAND  
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**Intimate partner violence, predictors and consequences; a gender difference study**

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# **Abstract**

## **Introduction**

Intimate partner violence (IPV) is a globally widespread public health problem associated with a wide range of adverse health consequences. Understanding the factors, which increase the risk of IPV victimization and its consequences, should contribute to more informed policy responses and have significant implications for IPV survivors and affected children.

Despite an extensive body of research on IPV, previous studies in the field have a number of limitations that need to be addressed, 1) much of the research has been restricted to female victimization and little attention has been paid to male victimization, which precludes gender comparisons, 2) evidence about different forms of IPV is inadequate, 3) details have been mostly derived from selective and clinical samples while evidence from population-based studies is limited, 4) previous studies' on IPV consequences have mostly relied on cross-sectional designs and few studies with prospective data are available, and 5) there are some limitations in controlling key potential confounders.

## **Aims**

To address the current limitations, this thesis uses a multidimensional measure of IPV and a relatively large population-based dataset, including both males and females, and control for potential confounders to address five research aims:

- 1) To determine age- and gender-specific rates of forms of IPV in a sample of the Australian population.
- 2) To determine the association between the experience of IPV victimization and leaving the abusive partner.
- 3) To determine the association between economic factors and the experience of IPV.
- 4) To determine the consequences of exposure to parental IPV for children.
- 5) To determine the health consequences of IPV for victims.

## **Methods**

Data for the current study are taken from the Mater-University of Queensland Study of Pregnancy (MUSP). MUSP is a prospective study of 7223 consecutive women and their offspring who were recruited initially at their first antenatal visit to the Mater Public Hospital in Brisbane between 1981 and 1983. Further data were obtained when the study children were 6 months, 5 years, 14

years, 21 and 30 years old. The Composite Abuse Scale with 30 items was used to measure IPV in the offspring's current or previous relationships at the 21- and 30-year follow-ups. Maternal IPV victimization at the 14-year follow-up was measured by a 7-item questionnaire about mothers' last year experiences of victimization by a partner.

## Results

1) In the 21-year follow-up, almost half (49.8%) of the sample reported at least one type of lifetime ever IPV. At 30 years about one-fifth (20.9%) of respondents have experienced at least one type of IPV during last year. Lifetime ever physical abuse (37.9%) followed by emotional abuse (33.3%) at 21 years and last year emotional abuse (16.7%) followed by physical abuse (10.6%) at 30 years were the most prevalent forms of IPV. Proportionally similar rates of IPV victimization were found for males and females at both the 21-year (48.6% vs. 44.9%;  $p=0.23$ ) and 30-year (20.9% vs. 18.6%;  $p=0.87$ ) follow-ups. Considering prior or current relationships, males in a current relationship reported they experienced most forms of IPV more often than did females. There was a disproportional tendency for relationships involving higher proportions of IPV to lead to a marital breakdown. IPV was more likely to have occurred in relationships that ended (40.8%) than in relationships that persisted (18.8%).

2) Females who experience emotional abuse, harassment and physical abuse reported at 21 years were more likely to change their partners. For males, there was no statistically significant association between the IPV and leaving their partner. Leaving a previous abusive relationship was not associated with experiences of later victimization, either for male or female respondents. The early IPV victimization remained a robust significant predictor for experiencing further IPV at 30 years, regardless of whether there was a change of partners.

3) Within low-income families, both partners reported experiencing higher levels of IPV. Families in which both partners earned a low income experienced higher levels of almost all forms of IPV. Income imbalance (when females earn more) was less often associated with the experience of IPV.

4) A robust association was found between maternal IPV and offspring's child maltreatment. Except for sexual maltreatment, which was consistently higher in female offspring, there were no gender differences in experiencing different types of maltreatment in offspring of families manifesting maternal IPV.

5) IPV victimization predicted substance use disorders in both males and females; however, the size of associations was relatively greater for females. We found a temporal association between IPV and depressive disorder in females with no previous depression diagnosis and a temporal association between IPV and subsequent anxiety disorders in females with a previous anxiety diagnosis. Emotional abuse was the only predictor of new cases of anxiety disorder in males.

## **Conclusion**

IPV is a prevalent public health concern in early adulthood, which typically involves both males and females as perpetrators and victims. Males remain more often in an abusive relationship and report experiencing higher rates of IPV in their current relationships compared with victimized females who are more likely to change their partners. However, changing a partner does not interrupt the continuity of victimization either for male or female respondents. Although relationships involving higher proportions of IPV tend to end, male and female survivors, as well as affected children, are at increased risk of multiple health problems. A broader perspective than the gendered theory should be taken to address the issue effectively. Economic hardship and scarcity create a context for conflict, which facilitates IPV for both partners in a relationship. IPV appears to have stronger negative effects on females, which may encourage them to leave the abusive male partner. However, males are also at risk of IPV and its adverse consequences. In the context of family violence, negative outcomes of IPV go beyond the incident itself and influence all family members, especially children regardless of their gender.

This study makes a number of contributions to the existing body of work related to the gender differences, predictors and consequences of IPV and strengthens the evidence for the content and direction of prevention and intervention programs.

## **Declaration by author**

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly authored works that I have included in my thesis.

I have clearly stated the contribution of others to my thesis as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, financial support and any other original research work used or reported in my thesis. The content of my thesis is the result of work I have carried out since the commencement of my higher degree by research candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my thesis, if any, have been submitted to qualify for another award.

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## Publications during candidature

- **Ahmadabadi, Z.**, Najman, J. M., Williams, G. M., Clavarino, A. M., D'Abbs, P., and Smirnov, A. (2019) Intimate partner violence in emerging adulthood and subsequent substance use disorders; Findings from a longitudinal study. *Addiction*, *114*, 1264-1273. <https://doi.org/10.1111/add.14592>.
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- **Ahmadabadi, Z.**, Najman, J. M., Williams, G. M., Clavarino, A. M., d'Abbs, P., & Abajobira, AA. (2018). Maternal intimate partner violence and child maltreatment. *Child abuse and neglect*, *82*, 23-3. <https://doi.org/10.1016/j.chiabu.2018.05.017>
- **Ahmadabadi, Z.**, Najman, J. Williams, GM., Clavarino, AM., d'Abbs, P., & Saiepour, N. (2018). Does leaving an abusive partner lead to a decline in victimization? *BMC Public Health* *18(404)*, 1-9. <https://doi.org/10.1186/s12889-018-5330-z>
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### **Research Involving Human or Animal Subjects**

The Mater Hospital and University of Queensland Study of Pregnancy (MUSP) in Australia has been approved by the Human Ethics Review Committee of the University of Queensland. Additional approval granted from the Human Ethics Research Office of the University of Queensland (Clearance number 2017001622) to undertake the present study. Written informed consent was obtained from all participants of the study.

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## List of Abbreviations or Acronyms

|              |   |
|--------------|---|
| <b>ADHD</b>  | Attention Deficit/Hyperactivity Disorder              |
| <b>ALSWH</b> | Australian Longitudinal Study of Women's Health       |
| <b>APA</b>   | American Psychiatric Association                      |
| <b>CAS</b>   | Composite Abuse Scale                                 |
| <b>CBCL</b>  | Child Behaviour Checklist                             |
| <b>CDC</b>   | Centres for Disease Control                           |
| <b>CES-D</b> | Centre for Epidemiological Studies Depression Scale   |
| <b>CFA</b>   | Confirmatory Factor Analysis                          |
| <b>CI</b>    | Confidence Interval                                   |
| <b>CIDI</b>  | Composite International Diagnostic Interview          |
| <b>CTS</b>   | Conflict Tactics Scale                                |
| <b>DSM</b>   | Diagnostic and Statistical Manual of Mental Disorders |
| <b>EA</b>    | Emotional abuse                                       |
| <b>EFA</b>   | Exploratory Factor Analysis                           |
| <b>FCV</b>   | First Clinic Visit                                    |
| <b>H</b>     | Harassment  |
| <b>IPV</b>   | Intimate Partner Violence                             |
| <b>IVAWS</b> | The International Violence against Women Survey       |
| <b>MUSP</b>  | Mater-University of Queensland Study of Pregnancy     |
| <b>OR</b>    | Odds ratio  |
| <b>PA</b>    | Physical abuse  |
| <b>PSS</b>   | Personal Safety Survey                                |
| <b>PTSD</b>  | Post-traumatic stress disorder                        |
| <b>SC</b>    | Severe combined                                       |
| <b>SES</b>   | Socio-economic Status                                 |
| <b>WHO</b>   | World Health Organization                             |
| <b>yr/fu</b> | Year follow-up  |

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## **Chapter One: Introduction**



## Rationale

Intimate partner violence (IPV) is a globally widespread *public health* problem associated with a wide range of adverse health consequences (1-4). According to the World Health Organization (WHO) IPV is “any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship” (5). The Centres for Disease Control (CDC) add that partners can be spouses, non-marital partners, former spouses or non-marital partners. This definition includes *acts* of physical violence, sexual violence, emotional abuse and controlling behaviors (5).

Although common belief is that IPV may occur in all settings and among all socioeconomic, educational, marital and cultural groups, a body of research shows that some persons or groups are at higher risk of interpersonal violence, while for others it is a rare experience (5-9). IPV cannot be understood in isolation; it is associated with a wide range of psychological, social, behavioural and economic characteristics (10-14). Understanding the factors that increase the risk of IPV victimization, should contribute to more informed policy responses. If it is possible to address protective/risk factors of IPV, then subsequent victimization may be avoided (14). On the other hand, because intimate partner violence is recurrent and chronic, patterns of destructive interactions may gradually create a stable hostile environment affecting the whole household, including children (15). For this reason, findings of this study might have significant implications for IPV survivors and children.

For decades researchers have examined evidence of different levels and settings to understand factors associated with variations in IPV occurrence (5). There are inconsistent findings in terms of estimates and risk factors associated with IPV. These inconsistencies may reflect different theoretical approaches (feminist or family violence) and conceptualizations (e.g., violence against women or domestic violence (16)), non-comprehensive and biased measurements (e.g., Abusive Behaviour Inventory (17)), selective samples (clinical and criminal samples) and confusion between current and former relationships (18-27). There are also concerns about the extent to which a broader context or common socio-economic factors may confound the association between exposure and outcome of interest, which need to be acknowledged.

This research uses the data from Mater-University Study of Pregnancy (MUSP) in Brisbane, Australia, a relatively large population-based study, which includes both men and women as well as a validated and multidimensional measure that reflects the range of types of IPV.

I aim to describe characteristics and forms of IPV, explore predictors and consequences of IPV for both genders, and examine whether these relationships are independent or reflects a range of potential confounders.

This study contributes to research on gender differences in IPV victimization in early and young adulthood. It also extends our understanding of a wide range of long-term health consequences of IPV, from depression and anxiety to substance use disorders. The current study explores IPV victimization experienced in relationships with different partners and contributes to a deeper understanding of leaving the abusive partner. The findings of this thesis provides an empirical basis for health policy and practice and IPV reduction and intervention programs.

## **Thesis outline**

This PhD thesis is divided into ten chapters.

- Chapter 1 provides a brief rationale of the current study by stating the current gaps and the need for research on predictors and consequences of IPV. Chapter 2 describes the existing knowledge in the field including the definition, types, rates and theories. It discusses what we know and what is unknown and reviews findings of empirical studies. Chapter 3 describes the MUSP study design, measurements, and the statistical methodologies.

- Chapters 4 to 9 contain the findings of six manuscripts published in/submitted to international peer-reviewed journals. These papers aim to investigate about rates, predictors and consequences of IPV for the family members. Chapter 4 discusses gender differences in different forms of IPV. It investigates whether males and females in current and former intimate relationships differentially experience IPV. Chapter 5 examines gender differences in the association between income (family and personal) and forms of IPV victimization. It investigates how gender [im]balance in personal income contributes to IPV victimization. Chapter 6 investigates gender differences in persistence of IPV, for those remaining in or leaving an abusive relationship. It also examines whether leaving an abusive partner may alter the continuity of victimization. Chapter 7 presents result of the association between maternal IPV and children's experience of maltreatment. Chapter 8 and 9 focus on gender differences in the associations between IPV in early adulthood and subsequent mental health (depression and anxiety) and substance use disorders (nicotine, alcohol and drug) in young adulthood.

- The final chapter (10) includes the main findings and common themes across papers, strengths, limitations and suggestions for further research. Practical implications of the key findings are also discussed in this chapter.

This thesis is by publication and all papers within the thesis contain an introduction, methods section and a discussion. Despite efforts to reduce repetition, some overlap and redundancy is inevitable.

## **Chapter Two: Literature review**

While intimate partner violence is a prevalent public health concern (1-4), we know relatively little about its characteristics, causes and outcomes. This review will first discuss IPV definitions, different ways to measure its occurrence, and estimates of its prevalence in Australia. Finally, important predictors of IPV with regard to theoretical perspectives and available literature about consequences of IPV will be considered.

## Definitions and types of IPV

Before 1970, IPV had been recognized and predominantly treated as a private and family matter and not as a social problem (28). Since then IPV has become more visible to the public, and scholars from different disciplines have addressed its complicated nature, risk factors and consequences.

Academic efforts to understand IPV have been mainly divided into feminist and family violence perspectives. Each perspective has developed its own specific terms and conceptualizations to explain IPV. Terms like *wife abuse*, *wife beating*, *violence against women* and *domestic violence* have been widely adopted and used by feminist theorists. Feminists see *gender* at the centre of the problem and tend to think of IPV as a stable pattern of behaviors used to maintain control over an intimate partner (29). While “domestic violence” has been used by feminist scholars to focus on the gendered nature of violence (30), terms like “family violence” reflect a more gender-neutral point of view about the problem (16).

In addition, a number of typologies has been developed to address various aspects of IPV. Johnson’s work (31-33) is one of the most influential contributions to the field. Johnson’s typology proposes multiple types of IPV that include *intimate terrorism* (perpetrator is violent and controlling, while the partner is either non-violent or controlling), *violent resistance* (the perpetrator, usually a woman, uses violence to resist or defend against partner’s coercive controlling violence), *situational couple violence* (both partners similarly use violence, but not control) and *mutual violent control* (both partners are violent and controlling). His work has since inspired multiple studies to differentiate between forms of IPV (34, 35).

According to the World Health Organization (WHO) *intimate partner violence* (IPV) is defined as “any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship” The Centres for Disease Control (CDC) add that partners

can be spouses, non-marital partners, former spouses, or non-marital partners. (5, 36). In the current study, we use the term *intimate partner violence* and measure it using the *Composite Abuse Scale (CAS)* developed by Hegarty et al (37, 38). The scale comprises four subscales including severe combined abuse (e.g. rape and assault with a knife or weapon), emotional abuse (e.g. keeping apart from friends and family, insults, blame and verbal violence), physical abuse (e.g. kicking, slapping, hitting) and harassment (e.g. harassing at work and over the telephone).”

## Epidemiology of IPV in Australia

Existing estimates of the prevalence of IPV in Australia are varied. Some studies have been conducted on clinical samples (19). Others are population-based studies (20, 24, 25). Inconsistent estimates of IPV are likely to reflect different approaches, methodologies, conceptualizations, measurements, samples’ characteristics and confusion between current and former relationships (18).

The Personal Safety Survey (PSS) collected self-reported information about the experience of violence since the age of 15 and in the 12 months prior to the survey, by different perpetrator types<sup>1</sup>, across Australia in 2012. When the perpetrator was a partner<sup>2</sup>, PSS differentiated between *partner violence*, *partner emotional abuse* and *stalking*<sup>3</sup>. This study indicated that 16.9% of all women (with 2.7% by current partner and 14.5% by previous partner) and 5.3% of all men (with 1.4% by current partner and 3.8% by previous partner) aged 18 years and over, report they have experienced partner violence. An estimated 25% of all women (with 4.5% by current partner and

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<sup>1</sup> The perpetrator could be current partner, previous partner, boyfriend/girlfriend or date, other known man or woman, and stranger.

<sup>2</sup> The term *partner* only refers to “a married or de facto relationship who live with that person in a private dwelling. This definition does not include boyfriend/girlfriend or date which do not live with together.

<sup>3</sup> *Partner violence* refers to any incident of sexual assault, sexual threat, physical assault or physical threat by a current and/or previous partner. *Sexual assault* is “an act of a sexual nature carried out against a person’s will through the use of physical force, intimidation or coercion, and includes any attempts to do this”, including rape, attempted rape, aggravated sexual assault, penetration by objects, forced sexual activity that did not end in penetration and attempts to force a person into sexual activity. *Sexual threat* involves the “threat of acts of a sexual nature that were made face-to-face where the person believes it is able to and likely to be carried out”. *Physical assault* is “the use of physical force with the intent to harm or frighten a person”, including being: pushed, grabbed or shoved; slapped; kicked, bitten or hit with a fist; hit with an object or something else that could hurt you; beaten; choked; stabbed”. Physical threat is “an attempt to inflict physical harm or a threat or suggestion of intent to inflict physical harm that was made face-to-face where the person believes it was able to and likely to be carried out.”

*Emotional abuse* “refers to being subjected to behaviors or actions that are aimed at preventing or controlling a person’s behaviour with the intent to cause emotional harm or fear. These behaviors are characterised in nature by their intent to manipulate, control, isolate or intimidate the person they are aimed at and includes psychological, social, economic and verbal abuse”.

*Stalking* includes “loitering and following, which the respondent believed was being undertaken with the intent to harm or frighten. To be classified as stalking more than one type of behaviour had to occur or the same type of behaviour had to occur on more than one occasion”.

21% by previous partner) and 14% of all men (with 2.9% by current partner and 12% by previous partner) aged 18 years and over, reported they had experienced emotional abuse by a partner (20). PSS has some difficulties in accessing those from remote areas and culturally diverse backgrounds. It is also unclear how violence and abuse were defined and distinguished. For example, contrary to some other studies (21-23), PSS categorized *threat* as a type of partner violence and not as a form of emotional abuse.

The International Violence against Women Survey (IVAWS) was conducted across Australia and included 6,677 women aged 18-69. It found that over a third of women reported at least one form of IPV victimization (24). The IVAWS measured three types of violence: *Physical* (“includes both physical assaults, which refer to the use of physical force with the intent to harm or frighten a woman, and physical attempts or threats, which refers to the verbal, and/or physical intent to inflict harm”), *Sexual* (“any form of non-consensual or forced sexual activity or touching including rape”) and *Psychological* (“includes insults, humiliation, put-downs, restrictions of freedom and constant surveillance”) (p, 10).

Only a few studies have focused on more specific age groups; Using Survey 1 (women aged 18-24) of the Australian Longitudinal Study of Women's Health (ALSWH), “11.2% of women reported ever having had a violent relationship with a partner”. However, *partner violence* was measured by a single question “Have you ever been in a violent relationship with a partner/spouse?” and the response category included two general terms of *physical or sexual violence* (25). In addition to existing limitations in measuring partner violence and confusion about the experience of IPV in the current or prior relationship, this research focused only on male-to-female violence, while, recent estimates of IPV, suggest a substantial rate of female-to-male violence; For instance, trends in recorded incidents of IPV in New South Wales found that about 1/3 of victims of domestic assault recorded by police, are male (26).

Alongside some national studies, globally comparative reports present an inconsistent picture of IPV in Australia: Johnson and colleagues’ report of violence— physical and sexual - in nine countries including Australia, found that the highest lifetime prevalence was in Mozambique (40%), then in Australia (27%) and Denmark (22%), and the lowest rates were in Hong Kong (9%) and Switzerland and Philippines (10%) (27). To what extent these rates reflect real differences in IPV or differences in the definition and measurement of IPV is unclear. Another worldwide review of available estimates of violence -physical and sexual- against women, suggested that while the

global prevalence of IPV among all ever-partnered women was 30%”, the lifetime prevalence of IPV in high-income countries including Australia was 23% (23).

The later finding calls into question the common notion that *the prevalence of violence against women is identical across societies*. This widespread idea may have come from some highly-cited WHO multi-country studies, like Garcia-Moreno and colleagues’ research (39) which was done mainly on traditional or economically developing countries (Bangladesh, Brazil, Ethiopia, Japan, Namibia, Peru, Samoa, Serbia and Montenegro, Thailand, and Tanzania) and its conclusion cannot be generalized to economically developed societies like Australia. Regarding efforts towards gender equality and objective economic and social changes, IPV may have different prevalence and characteristics in Australia to those observed in other societies (40-42).

## **Gender difference in IPV**

Despite an extensive body of research on IPV, it is not clear whether there are gender differences in intimate partner violence perpetration and victimization (43-45). Much of the available research indicates that IPV is *male-perpetrated* (28, 46, 47). *Feminist theory* considers *gender* and *power* as the central component of analysis and suggests that males are the primary perpetrators of IPV. Adherence to traditional gender roles by males that involves male dominance combined with non-adherence to traditional gender roles by female partners, together with power inequalities between males and females the genders and male dominance are the primary reasons of IPV perpetration (28, 30). A, male violence is systemic, frequent and brutal. It derives from patriarchal social norms and cultural prescriptions other than individual deviance, pathologies or family history. The *batterer subtypes typology* identifies these subtypes of male perpetration including *family-only batterers*, *borderline/ dysphoric* and *generally violent/antisocial*. Family-only batterers have little or no psychopathology and are believed to engage in the least violence within and outside the home. Dysphoric/borderline batterers are those with the most psychologically distress and engage in moderate to severe wife abuse and extra familial violence. The last subtype demonstrates characteristics of antisocial personality disorder (e.g., criminal behaviour, substance abuse) and engage in high levels of marital violence and the highest levels of extra familial violence (48).



In contrast to the gendered perspective, a growing body of evidence suggests a *gender symmetry* model of family violence (16, 49-54). Considering the family as a *system, the family violence perspective* challenges the feminist idea that IPV is only male-perpetrated. It suggests that gender inequality is just one factor among a complex of risk factors for IPV, and IPV is one of many forms of family violence (e.g., child abuse). Family violence stems from “the structure of the modern family as a social constitution”. This theory tends to view IPV as *gender-symmetrical*, perpetrated by either partner (55-57).

What is currently known about gender differences in IPV victimization/perpetration likely reflects disparities in a cultural context, samples characteristics, definitions of IPV, different ways of measuring IPV, and confusion about whether IPV includes both current and former relationships.

It is likely that representative or community samples produce results, which differ from those observed using selected samples based upon those in contact with the criminal justice system (31, 58). In a comprehensive review of 50 studies (59), mutual violence was identified across all types of samples. Estimates of gender differences in IPV may vary depending upon the degree of violence, as females may be more likely to experience more severe injuries (60). One important discrepancy in IPV estimates can be attributed to the diverse ways of measuring IPV. Some widely used measurements of IPV have been developed based on a particular theory or a selective aspect of IPV. For instance, the Abusive Behavior Inventory (17) is derived from and consistent with a feminist perspective about the nature of domestic violence and is associated with the view that family violence is exclusively male-perpetrated.

One major source of discrepancy is the confusion between IPV in current or previous relationships (61). Most of the gender symmetry studies have used measurements like Conflict Tactics Scale (21), which doesn't differentiate between IPV experiences in the current and former relationships. Some studies, however, have indicated that females may be more inclined to terminate their abusive relationships and report violence in a previous (but not current) relationship. This also may over represent males' victimization who tend to report their IPV experiences tend to be in a current relationship (61, 62).

Another important concern is the extent to which demographic factors (e.g., age, marital status, education and unemployment) may confound the association between gender and IPV (63-66).

## Leaving the abusive partner

A considerable part of literature about IPV victims is based on theories that try to answer questions like *why victimized women stay in an abusive relationship* or *how they can free from the abuse*. Initial attempts have had a victim-blaming and psychopathological approach to the victims. They have been described passive, helpless, with dysfunctional emotional reaction to the stressful situation and unable to leave the abusive relationship (67). For example, on the basis of *cycle of abuse theory*, Walker developed *battered women's syndrome* theory. *Battered women's syndrome* posits that an abused woman may (a) re-experience victimization, (b) attempt to avoid the psychological impact of victimization, (c) experience hyperarousal, hypervigilance, somatic concerns and intimacy issues, or (d) disrupt interpersonal relationships and e) be involved in retaliating or self-defense behaviors (68). *Theory of learned helplessness* suggests that continuous abuse negatively affects a woman's cognitive and decision making ability, increases loss of control and minimize the abused woman's motivation to actively respond to or leave the abusive relationships (69). *Trauma theory* posits that trauma is a significant consequence of IPV, and victimized women are at increased risk of Post-Traumatic Stress Disorder (PTSD). Similar to a trauma, victimization affects how victims cognitively process and emotionally response to an interpersonal stressor. This theory offers a psychobiological explanation for why IPV victims may be vulnerable to further victimization (70-72). *The life-course theory* provides an insight into continuity and stability of IPV victimization across relationships. The notion of *cumulative continuity* describes how negative outcomes of earlier experiences of victimization (e.g. psychological problems) transition into subsequent relationships and lead to repeated victimization (73, 74).

*The life-course theory*, however, has acknowledged “turning points” (e.g. help seeking) which may break the cycle of violence and reduce the negative impacts of IPV on victims (75). Along with this idea, a number of recent theories talk about *survivors* instead of *victims* and adopt empowerment and strengths-based approaches. *Social support theory*, for instance, discusses the possibility that strong family and community support can reinforce survivors' wellbeing and active responses to abusive relationships or assist her to leave the abusive partner (67). *Empowerment models* have been developed to conceptualize survivors' needs, challenges and goals and the process of gaining power and taking action against the violent environment (76).

Aside from the use of varying theoretical backgrounds, empirical evidence has suggested that IPV may occur repeatedly in the context of intimate relationships (77). Prior victimization/perpetration has appeared to be a strong risk factor for further victimization/perpetration (78-81). Although remaining in an abusive relationship is accompanied by continued victimization, it remains unclear whether leaving that relationship and re-partnering lead to a reduced risk of later victimization.

Prior research following those who have previously experienced IPV has been limited and inconclusive. Only a small number of scholars have suggested that changing partner may reduce IPV perpetration (15, 82) and victimization (83). Capaldi et al (82) found that IPV is “dyadic in nature” and reinforced by relationships characterized by chronic conflict. Changing a partner and leaving the hostile environment interrupts destructive patterns of interaction. In another study of low income victimized women, leaving an abusive partner was found to decrease the risk of recurrent victimization (83).

In contrast, a recent body of research has cast doubt on the presumed advantages of leaving an abusive relationship and IPV perpetration and victimization has been reported to continue across relationships (15, 60, 80, 84-87). It has been suggested that a particular period of the life course may be associated with higher rates of IPV. Contemporary young people experience a new, crucial and complex stage between adolescence and full-fledged adulthood (18 -25 years), named *emerging adulthood*. Empirical evidence shows that IPV victimization peaks in late adolescence and emerging adulthood and then declines in older age (13). Individuals in this developmental life stage have difficulties with identity exploration, relationship formation, financial independence, long-term commitment and stability in social roles, which may put them at increased risk of IPV (88-91). Afterwards, developmental changes (e.g., maturing behaviors, personal achievements, interactional skills) may protect individuals from subsequent victimization/ perpetration-regardless of leaving or staying with a partner (88-91).

Leaving a prior abusive partner, might arguably increase the risk of more severe IPV victimization, particularly homicide (92). Other than partner-related characteristics, risk of [re]victimization is partly associated with victim-related factors (e.g. lower socio-economic resources and history of child abuse) which may exist before the early experience of IPV. Empirical studies have found that re-victimization might be exacerbated across relationships because of financial hardship, poor mental health, substance abuse and having children (93-99).

Beside discrepancies in the literature, unresolved debate continues about gender differences in leaving an abusive relationship. One group of scholars focus on the internal (e.g., psychological difficulties) and external (e.g. economic dependency) barriers against females' ability to leave an abusive relationship (93, 100). By contrast, other scholars suggest that due to multiple social obstacles (e.g., shame and denial) victimized men may be unwilling to terminate their violent relationships (61, 101). There is inadequate evidence about the extent to which different forms of IPV may predict leaving an abusive partner. Although physical and emotional abuse are mostly considered to be correlated, they might have different effects on leaving or staying in an abusive relationship (102).

## **Risk factors of IPV**

Over recent decades, IPV has increasingly been recognized as a complex and controversial public health problem. A body of research has established a robust link between the poverty, low socio-economic status (SES), disadvantage circumstances and IPV perpetration and victimization (6-9). In addition, relatively little has been written about the separate role of husband's and wife's income as these might be related to IPV (103).

Existing theoretical models and the findings related to these models, which link gender, economic issues and domestic violence are not consistent (104). *Feminist* scholars (28, 46, 47) and *Dependency theory* (95-97, 105) highlights females' economic dependency as the root of violence against women. Women's inferior position in the patriarchal structure of power, it is argued, leads to lower economic opportunities, make them dependent on their male partners, and raises the risk of IPV victimization. *Exchange theory* interprets *marriage* as an exchange system where partners are considered valuable based on their physical attractiveness, skills, and socio-economic status. The theory suggests a partner with higher perceived market value may control the other through the threat or the use of violence. Family violence occurs when the rewards of violent behaviour outweigh the costs, especially when an effective social control is absent. Social inequality between male and female in physical power, status, income, education and employment reduces the transactional costs of using violence. The potential imbalance of available resources also precludes ending the abusive relationships and leaving the cycle of violence (106).

From *the Resource Theory* perspective, men who lack socioeconomic resources use violence to maintain power. According to this theory, resources like income, education or status are used to achieve personal goals. Violence is also a personal resource that can be used when other legitimate resources are unavailable or low (107, 108). *Relative Resource Theory* extends the debate suggests that women with higher relative status constitute a challenge to established male dominance and are more vulnerable to abuse (109, 110). *Gendered resources theory*, adds a condition to this rule and argues that females' higher resource increases the risk of IPV only if the male partner holds less egalitarian gender views (111).

Despite Australia historically having been characterized as a strong male-breadwinner culture (41, 112), over the most recent decades, women's labour force participation rates and the proportion of women with a Bachelor degree has increased to 58% and 25% respectively. Egalitarian gender beliefs about work and family roles have become more common and couples with similar socio-economic status or dual earner families have emerged to be increasingly common (113). Perhaps as a consequence of these social and economic changes, IPV in Australia may have particular characteristics.

## **IPV consequences**

### **Victims' mental health disorders**

The association between IPV and mental health problems have been previously studied (114-116). However, most of previous studies have been cross-sectional and the temporal order of IPV and mental health problems remains to be determined. In one longitudinal study of a nationally representative cohort, Ouellet-Morin, et al (117) tested the directionality of associations between IPV and depression. Excluding women with a history of depression, they found that IPV independently predicted new-onset depression in survivors. Beside research suggesting that IPV may lead to a subsequent poor mental health, an extensive body of literature has identified a higher risk of IPV victimization in women with severe mental illness (118-121). There is also some evidence of a bidirectional association between IPV and poor mental health (116, 122).

Further, much of the existing longitudinal research has been restricted to IPV and depression (117, 123-129), there is a paucity of evidence about the other mental health outcomes of IPV including anxiety (122, 130). Moreover, previous longitudinal studies have some

limitations in controlling for key potential confounders (116). It is possible that any association between IPV and mental health may reflect other factors related to both exposure and outcome. This includes childhood exposure to family violence, experience of childhood sexual abuse and living with parents who experienced mental health problems (13, 64).

Consequences of females' victimization have been the main concern of existing prospective research (117, 124-127, 129). A more comprehensive study including both females and males has the potential to make a significant contribution to understanding gender differences in IPV experience and outcomes. One longitudinal study followed male and female adolescents through adulthood to investigate sex differences in mental health consequences of physical partner abuse. It showed that although both males and females reported similar rates of IPV, females were more likely to develop depression and PTSD (post-traumatic stress disorder) than did males (122). Still, the extent to which different forms of IPV, including psychological abuse, may affect subsequent mental health remains to be determined (116).

### **Victims' substance use disorders**

The available literature addressing the relationship between IPV victimization and substance use disorder is controversial (131). While drug and alcohol use have been found to increase the risk of IPV victimization/perpetration (13, 14, 64, 66, 132-140), there is inadequate evidence concerning whether substance use/abuse may also be a consequence of IPV victimization. Health behaviors of victims within the abusive relationships have been partly discussed in *the self-medication hypothesis* (141). This theory indicates that to cope with psychological distress, relieve physical pains and manage emotions and mental symptoms like posttraumatic stress, victimized women may use alcohol or tobacco.

While there are empirical studies consistent with the above theory (142-148), previous studies are generally cross-sectional and based on retrospective data. They consistently report the co-occurrence of IPV and substance use/abuse but are unable to determine the temporal precedence of either the substance use disorders or IPV.

There are a number of longitudinal studies with longer time lags between the experience of IPV and the assessment of substance use (149-155). For instance, research on a sample of college women and men over a three-year period (150) showed that only females who had experienced violence were more likely to have drinking problems later. Newlywed wives'

experience of IPV was shown to predict subsequent alcohol use at the time of the first wedding anniversary (149).

Despite the extensive research having carried out on IPV and substance abuse, previous longitudinal studies have failed to take account of the effect of substance use history on later IPV and substance use. Pre-existing substance use problems might be responsible for both exposure and an outcome of interest (154-158). There is evidence that the association between IPV and substance use disorders might vary by gender (159). Moreover, the existing literature offers contradictory findings: while males are reported to externalize interpersonal stress by drinking alcohol and using illicit drugs (160, 161), females might be at greater risk of alcohol and drug use, because they may be more sensitive to intimate violence (150, 151, 162). There are controversies about whether the association between IPV and substance use may be attributable to potential confounders. Evidence suggests that those who belong to the indigenous communities and/or are of lower socio-economic status, those with a history of child abuse and poor mental health are at increased risk of victimization and substance use problems (13, 64, 150, 152, 154, 155).

### **Offspring's childhood maltreatment**

Literature about the association between IPV and child abuse has mostly focused on adult occurring IPV as a consequence of childhood maltreatment and not vice versa (163-165). For example, in *the intergenerational transmission theory* witnessing or experiencing violence in the family of origin during childhood is a predictor of IPV in subsequent intimate relationships (166, 167). IPV victims and perpetrators are believed to have experienced abuse as a child or observed violence in their parents' relationships and accepted violence as a normal, acceptable and effective strategy in intimate relationships (168).

Our knowledge about whether parental IPV might be associated with or predict child maltreatment is limited (169). Because pathways to child maltreatment are complex (170), the association between parental IPV and their children's experience of maltreatment may reflect a broader context for both exposure and outcome of interest. IPV and child maltreatment may occur as consequences of common social, environmental, familial or individual risk factors (171).

At the societal level, cultural and economic factors may create a context for violence. Limited or unequal resources and stressful life events may contribute to a sense of frustration and powerlessness diminish family's coping mechanisms, and ability to problem solve and contribute

to interpersonal violence (171-173). At the community level, social isolation and living in a non-supportive, disadvantaged and high-crime residential neighborhood are associated with a greater risk of family violence (174, 175). Familial-level risk factors for spousal and child abuse include marital instability, changes in family structure, single parent or step families and large family size (176, 177). It has been suggested that members of a fragile, incomplete and transitional household experience difficulties in attachment, communication, adjustment and conflict resolution (178, 179). At the last level are individual characteristics including age, gender, psychopathology and behavioral factors (180). Violence perpetration – toward partner or children- is associated with poor psychological health including depressive symptoms, anxiety, impulsivity, and emotional dysregulation (181). Although the literature suggests that socio-economic, familial and individual risk factors may contribute to IPV and child abuse (182), no empirical study has been carried out to test this possibility. Understanding the nature of the association between parental violence and child maltreatment should contribute to better efforts and enhanced resources to initiate successful child maltreatment prevention (183).

## **Objectives of the current study**

The literature review in this study suggests there is inconclusive evidence about gender and IPV. Due to methodological limitations in previous studies, the gender difference in IPV victimization is poorly understood. Rates of different forms of IPV in males and females reflect differences in the definition, samples and measurement of IPV. Males' victimization and their decision to stay or leave the violent relationship is unknown. Empirical evidence supporting the effectiveness of leaving the abusive partner is inconclusive and inadequate. Particularly, interventions that encourage IPV victims to leave their abusive partners need an evidence-based understating of the consequences of leaving an abusive partner. There is still uncertainty about how economic circumstances may be related to IPV: whether poverty affects males' risk of victimization, whether a higher personal income or income equality protects females from IPV victimization or rather increases their vulnerability. The literature review also suggests the need for more prospective studies to determine the temporal order of IPV and subsequent health problems in both males and females.



To address the current gaps in research, the aims of this thesis are as follow:

**Aim 1: To determine age and gender differences in the experience of IPV victimization.**

- What is rate of IPV at 21 and 30 years of age?
- How do males and females report physical abuse, emotional abuse, harassment and severe combined victimization?

**Aim 2: To determine the relationship between economic factors and the experience of IPV.**

- Is family income associated with IPV victimization of both partners?
- Does wife's income influence IPV victimization of both partners?
- Is income (im)balance between wife and husband associated with IPV?

**Aim 3: To determine the association between the experience of IPV victimization and leaving the abusive partner.**

- What type of IPV is associated with leaving a relationship?
- Does change of an abusive partner disrupt victimization?
- Is there any gender difference in continuity of IPV victimization across relationships?

**Aim 4: To determine consequences of exposure to maternal IPV for children.**

- Is exposure to maternal IPV victimization associated with offspring's child maltreatment?
- Is this association independent or reflects a range of potential confounders including socio-economic, familial and psychological factors?
- Are male and female offspring maltreated differently in a family characterized by maternal victimization?

**Aim 5: To determine consequences of IPV for victims.**

- Is there a temporal association between the experience of different types of IPV and subsequent substance use disorders in young adulthood?
- Is there a temporal association between the experience of different types of IPV and subsequent mental health disorders in young adulthood?
- What is gender difference in health consequences of IPV victimization?

## **Chapter Three: Methods and measurements**

## **Participants**

Data for the current study were taken from the Mater Hospital and University of Queensland Study of Pregnancy (MUSP) in Australia (184). The MUSP is a prospective pre-birth cohort study of women who gave birth to a live singleton baby at The Mater Misericordiae Mothers Hospital, Brisbane between 1981 and 1984. Of the total 8556 pregnant women who were invited into the study, 8458 (98.9%) pregnant women consented to participate in the study, and 7631 (32.6% primigravidae) mothers gave birth to a live singleton baby at the hospital. These women were invited to complete prenatal assessments and questionnaires about social demographic characteristics, life style, family structure, and other health related information including mental health before and during pregnancy. The sample was re-interviewed at 3 to 5 days after the birth of the baby where data on late pregnancy together with their medical records were also collected. A total of 7223 live and singleton babies make up the study cohort. Of these, 520 children pairs were siblings born from the same mother at different times within the study period (Figure 3.1). The sample's mean age was 25 years ( $SD \pm 5.11$ ); the majority was Caucasians (91.8%) followed by Aboriginal/Torres Strait Islander (4.1%) and Asians (3.7%) (332). Mother-child dyads were assessed when the study children were 3-5 days, 6 months, 5 years, 14 years and 21 years old. Offspring at 21 and 30 years old were interviewed and answered a wide range of questions about their socio-demographic characteristics, health, relationships and lifestyle (184, 185).

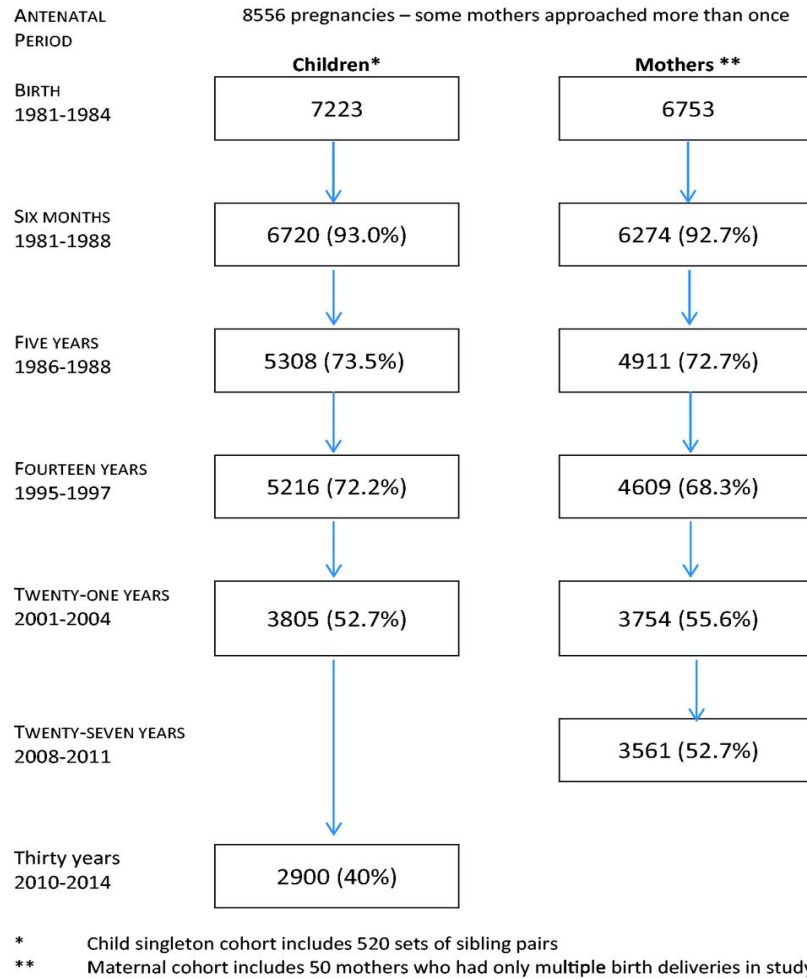
### **The current study**

The main body of this thesis was based on offspring's data collected at the 21- and 30-year follow-ups. Subsamples of respondents who completed self-report questionnaires about intimate partner violence (1265 to 2401 persons) were analysed. In addition, a subsample of 2064 mothers and children whose data on maternal IPV and child maltreatment was available, completed the sample.

### **Ethical clearance**

The MUSP has been approved by the Human Ethics Review Committee of the University of Queensland. Additional approval granted from the Human Ethics Research Office of the University of Queensland (Clearance number 2017001622) to undertake the present study. Written informed consent was obtained from all participants of the study. The present analysis used data

from the 14, 21- and 30-year follow-up surveys. At these phases of the study, written informed consent was obtained from the participants.



**Figure 3.1. MUSP Flowchart: number (%) retained in study at each phase (age) of data collection (186)**

# Measurement

## Intimate partner violence

There is no agreed upon definition of what constitutes IPV. Similarly, the measurement of IPV in previous studies varies depending upon the definitions that have been used. Beside official statistics including police reports or hospital records, which detect only the most severe cases of IPV, a number of tools have been developed to quantify and measure the IPV spectrum in the population. Some of the most-cited measures include the *Conflict Tactics Scale* (CTS; 21) the *Severity of Violence Against Women Scale* (SVAWS; 187), the *Abuse Behaviour Inventory* (ABI; 17), the *Psychological Maltreatment of Women Inventory* (PMWI; 188) and *Measure Wife Abuse* (MWA; 189). In addition, there are a number of IPV screening tools in healthcare, including *Women of Abuse Screen Tool* (WAST) or *Abuse Assessment Screen* (AAS) which are used in mental health services to identify victims (190).

The IPV measurements are different in their applications in different settings (households vs. shelters) and different samples (general population vs. battered women). Some measures ask about frequency of violent acts, while others collect qualitative reports of victimization. IPV measurements may include one or multiple forms of IPV, like physical abuse solely or combined with psychological abuse; they may be different in the way they address IPV duration and severity. There are various approaches towards selecting a time frame for victimization (last six months or 12 months). Measures also vary concerning victimization by a present or previous partner.

Despite the long-term efforts in the measurement of IPV, it remains a complex and difficult experience to empirically investigate (191, 192). Little has been done to evaluate the comprehensive psychometric properties of existing IPV measures. One systematic review has indicated that available screening tools have not been validated in both male and female samples and as a result lack a gender sensitivity. There are also limitations in defining a validated reference standard to detect IPV cases (190).

The CTS and CTS-2 (21) have been the most widely used instrument in research on family violence. The CTS scales are driven by *conflict theory* developed by Straus (193), and count the number of times partners use violent strategies to resolve conflicts in their relationship. They have been criticized for being focused on verbal and physical aggression and paying limited attention to psychological abuse. Several studies have cast doubt on CTS external, construct and theoretical

validity (38, 194). Dobash and Dobash (194) argue that the meaning of some behavioural acts (e.g. thrown an object at your partner) are open to interpretation; no differentiation is made between those who have committed one violent act and those with several acts; and the context behind the violent act, whether it is a retaliation or self-defence, is not clear.

The ABI (17) was developed as an alternative to the CTS and was driven by *feminist theory*. It measures physical and psychological abuse of women and includes *power and control tactics* like restricting finances, sexual coercion, physical violence, isolating women. There are concerns about its theoretical (a narrow focus on male perpetration) and construct validity, as items reflecting sexual abuse are subsumed on the physical abuse factor. It has been originally validated in a small and selective sample and its validity in general population remains unknown (195).

### ***Composite Abuse Scale***

The *Composite Abuse Scale (CAS)* has been developed by Hegarty et al (37, 38) to address the existing limitations of measuring IPV. The CAS is a widely used scale (196-198) to assess frequency of violence in intimate relationships (current or previous relationships). It is a multidimensional and validated tool with well-demonstrated face, content, concurrent, criterion, discriminant and construct validity as well as high internal consistency (37, 38, 192). The CAS has been translated into several languages and its psychometric characteristics have been supported in various community populations and clinical settings like general practice, antenatal clinics, emergency departments, and drug and alcohol clinics worldwide (196-199).

The original scale, contained 74 items comprising the four sub-scales was validated on a convenience sample of nurses (n=427) with further validation on a sample of general practice patients (n=1896) and emergency department patients (n= 345) which has resulted in the current 30 item version (37). The scale comprises four subscales: severe combined abuse, emotional abuse, physical abuse and harassment (Table 3.1). Response options ranged from never, only once, several times, once a month, once a week and daily which were scored from 0 (= never) to 5 (=daily). In the current study, total scores for each of the four subscales were calculated by summing the response to the relevant items. Then the recommended cut-off scores for the individual subscales (severe combined abuse ( $\geq 1$ ), physical abuse ( $\geq 1$ ), emotional abuse ( $\geq 3$ ), and harassment ( $\geq 2$ ) and total scale ( $\geq 3$ ) were applied. Participant with equal or higher scores than the cut-off score, were considered to have experienced abuse (38). This variable is used in all studies except for 7.

IPV at 21- and 30- year follow-up was measured using the CAS. At 21 years respondents were asked to recall “ever happened” incidences of IPV (21 items), but at 30 years they were asked to recall their “last year” relationships (30 items).

**Table 3.1. CAS subscales and items in 21- and 30-year follow-ups**

| Composite Abuse subscales       | never=0, only once=1, several times=2, once a month=3, once a week=4 and daily=5   |   |
|---------------------------------|--|---|
|                                 | 21-year follow-up (lifetime)   | 30-year follow-up (last year)   |
| <b>Severe Combined</b><br>(≥ 1) | Raped me, used a knife or gun or weapon (2 items; $\alpha= 0.62$ )   | Raped me, used a knife or gun or weapon, kept me from medical care, locked me in the bedroom, tried to rape me, took my wallet and left me stranded, put foreign objects in my vagina/anus, refused to let me work outside (8 items; $\alpha= 0.79$ )   |
| <b>Physical Abuse</b><br>(≥ 1)  | Slapped me, pushed, grabbed or shoved me, hit or tried to hit me with something (4 items; $\alpha= 0.91$ )   | Slapped me, pushed, grabbed or shoved me, hit or tried to hit me with something, kicked me, bit me or hit me, threw me, shook me, beat me up (7 items; $\alpha= 0.90$ )   |
| <b>Emotional Abuse</b><br>(≥ 3) | Told me that I was not good enough, tried to turn others against me, told me that I was ugly, tried to keep me from family, blamed me for causing their violence, became upset if housework was not done, told me that I was crazy, told me that no one would ever want me, did not want me to socialize with friends, tried to convince others that I was crazy (11 items; $\alpha= 0.91$ ) | Told me that I was not good enough, tried to turn others against me, told me that I was ugly, tried to keep me from family, blamed me for causing their violence, became upset if housework was not done, told me that I was crazy, told me that no one would ever want me, did not want me to socialize with friends, tried to convince others that I was crazy, told me that I was stupid (11 items; $\alpha= 0.89$ ) |
| <b>Harassment</b><br>(≥ 2)      | Followed me, hung around outside my house, harassed me over the telephone, harassed me at work (4 items; $\alpha=0.83$ )   | Followed me, hung around outside my house, harassed me over the telephone, harassed me at work (4 items; $\alpha= 0.72$ )   |

### ***Maternal IPV***

At the 14-year follow-up, mothers who were recruited in 1981-3 completed a 7-item questionnaire about their last year experiences of victimization by a male partner. They were asked whether their partners had done any of the following during a disagreement: yelled at, insulted, sulked or refused to talk, threw something at, pushed grabbed or shoved, tried to hit and hit then. These items are taken from other measures of domestic violence, such as the Conflict Tactics Scale (200). Response options comprised never (=1), sometimes (=2) and often (=3). Items were summed and averaged ( $\alpha=0.70$ ; mean: 1.31 (SD= 0.2)) and cases with score one standard deviation above the mean ( $\geq 1.51$ ) were considered as *victimized*. This variable is used in study 7.

## **Predictors of IPV**

### ***Economic factors***

Economic risk factors include three components of personal income, family income and income [im]balance: All the 30-year follow-up respondents were asked to choose their own and their partners' income from 11 categories (no income to \$3000 or more per week) separately. Own and partner absolute income were separately categorized into three categories: *low* (income under \$600 per week) *middle* (\$600 to \$1300 per week) and *high* (more than \$1300). Using the midrange of own and partner's income categories and adding them up, we created a weekly family income variable with five categories. For income [im]balance, we combined respondents' income with their partners'. Calculated variable comprised nine states (3 own states× 3 partner states). Then we categorized them into three main groups of “*Husband (male) earn more*”, “*Wife (female) earns more*” and “*Balanced*”. Balance earning itself was classified into three groups of “*both [partners] earn low*” “*both earn middle*” and “*both earn high*”. This variable is used in study 5.

### ***Changing partner at 21 years***

At 30 years, length of relationship was measured with a question: *for how long (in years) has your current live-in relationship lasted* (ranged from one month to 17 years). Average length for females was 7.3 years ( $\pm$  3.8) and for males was 6.3 years ( $\pm$  3.6). Length of relationship was subtracted from the duration between two surveys and categorized into *those who had stayed with the same partner since the 21-year follow-up* and *those who had changed partners after the 21-year follow-up*. This variable is used in study 6.

## **Consequences of IPV**

### ***Childhood Trauma Questionnaire***

For measuring child maltreatment, we used the Childhood Trauma Questionnaire (CTQ–SF) (201, 202). The CTQ is a retrospective and self-administered questionnaire, which has been used worldwide in both clinical and non-clinical adolescent and adult populations. It has good psychometric properties in general population and clinical samples (201-203). The CTQ has demonstrated convergent and construct validity. The factorial structure of CTQ has been approved



using the exploratory (EFA) and confirmatory factor analyses (CFA). It has been shown to be a sensitive and valid screening questionnaire for childhood trauma in various settings (204-206).

It contains 25 items to measure five dimensions of childhood maltreatment: emotional abuse (5 items including being hated, hurt or insulted;  $\alpha$  in the current study =0.85), physical abuse (5 items including being beaten, bruised or punished with object ;  $\alpha$ = 0.76), sexual abuse (5 items including being sexually touched, molested or abused;  $\alpha$ =0.95), physical neglect (5 items including not having enough food or wearing dirty clothes;  $\alpha$ =0.55), and emotional neglect (5 items including not felt loved or important or close to family members;  $\alpha$ =0.89). Participants were asked to respond to each item with regard to “when they lived with parents”. Response options comprise from never (=1) to very often (=5), producing scores of 5 to 25. We used the recommended cut-off scores to categorize cases into abused and not-abuse (emotional abuse ( $\geq 13$ ), physical abuse ( $\geq 10$ ), sexual abuse ( $\geq 8$ ), emotional neglect ( $\geq 15$ ) and physical neglect ( $\geq 10$ ). We summed two forms of neglect to have a more stable and consistent measure of child maltreatment. This variable is used in study 7.

### ***Mental health disorders***

At the 21- and 30-year follow-ups, offspring’s major depressive disorder and anxiety disorders (including PTSD (post-traumatic stress disorder), social and specific phobia, generalized anxiety and panic disorder) were measured using the Composite International Diagnostic Interview (CIDI). The CIDI-Auto is a structured and standardized diagnostic interview in general population for the assessment of mental disorders including depressive and anxiety disorders (207). The CIDI-Auto is a reliable, well-regarded and widely-used tool with good reliability and validity (208).

It also provides diagnosis using criteria in Diagnostic and Statistical Manual of Mental Disorders,4th Edition (DSM-IV; 209). DSM is the reference book developed by the American Psychiatric Association (APA) and the World Health Organization (WHO). “DSM-IV is strongly grounded in empirical knowledge and represents a consensus of the mental health field. It is used by health care professionals as the authoritative guide to the diagnosis of mental disorders. DSM contains descriptions, symptoms, and other criteria for diagnosing mental disorders” (210). This variable is used in study 9.

### ***Substance use disorders***

At 21 and 30 years, offspring substance disorder, including alcohol, nicotine and illicit drugs (cannabis, cocaine, opiates, hallucinogens, sedatives, and amphetamines) were measured using CIDI (207). Participants were evaluated and coded to yield diagnoses using criteria in DSM-IV (209). According to the DSM-IV, dependence required endorsement of a minimum of three out of seven criteria (tolerance to a substance, withdrawal, unplanned consumption, unsuccessful efforts to control, spending a great deal of time related to substance use, continued use despite physical/psychological problems and giving up interests in other activities to substance use). Diagnoses of abuse required the endorsement of at least one of the four criteria for abuse (role performance, hazardous use, legal problems, and social-interpersonal problems). For alcohol and drugs, we merged abuse and dependence and created variables *any alcohol use disorder* and *any drug use disorder*. For the nicotine disorder, we considered nicotine dependence based on whether or not smokers meet any three of the seven criteria. Participants were also considered to have lifetime substance disorders diagnosis, if they met the DSM-IV abuse or dependence criteria. We, then, summed three dichotomous substance disorders to generate a multiple disorder variable with three categories of *none*, *one disorder* and *two and more disorders*. This variable is used in study 8.

### **Potential confounders**

The study included a wide range of confounders measured at 5-, 14-, 21- and 30-year follow-ups:

These covariates consisted of: a) *Socio-economic factors*: offspring's and mother's education, income and employment, as well as racial background, family social network and residential environment; b) *Familial factors*: offspring's and mother's marital status, length of current intimate relationships, number of children, age of mother at first pregnancy, and presence of stepfather, and c) *Psychological factors*: maternal and her partner's mental health, child behavior checklist including internalizing behavior, aggression and attention deficit hyperactivity disorder (ADHD), history of childhood sexual abuse. The detailed description of these variables is presented in respective papers.

## **Data analysis**

This study aims to determine gender differences in the experience of IPV, investigate risk factors and predict consequences associated with forms of IPV in survivors and their children. To obtain these aims, following descriptive statistics and analysis approaches were used:

### ***Descriptive statistics***

The prevalence of each type of IPV is determined separately for each gender. For describing demographic characteristics and determining group differences, descriptive statistics like chi square, t-test and relative risk were used.

### ***Logistic regression***

The dependent variables in all papers are dichotomous. Therefore, to investigate the associations of interest binary logistic regression analysis was performed and odds ratios with 95 % confidence intervals (ORs; 95 % CIs) were reported. In each series of analyses, first unadjusted models, where there are only dependent and independent variables in the model, were tested. To determine the independent effect of independent variables, multivariable models or adjusted models, where the primary association is adjusted for a range of possible covariates, were carried out. In order to determine gender differences, we conducted all the analyses separately for male and female offspring.

### ***Interaction term***

To examine the effect of staying/changing an abusive partner on the association between IPV at 21- and 30-year follow-ups an interaction term (IPV at 21 × leaving/ staying) was used. We also tested an interaction term between gender and IPV at 21 to examine if the associations of IPV at 21 years with subsequent mental health disorders differ for males and females. For the remaining outcomes, gender analysis was done for either gender separately.

Detailed information about the statistical analysis for specific dependent and independent variables is provided in each chapter.

## Missing data

Similar to any other longitudinal studies, long-term follow-ups in MUSP involve substantial attrition. Figure 3.1 provides a flowchart of the retention/attrition rate of the sample. Mothers with economically disadvantage, of unstable marital status and with higher rates of anxiety, depression and substance use were more likely to be lost to follow-up (186). However, multiple studies on MUSP have found that the attrition minimally affects estimates of association (184, 186, 211).

In paper 5, to assess the possibility of attrition bias affecting the results of longitudinal papers (those investigating IPV consequences), we conducted multiple imputation and included the main predictor (IPV), the outcome variable (substance use and mental health disorders) and available covariates in the multiple imputation (212, 213). We employed sensitivity analysis by repeating the regression models using 50 cycles of imputation.

In paper 6 we conducted a propensity analysis and repeated the regression analyses using a variable representing the characteristics of the sample at baseline including sex, maternal education, family income, quality of marital relationships, parental racial background and maternal depression (214). To do this analysis, in SPSS we used logistic regression to calculate a propensity score of the association between the baseline confounding variables and the predictor variables of interest (forms of IPV). This propensity weighting was then used in subsequent regression outcome models instead of the individual confounders. The detailed analyses are provided in respective papers.

Statistical analyses are conducted using STATA-13 and SPSS-24 packages.

## **Chapter Four: Gender differences in IPV**

This chapter includes a published paper cited as:

Ahmadabadi, Z., Najman, J. M., Williams, G. M., Clavarino, A. M., & d'Abbs, P. (2017). Gender differences in intimate partner violence in current and prior relationships. *Journal of Interpersonal Violence*. <https://doi.org/10.1177/0886260517730563>

## **Abstract:**

**Background and objectives:** While much available research indicates that intimate partner violence (IPV) is male-perpetrated, growing, recent evidence suggests a gender symmetry model of family violence. This paper examines gender differences in intimate partner violence in current and prior relationships reported by young adults.

**Methods:** Data comprised 2060 young adults (62.1% females) who participated at the 30-year follow-up of the Mater Hospital and University of Queensland Study of Pregnancy (MUSP) in Brisbane, Australia. The Composite Abuse Scale was used to measure IPV during the last 12 months in the respondents' most recent relationship.

**Results:** Similar proportions of males and females reported leaving their prior relationships. Both males and females who were not currently in a relationship, reported experiencing much higher rates of IPV than those who were in a relationship. There were no differences in the past experience of IPV between males and females who were not currently in a relationship, but males in a current relationship reported they experienced most forms of IPV more often than did females.

**Conclusions:** IPV typically involves both male and female perpetrators and victims. It does appear that the majority of relationships involving higher rates of IPV were dissolved. IPV was more likely to have occurred in relationships that ended than in relationships that persisted. Males more often remain in an abusive relationship and report experiencing higher rates of IPV in their current relationships compared to females.

**Key words:** Gender, intimate partner violence

## Introduction

Intimate partner violence (IPV) is a prevalent public health concern worldwide (1, 39). Despite an extensive body of research on IPV, it is not clear whether there are gender differences in intimate partner violence perpetration and victimization (43-45). While much of available research indicates that IPV is *male-perpetrated* (28, 46, 47), growing, recent evidence suggests a *gender symmetry* model of family violence (16, 49-54). What is currently known about gender differences in IPV victimization/perpetration likely reflects disparities in a cultural context, samples characteristics, definitions of IPV, different ways of measuring IPV, and confusion about whether IPV includes both current and former relationships.

A number of highly-cited studies which report a high prevalence of female victimization have been conducted in traditional or economically developing countries; for example a WHO multi-country study using data from ten countries (Bangladesh, Brazil, Ethiopia, Japan, Namibia, Peru, Samoa, Serbia and Montenegro, Thailand, and Tanzania) concluded that “violence against women is widespread” (39). A recent review of available estimates of violence against women (23) suggested that the lowest prevalence of IPV was found in high-income countries including Australia. It may be that in modern and economically developed societies like Australia, egalitarian gender attitudes and objective economic and social changes are associated with lesser gender differences in IPV. Growing female’ status and power, combined with changes in normative expectations may challenge historical gender differences in IPV victimization (41, 42). In more economically developed countries, men may be inhibited from using violence, especially physical violence, against women (215), while a degree of aggression by women towards male partners is tolerated (216-218).

It is likely that representative or community samples produce results, which differ from those observed from a selected sample based upon those in contact with the criminal justice system (31, 58). Similarly, details of intimate partner violence which are derived from official reports of women who are using a medical service may over-represent severe and unidirectional male perpetration, while population sample surveys may identify IPV cases which are less severe and bidirectional. In a comprehensive review of 50 studies (59), mutual violence was identified in half of the IPV cases while male only perpetrated violence comprised a quarter of all cases. Additionally, mutually perpetrated violence was reported across all types of samples – either representative or selective - whereas only-male-perpetrated violence was much more frequently

observed in samples selected from those in contact with the criminal justice system. Estimates of gender differences in IPV for may vary depending upon the degree of violence, as females are more likely to experience more severe injuries (60).

One important discrepancy in IPV estimates can be attributed to the diverse ways of measuring IPV. Some widely used measurements of IPV have been developed based on a particular theory or a selective aspect of IPV. For instance, the Abusive Behavior Inventory (Shepard and Campbell (17) is derived from and consistent with a feminist perspective about the nature of domestic violence and leads to arguably biased findings that family violence is exclusively male-perpetrated. By contrast, the commonly used Conflict Tactics Scale (21) measures *the act of violence* rather than its *consequences*, which arguably produces findings suggesting an overrepresentation of women as “violent”. In much of the available research on IPV emotional, economic and sexual abuse as well as gender-specific types of IPV may not be adequately represented (58, 199, 219, 220).

There is also a recent debate about how assessments of IPV, which refer to prior or current relationships, may affect gender-based conclusions (61). Ackerman suggests that women are more inclined than men to terminate abusive relationships and may more frequently report violence in a previous (but not current) relationship. A focus on IPV in a current relationship (characteristics of gender symmetry studies) may ignore “gendered differences” and asymmetric consequences of IPV like injuries or fear. Restricting the sampling frame to a current relationship may also lead to overrepresentation of male victimization and underestimation of male perpetration (61, 62). Ackerman’s findings that females often disproportionately leave an abusive relationship, has not been replicated by other studies (61, 93, 100, 221, 222). Anderson (93) argues that the interplay between internal (e.g., depression, low self-esteem, sense of control) and external barriers (e.g. economic dependency, social expectations of a mother to remain for the sake of children) constrain women from leaving an abusive partner. There is a need to know whether males or females are more likely to terminate an abusive relationship.

Another important question concerns the extent to which demographic factors may confound the association between gender and IPV. Previous studies have well documented that people of younger age, unstable marital status e.g., living with a partner but not married, lower education level, unemployment and insecure occupational status are vulnerable to IPV victimization (63-66). Having children appears to have a more complicated association with IPV



victimization: biological parents may be expected to remain in an abusive relationship because of the children, or may decide to leave it in order to protect children from being exposed to violence; on the other hand, carrying children to the next romantic relationship, might increase the risk of conflict not only with prior partner (custody disagreements), but also with the new partner (223).

This paper aims to address the current gap in knowledge about gender differences in IPV with respect to several issues: We recruited a population sample of both males and females in an economically developed society and used a validated measure of different types of IPV. In addition, we adjusted for a range of demographic variables in the relationship between gender and IPV. While the co-occurrence of multiple types of victimization among women have been previously examined (224, 225) literature about IPV co-occurrence in males is limited. We also determine the extent to which IPV is differentially experienced by males and females in current and former intimate relationships.

## **Methods**

### **Participants**

Participants are from the Mater Hospital and University of Queensland Study of Pregnancy (MUSP), which is a prospective cohort study of mothers and their children (184). Between 1981 and 1983, baseline data were collected from 7223 consecutive women who attended their first clinical visit at Brisbane's Mater Misericordiae Hospital. Further data were obtained when the study children were 6 months, 5 years, 14 years, 21 and 30 years old. Informed consent was gained from all participants. The University of Queensland and Mater Misericordiae Hospital institutional ethics committees approved this study. Out of 2438 participants at the 30-year follow-up, we omitted 378 cases who reported that they had not ever been in any intimate relationship- and analyzed 2060 persons who completed the self-report questionnaire. 62.1% of the sample were females and the mean age was 30.30 ( $\pm$  1.13). Most of the participants' ethnicity was White (93.6%), 3.1% Asian and 3.3% Aboriginal/Torres Strait Islander. Among the participants, 53.7% were married, 31.3% were living together and 15% had been in a relationship but were single at the current follow-up. 55.5% of respondents had children and the average length of their current relationship was 6.9 years ( $\pm$  3.79) (ranging from 1 month to 17 years).

## Measurement

According to World Health Organization (WHO), “intimate partner violence refers to any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship”. This definition includes acts of physical violence, sexual violence, emotional abuse and controlling behaviors (5). Hence, terms of ‘intimate partner violence’ and ‘intimate partner abuse’ can be used interchangeably (38).

IPV at the 30-year old follow-up was measured using the Composite Abuse Scale (CAS). The CAS is a self-report scale which was developed using well-known scales like the Conflict Tactics Scale (21), and the Measure of Wife Abuse (189). It is a multidimensional and validated tool with well-demonstrated face, content, concurrent, criterion, discriminant and construct validity as well as high internal consistency (37, 38, 192). The CAS has been translated into several languages and its psychometric characteristics have been supported in various clinical and community populations worldwide (196-199). The CAS asks a series of questions about how frequently specific forms of abuse have been experienced during the last 12 months in the respondent’s most recent relationship (current partner or if no current partner, previous partner). The scale comprises 30 items (Supplementary Table S4.1) ( $\alpha = .95$ ) and 4 subscales: severe combined abuse ( $\alpha = .79$ ; comprises 8 items which include rape, keep from obtaining medical care, locked in the bedroom), emotional abuse ( $\alpha = .90$ ; comprises 11 items which include insults, verbal, psychological dominance and separation from friends and family), physical abuse ( $\alpha = .89$ ; comprises 7 items which include slapping, throwing, hitting, shaking) and harassment ( $\alpha = .72$ ; comprises 4 items including actual harassment like following, harassing over the telephone and at work). Items were quantified into never, only once, several times, once a month, once a week and daily in a 12-month period (38). After recoding each item to 0 (= never) to 5 (=daily) and summing them, we used the recommended cut-off scores for the individual subscales (severe combined abuse ( $\geq 1$ ), physical abuse ( $\geq 1$ ), emotional abuse ( $\geq 3$ ), and harassment ( $\geq 2$ ). Endorsement of a score equal to or higher than the cut-off score meets the criteria for abuse. Four dichotomous subscales were summed to generate a multiple victimization variable with three categories of *none* (reference group), *only one type* and *two types and more*.

## Covariates

We separated respondents who answered the questionnaire regarding their current relationship (partner) from those who reported that they did not currently have a partner. For this purpose, we asked respondents about their present marital status (single/never married, living together, married or separated), whether they lived with their partners and for how long they lived with their current partner. Those no longer with their partners or are no longer married or living with their current partner were categorized as *not currently in an intimate relationship*. We also adjusted for some demographic variables that may be related to both gender and the experience of IPV. All participants were about 30 years of age (Males =  $30.39 \pm 1.17$ ; Females =  $30.25 \pm 1.11$ ), so we did not adjust for the age variability in the sample. Respondents' education level was categorized into *high school completion or less, diploma, college and university* (reference category). Having a child was dichotomized into *yes* and *no* (reference category). Marital status comprised two categories, *living together* and *married* (reference group). Length of relationship was measured with a question "For how long (in years) has your current live-in relationship lasted". Average length for females was 7.3 years ( $\pm 3.8$ ) and for males was 6.3 years ( $\pm 3.6$ ).

## Data analysis

The prevalence of each type of IPV was determined separately for each gender. For describing demographic characteristics, descriptive statistics, chi square and t-test were used. IPV forms (Severe Combined, Physical Abuse, Emotional Abuse, and Harassment) were not mutually exclusive. Binary and multi-nominal logistic regression is performed and odds ratios (ORs) with 95 % confidence intervals (CIs) are reported. Each of the regression models was then adjusted for respondents' demographic characteristics. Statistical analyses were conducted using STATA-13 and SPSS-24 softwares.

## Results

Table 4.1 presents comparative information of males and females by their demographic and IPV characteristics. More females who are currently in a relationship Have children and a university education than do comparable men. However, women are less likely to be in full time employment than males. There is only one significant gender difference between respondents who

are not currently in a relationship; females are more often unemployed or employed part time compared to males. While we have not explicitly examined differences between females (or males) comparing those in a current or prior relationship, such differences do appear to exist. Females who are in a current relationship are more likely to Have children and to be experiencing lower rates of IPV compared to females not currently in a relationship. Males in a current relationship are more likely to be employed full time, to Have children and to be less likely to be experiencing IPV.

Table 4.2 presents the bivariate associations between demographic variables and IPV victimization at the 30-year follow-up for respondents who are currently in a relationship. Females who cohabit are more likely to experience severe combined victimization and emotional abuse while cohabiting males more frequently experience harassment. Having a child is strongly associated with reports of experiencing severe combined victimization in men and harassment in females. Physical abuse is experienced twice as often by females with a lower level of education and unemployed. Males with a part time job are more likely to report harassment.

Table 4.3 shows that those who are in current a relationship (males and females) report they experience statistically, significantly less IPV – individual and multiple types- than those who are not currently in a relationship. However, these differences appear to be larger for females than males. Females not currently in a relationship more frequently report having experienced multiple types of IPV than do males.

With respect to gender differences in IPV, males in a current relationship, with the exception of Severe Combined victimization, report they experience higher rates of Physical and Emotional Abuse as well as Harassment (Table 4.4). For Physical Abuse and Harassment, the differences are large with males reporting they experience victimization about twice as often as females. Adjustment for demographic variables did not alter the results described above. Males describing their current relationship experience both higher individual and multiple forms of intimate partner violence. By contrast, for those not currently in a relationship, there was no association between gender and IPV. The finding that males and females not currently in a current relationship experience similar rates of IPV suggests that males who are experiencing IPV may remain in these relationships more often than do females.

We have also examined gender differences in response to the specific items in the CAS scale (Supplementary Table S4.1). The Severe Combined subscale includes such items as rape or

attempted rape, physical restraint and threat. There are no gender differences for these items. Males describing their current relationship reported more often being slapped, hit and kicked by their present partner, while females who were not currently in a relationship more often experienced being pushed, thrown and shaken. Emotionally, men in a current relationship were more often told they were not good enough, not allowed to socialize with friends as well as told they failed to undertake housework-related expectations. Females who are not currently in a relationship reported they had more often been blamed for their partners' violence, and told they were crazy and unwanted. Males in a current relationship report they were followed by their current partner and females reported their prior partners hung around more often.

## **Discussion**

The present study suggests that both males and females who are not currently in a relationship, report having experienced much higher rates of IPV in the past year than those who are in a current relationship. Based on composite scales, there are no differences in the experience of IPV between males and females who are not currently in a relationship. However, males in a current relationship experience most forms of IPV more than comparable females.

Contrary to previous studies (28, 47) that describe IPV primarily as “violence against women” or “wife abuse”, we found that males experience higher rates of physical and emotional abuse and harassment in their current intimate relationships. This finding is partly consistent with the *Family Violence perspective* and *gender symmetry* model of IPV aggression (16, 40, 44, 49, 226), in which both men and women might engage in domestic violence (50-54, 227).

Several possibilities need to be considered when interpreting the result: these findings might reflect methodological differences between our research and previous studies, involving sampling, measurements and definitions (31, 228-230). Some studies which have reported high violence against women generally have been done in criminal settings with questionnaires which measure severe domains of IPV (54, 229, 231), or have been conducted in traditional societies (39), recruited women from health settings and at risk groups like battered women (232) or used a feminist-oriented measurement like ABI (17). Otherwise, with a comprehensive measure of IPV and recruiting population samples, several recent studies have found that women were more violent in intimate relationships than were males (16, 51, 226). There is also a need to consider the possibility that the current sample may not include a small group of very violent men. Such a

possibility cannot be excluded, as men who had frequent contact with the criminal justice system or who were incarcerated were unlikely to be retained in this 30-year phase of data collection. Johnson (31) proposes to distinguish between two types of violence: a gendered and severe form of violence, called *patriarchal terrorism*, which is generally found in clinical samples, and a gender-balanced type named *common couple violence*, which mostly has been reported in population surveys, as for example suggested by the present research. From a different perspective, Anderson (100) argues that there is no such phenomenon as *gender neutral violence*, even in studies that simply reduce *gender* to what females and males do. Contexts (e.g., cultural scripts), motivations and consequences (e.g., injuries) of IPV vary by gender. The last possibility is that males in our study might have over-reported their experiences of IPV (233). It is difficult to see why this would be the case. Indeed, some suggest that males have lesser tendency to disclose their own victimization, mainly due to shame or fear of not being believed (234, 235).

Overall, the proportions who are not currently in a relationship appear to be similar for males and females (15.2% vs. 14.1%); however, our data suggests that a smaller proportion of victimized males left their abusive partners than did victimized females. Out of 233 females who experienced any type of IPV in the past year, 73 women had left their relationships (31.3%), while out of 193 males who reported being abused, 47 (24.4%) had terminated their abusive relationships ( $\chi^2 = 2.54; p = 0.11$ ). This finding confirms that a substantial proportion of abused individuals make a decision not to stay with a violent partner. Furthermore, this finding may suggest that men tend to remain more often in an abusive relationship compared to females. There are a number of possible explanations for this finding. The first possibility is that while women victims are socially encouraged to exhibit their fears and vulnerability and to seek help for IPV (101, 236) social discouragements (e.g., societal bias, shame and denial) precludes men from disclosure of their victim status (101). A second possibility could be the extent to which men and women are affected by the partner violence. Some evidence shows that although females may perpetrate violence as frequently as do men, due to the males physical strength, and higher social and economic status in the society, they experience fewer negative psychological (fear, stress, guilt) and physical consequences (28, 58). A third possibility is that social expectations of males to be the breadwinner and responsible for their [even abusive] partners, constrain them from leaving an intimate relationship (93).

Our results support the idea that females' victimization cannot be understood by assessing only details of their current relationships (61). Although, composite scales of IPV did not reveal any gender differences in IPV, individual items suggested that rates of some specific forms of physical and emotional abuse as well as harassment in females, who are not currently in a relationship, might be higher than those reported by men. While males [in their current relationship] reported being slapped, hit and kicked, females [in their former relationship] reported being pushed, thrown and shaken. Arguably, the latter entails more physical power and leads to more injuries. In interpreting emotional abuse items, males more often reported, "their partners did not want them to socialize with friends". We also found that females were experiencing verbal insults more often, especially items containing "crazy", "unwanted" and "blamed for partner's violent behavior". This supports Johnson's idea suggesting that men in an abusive relationship, may make females feel worthless, guilty and humiliated (31). Males reported higher rates of emotional abuse over house chores. It seems that while families are increasingly becoming dual earners, some males who are expected to undertake what were previously feminine roles, are unwilling to do so and this unwillingness may be a source of family conflict (237, 238).

## **Conclusion**

The present study compares males and females using a relatively large population sample with a comprehensive self-report measure of IPV. IPV in this study involves both males and females as perpetrators and victims. While males reported they are more often the victims of IPV in the current relationship, the broader context is that IPV involves couples who are engaged in interactions characterized by disagreements and physical violence. It does appear that there was a disproportional tendency for relationships involving higher proportions of intimate partner violence to lead to a mutual breakdown. IPV was more likely to have occurred in relationships that ended than in relationships that persisted. The findings suggest that victimized men appear to remain in an abusive relationship and report greater rates of IPV in a current relationship. There may be a need to have a greater emphasis on IPV- related research and male victimization, its correlates and consequences.

These findings should be interpreted with regard to the limitations of an absence of very high-risk individuals in the study, as well as reliance on only one partner's self-report of victimization (239). While a retrospective self-report of IPV might be subject to recall bias or

reporting errors, CAS asked about the most recent experiences in order to minimize losing information (37). Further studies are needed to address the experience of IPV in those who may have had a previous abusive partner, which was not their most recent relationships.

**Table 4.1. Gender differences in study variables at 30-year follow-up**

| Variables   | Current relationship <sup>a</sup> |            | Not currently in relationship <sup>b</sup> |           |
|---|-----------------------------------|------------|--|-----------|
|   | Female                            | Male       | Female                                     | Male      |
|   | %                                 |            | %  |           |
| <b>Present marital status (at 30yr/fu)</b>                                      | (n=1094)                          | (n= 658)   |  |           |
| Living together   | 35.5                              | 39.1       | --   | --        |
| Married   | 64.5                              | 60.9       | --   | --        |
| <b>Have children (at 30 yr/fu)</b>  | (n=1074)                          | (n= 645)*  | (n=182)                                    | (n= 118)  |
| No  | 37.3                              | 49.1       | 56.6                                       | 65.3      |
| Yes   | 62.7                              | 50.9       | 43.4                                       | 34.7      |
| <b>Education (at 30 yr/fu)</b>  | (n=1091)                          | (n= 658)*  | (n=183)                                    | (n= 122)  |
| High School and less  | 28.9                              | 33.7       | 36.1                                       | 45.1      |
| College   | 38.5                              | 43.5       | 39.3                                       | 37.7      |
| University  | 32.6                              | 22.8       | 24.6                                       | 17.2      |
| <b>Occupational status (at 30yr/fu)</b>   | (n=1045)                          | (n=658)*   | (n=182)                                    | (n= 116)* |
| Unemployed  | 25.1                              | 3.8        | 26.9                                       | 12.9      |
| Part time   | 21.3                              | 5.5        | 20.9                                       | 12.1      |
| Full time   | 53.6                              | 90.7       | 52.2                                       | 75.0      |
| <b>Forms of IPV victimization (at 30yr/fu)</b>                                  | (n= 1076)                         | (n= 642)   | (n=180)                                    | (n= 115)  |
| Severe combined (≥1)  | 1.8                               | 1.9        | 16.1                                       | 11.3      |
| Physical Abuse (≥1)   | 5.9                               | 12.0       | 27.2                                       | 22.6      |
| Emotional Abuse (≥3)  | 12.3                              | 16.4*      | 36.1                                       | 28.7      |
| Harassment (≥2)   | 2.5                               | 5.3*       | 26.1                                       | 20.0      |
| At least one  | 14.9                              | 22.7*      | 40.6                                       | 40.9      |
| <b>Multiple IPV victimization (at 30yr/fu)</b>                                  | (n=1076)                          | (n=642)*   | (n=180)                                    | (n= 115)  |
| None  | 85.1                              | 77.3       | 59.4                                       | 59.1      |
| Only one type   | 8.9                               | 13.6       | 10.6                                       | 19.1      |
| ≥Two types  | 5.9                               | 9.2        | 30.0                                       | 21.7      |
| <b>Length of current relationship</b><br>(range= 1month to 17 years)(Mean (SD)) | 7.3 (3.8)                         | 6.3 (3.6)* | --   | --        |

\*  $\chi^2 p < 0.05$ ; <sup>a</sup> Respondents who are in a relationship now (living together + married); <sup>b</sup> Respondents who were in an intimate relationship before but are single now (n= 308; females= 186; males=122).



**Table 4.2. Bivariate association between demographic variables and different forms of IPV in the current relationship (OR (95% CI))**

| Variables                                   | SC                                  |                                       | PA                                  |                     | EA                                  |                     | H                                   |                                      |
|---|-------------------------------------|---------------------------------------|-------------------------------------|---------------------|-------------------------------------|---------------------|-------------------------------------|--------------------------------------|
|   | Female                              | Male                                  | Female                              | Male                | Female                              | Male                | Female                              | Male                                 |
| <b>Present marital status (at 30 yr/fu)</b> |                                     |                                       |                                     |                     |                                     |                     |                                     |                                      |
| Married                                     | 1                                   | 1                                     | 1                                   | 1                   | 1                                   | 1                   | 1                                   | 1                                    |
| Living together                             | <b>2.53</b><br>( <b>1.01-6.35</b> ) | 0.79<br>(0.24-2.66)                   | 1.59<br>(0.95-2.65)                 | 1.22<br>(0.75-1.98) | <b>1.49</b><br>( <b>1.03-2.16</b> ) | 1.49<br>(0.98-2.27) | 1.70<br>(0.79-3.66)                 | <b>3.10</b><br>( <b>1.51-6.38</b> )  |
| <b>Have children (at 30 yr/fu)</b>          |                                     |                                       |                                     |                     |                                     |                     |                                     |                                      |
| No  | 1                                   | 1                                     | 1                                   | 1                   | 1                                   | 1                   | 1                                   | 1                                    |
| Yes   | 1.30<br>(0.49-3.44)                 | <b>10.93</b><br>( <b>1.40-85.17</b> ) | 1.66<br>(0.94-2.94)                 | 1.33<br>(0.82-2.15) | 1.27<br>(0.86-1.87)                 | 1.23<br>(0.81-1.87) | <b>2.68</b><br>( <b>1.01-7.14</b> ) | 0.75<br>(0.37-1.50)                  |
| <b>Education level (at 30 yr/fu)</b>        |                                     |                                       |                                     |                     |                                     |                     |                                     |                                      |
| University                                  | 1                                   | 1                                     | 1                                   | 1                   | 1                                   | 1                   | 1                                   | 1                                    |
| College                                     | 2.59<br>(0.70-9.65)                 | 3.27<br>(0.39-27.39)                  | 1.56<br>(0.79-3.04)                 | 1.46<br>(0.74-2.86) | 1.28<br>(0.82-2.0)                  | 1.24<br>(0.71-2.17) | 1.37<br>(0.44-4.23)                 | 1.92<br>(0.93-8.71)                  |
| High School & less                          | 2.71<br>(0.69-10.55)                | 3.45<br>(0.40-28.84)                  | <b>2.04</b><br>( <b>1.04-4.02</b> ) | 1.46<br>(0.90-3.30) | 1.31<br>(0.81-2.10)                 | 1.24<br>(0.69-2.21) | <b>3.31</b><br>( <b>1.18-9.28</b> ) | 2.85<br>(0.93-8.71)                  |
| <b>Occupational status (at 30 yr/fu)</b>    |                                     |                                       |                                     |                     |                                     |                     |                                     |                                      |
| Full time                                   | 1                                   | 1                                     | 1                                   | 1                   | 1                                   | 1                   | 1                                   | 1                                    |
| Part time                                   | 0.27<br>(0.04-2.18)                 | 4.14<br>(0.86-19.96)                  | 0.66<br>(0.28-1.55)                 | 1.36<br>(0.51-3.64) | 0.84<br>(0.51-1.41)                 | 1.13<br>(0.46-2.82) | 1.26<br>(0.59-3.61)                 | <b>3.70</b><br>( <b>1.32-10.32</b> ) |
| Unemployed                                  | 1.95<br>(0.75-5.13)                 | 2.91<br>(0.35-24.02)                  | <b>2.30</b><br>( <b>1.31-4.04</b> ) | 1.60<br>(0.53-4.85) | 1.38<br>(0.90-2.12)                 | 0.77<br>(0.22-2.63) | 1.26<br>(0.47-3.40)                 | 1.97<br>(0.44-8.85)                  |
| <b>Length of current relationship</b>       | <b>0.88</b><br>( <b>0.77-0.99</b> ) | 1.16<br>(0.98-1.36)                   | 1.03<br>(0.97-1.10)                 | 0.99<br>(0.93-1.07) | <b>1.06</b><br>( <b>1.01-1.11</b> ) | 1.02<br>(0.95-1.07) | 1.05<br>(0.95-1.16)                 | 0.99<br>(0.89-1.1)                   |

SC: Severe Combined; PA: Physical Abuse; EA: Emotional Abuse; H: Harassment; Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ).

**Table 4.3. IPV victimization across genders and relationships**

|                                 | Females (n=1256)   |   |                              |                               | Males (n=757)  |  |                             |                             |
|---------------------------------|--|---|------------------------------|-------------------------------|--|--|-----------------------------|-----------------------------|
|                                 | %  |   | OR (95% CI)                  |                               | %  |  | OR (95% CI)                 |                             |
|                                 | Current relationship <sup>a</sup> (Reference group) (n=1076) | Not currently in relationship <sup>b</sup> (n= 180) | Unadjusted                   | Adjusted**                    | Current relationship <sup>a</sup> (Reference group) (n= 642) | Not currently in relationship <sup>b</sup> (n=115) | Unadjusted                  | Adjusted <sup>c</sup>       |
| <b>Forms of IPV<sub>s</sub></b> |  |   |                              |                               |  |  |                             |                             |
| SC                              | 1.8  | 16.1*   | <b>10.68</b><br>(5.85-19.53) | <b>13.11</b><br>(6.86-25.06)  | 1.9  | 11.3*  | <b>6.69</b><br>(2.97-15.07) | <b>6.08</b><br>(2.42-15.28) |
| PA                              | 5.9  | 27.2*   | <b>6.01</b><br>(3.97-9.11)   | <b>7.0</b><br>(4.45-11.02)    | 12.0   | 22.6*  | <b>2.14</b><br>(1.30-3.53)  | <b>1.91</b><br>(1.11-3.27)  |
| EA                              | 12.3   | 36.1*   | <b>4.04</b><br>(2.84-5.76)   | <b>4.27</b><br>(2.93-6.22)    | 16.4   | 28.7*  | <b>2.06</b><br>(1.31-3.24)  | <b>2.05</b><br>(1.27-3.43)  |
| H                               | 2.5  | 26.1*   | <b>13.73</b><br>(8.27-22.78) | <b>18.53</b><br>(10.59-32.43) | 5.3  | 20.0*  | <b>4.47</b><br>(2.52-7.93)  | <b>3.44</b><br>(1.86-6.35)  |
| At least one                    | 14.9   | 40.6*   | <b>3.91</b><br>(2.78-5.50)   | <b>4.14</b><br>(2.88-5.95)    | 22.7   | 40.9*  | <b>2.35</b><br>(1.55-3.56)  | <b>2.27</b><br>(1.47-3.52)  |
| <b>Multiple IPV</b>             |  |   |                              |                               |  |  |                             |                             |
| None                            | 85.9   | 59.7*   | 1                            | 1                             | 77.6   | 59.1*  | 1                           | 1                           |
| Only one type                   | 8.7  | 12.2  | <b>2.01</b><br>(1.21-3.32)   | <b>2.02</b><br>(1.19-3.42)    | 13.6   | 21.7   | <b>2.10</b><br>(1.26-3.51)  | <b>2.18</b><br>(1.287-3.70) |
| ≥Two types                      | 5.4  | 28.2  | <b>7.53</b><br>(4.92-11.53)  | <b>8.90</b><br>(5.59-14.15)   | 8.9  | 19.1   | <b>2.83</b><br>(1.63-4.92)  | <b>2.46</b><br>(1.34-4.50)  |

SC: Severe Combined; PA: Physical Abuse; EA: Emotional Abuse; H: Harassment.

<sup>a</sup> Respondents who are in a current relationship (living together + married).

<sup>b</sup> Respondents who were in an intimate relationship before but are single now; Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ).

<sup>c</sup> Adjusted for education, occupational status and having children.

\*  $\chi^2 p < 0.05$ ;

**Table 4.4. Gender differences in the experience of IPV at 30-year follow-up (Reference group= females)**

|   | OR (95% CI)             |                         |
|---|-------------------------|-------------------------|
|   | Unadjusted              | Adjusted <sup>d</sup>   |
| <b><u>Current relationship</u><sup>a</sup></b>          |                         |                         |
| <b>Forms of IPV<sup>c</sup></b>                         |                         |                         |
| Severe combined   | 1.06 (0.51-2.20)        | 1.26 (0.55-2.91)        |
| Physical Abuse  | <b>2.19 (1.55-3.11)</b> | <b>2.61 (1.74-3.93)</b> |
| Emotional Abuse   | <b>1.40 (1.06-1.85)</b> | <b>1.55 (1.14-2.10)</b> |
| Harassment  | <b>2.17 (1.29-3.64)</b> | <b>2.15 (1.19-3.89)</b> |
| At least one  | <b>1.69 (1.31-2.16)</b> | <b>1.81 (1.37-2.39)</b> |
| <b>Multiple IPV</b>                                     |                         |                         |
| None (ref)  | 1                       | 1                       |
| One type only   | <b>1.71 (1.26-2.35)</b> | <b>1.68 (1.20-2.36)</b> |
| ≥Two types  | <b>1.83 (1.25-2.67)</b> | <b>2.19 (1.41-3.40)</b> |
| <b><u>Not currently in relationship</u><sup>b</sup></b> |                         |                         |
| <b>Forms of IPV<sup>c</sup></b>                         |                         |                         |
| Severe combined   | 0.66 (0.33-1.34)        | 0.89 (0.39-1.89)        |
| Physical Abuse  | 0.78 (0.45-1.35)        | 0.88 (0.48-1.62)        |
| Emotional Abuse   | 0.72 (0.43-1.18)        | 0.83 (0.47-1.44)        |
| Harassment  | 0.71 (0.40-1.25)        | 0.88 (0.47-1.65)        |
| At least one  | 1.01 (0.63-1.63)        | 1.23 (0.73-2.09)        |
| <b>Multiple IPV</b>                                     |                         |                         |
| None (ref)  | 1                       | 1                       |
| One type only   | 1.81 (0.94-3.45)        | <b>2.11 (1.06-4.21)</b> |
| ≥Two types  | 0.69 (0.38-1.23)        | 0.81 (0.42-2.31)        |

Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ).

<sup>a</sup> Only respondents in a current relationship (with a partner) were considered.

<sup>b</sup> Respondents who were in a relationship before but now are single were considered.

<sup>c</sup> Reference group= no IPV <sup>d</sup> Adjusted for demographic variables at the 30-year follow-up.

**Table S 4.1. Gender differences in the experience of IPV specific items \* at 30-year follow-up**

| IPV Items                                 | Current relationship |                   |                  | Not currently in relationship <sup>b</sup> |                  |              |
|---|----------------------|-------------------|------------------|--|------------------|--------------|
|   | Females<br>(n=1074)  | Males<br>(n=642)  | <i>p</i>         | Females<br>(n=180)                         | Males<br>(n=115) | <i>p</i>     |
|   | n (%)                |                   |                  | n (%)                                      |                  |              |
| <b>Severe Combined</b>                    |                      |                   |                  |  |                  |              |
| Raped me                                  | 0.0                  | 1 (0.2%)          | 0.2              | 2 (1.1%)                                   | 2 (1.7%)         | 0.65         |
| Used a knife or gun or weapon             | 3 (0.3%)             | 3 (0.5%)          | 0.52             | 6 (3.3%)                                   | 8 (7.0%)         | 0.15         |
| Kept me from medical care                 | 2 (0.2%)             | 1 (0.2%)          | 0.90             | 8 (4.5%)                                   | 2 (1.7%)         | 0.21         |
| Locked me in the bedroom                  | 2 (0.2%)             | 1 (0.2%)          | 0.88             | 10 (5.6%)                                  | 3 (2.6%)         | 0.23         |
| Tried to rape me                          | 0.0                  | 0.0               | --               | 4 (2.2%)                                   | 2 (1.8%)         | 0.77         |
| Took my wallet and left me stranded       | 4 (0.4%)             | 6 (0.9%)          | 0.14             | 16 (8.9%)                                  | 8 (7.0%)         | 0.55         |
| Put foreign objects in my vagina/anus     | 8 (0.7%)             | 0.0               | 0.02             | 10 (5.5%)                                  | 4 (3.5%)         | 0.43         |
| Refused to let me work outside            | 4 (0.4%)             | 3 (0.5%)          | 0.77             | 7 (3.9%)                                   | 4 (3.5%)         | 0.86         |
| <b>Physical Abuse</b>                     |                      |                   |                  |  |                  |              |
| Slapped me                                | <b>25 (2.3%)</b>     | <b>50 (7.8%)</b>  | <b>&lt;0.001</b> | 27 (15.1%)                                 | 18 (15.7%)       | 0.90         |
| Pushed, grabbed or shoved me              | 55 (5.1%)            | 36 (5.6%)         | 0.66             | <b>43(23.9%)</b>                           | <b>17(14.8%)</b> | <b>0.05</b>  |
| Hit or tried to hit me with something     | <b>18 (1.7%)</b>     | <b>33 (5.1%)</b>  | <b>&lt;0.001</b> | 25 (13.8%)                                 | 17 (14.8%)       | 0.82         |
| Kicked me, bit me or hit me               | <b>11 (1.0%)</b>     | <b>21 (3.3%)</b>  | <b>0.001</b>     | 19 (10.5%)                                 | 9 (7.8%)         | 0.44         |
| Threw me                                  | <b>14 (1.3%)</b>     | <b>2 (0.3%)</b>   | <b>0.03</b>      | <b>22(12.3%)</b>                           | <b>3 (2.6%)</b>  | <b>.004</b>  |
| Shook me                                  | 13 (1.2%)            | 4 (0.6%)          | 0.24             | <b>26(14.5%)</b>                           | <b>3 (2.6%)</b>  | <b>.001</b>  |
| Beat me up                                | 5 (0.5%)             | 4 (0.6%)          | 0.66             | 16 (8.8%)                                  | 7 (6.1%)         | 0.39         |
| <b>Emotional Abuse</b>                    |                      |                   |                  |  |                  |              |
| Told me that I was not good enough        | <b>76 (7.1%)</b>     | <b>77 (12.0%)</b> | <b>0.001</b>     | 49 (27.2%)                                 | 27 (23.5%)       | 0.47         |
| Tried to turn others against me           | 18 (1.7%)            | 16 (2.5%)         | 0.24             | 28 (15.6%)                                 | 15 (13.0%)       | 0.54         |
| Told me that I was ugly                   | 28 (2.6%)            | 23 (3.6%)         | 0.25             | 23 (12.8%)                                 | 10 (8.7%)        | 0.28         |
| Tried to keep me from family              | 17 (1.6%)            | 17 (2.7%)         | 0.12             | 23 (12.8%)                                 | 11 (9.6%)        | 0.39         |
| Blamed me for causing their violence      | 51 (4.7%)            | 19 (3.0%)         | 0.07             | <b>47(26.1%)</b>                           | <b>14(12.2%)</b> | <b>0.004</b> |
| Became upset if housework was not done    | <b>134(12.5%)</b>    | <b>117(18.3%)</b> | <b>0.001</b>     | 38 (21.1%)                                 | 20 (17.4%)       | 0.43         |
| Told me that I was crazy                  | 116 (10.8%)          | 57 (8.9%)         | 0.20             | <b>57(31.7%)</b>                           | <b>24(21.4%)</b> | <b>0.06</b>  |
| Told me that no one would ever want me    | 27 (2.5%)            | 16 (2.5%)         | 0.98             | <b>34(18.8%)</b>                           | <b>11 (9.6%)</b> | <b>0.03</b>  |
| Did not want me to socialize with friends | <b>66 (6.1%)</b>     | <b>73 (11.4%)</b> | <b>&lt;0.001</b> | 49 (27.1%)                                 | 28 (24.6%)       | 0.63         |
| Tried to convince others that I was crazy | 11 (1.0%)            | 5 (0.8%)          | 0.61             | <b>28(15.5%)</b>                           | <b>9 (7.8%)</b>  | <b>0.05</b>  |
| Told me that I was stupid                 | 81 (7.5%)            | 50 (7.8%)         | 0.85             | 29 (16.1%)                                 | 17 (14.8%)       | 0.14         |
| <b>Harassment</b>                         |                      |                   |                  |  |                  |              |
| Followed me                               | <b>10 (0.9%)</b>     | <b>18 (2.8%)</b>  | <b>0.003</b>     | 24 (13.3%)                                 | 12 (10.5%)       | 0.47         |
| Hung around outside my house              | 9 (0.8%)             | 3 (0.5%)          | 0.37             | <b>23(12.8%)</b>                           | <b>6 (5.2%)</b>  | <b>0.03</b>  |
| Harassed me over the telephone            | 34 (3.2%)            | 28 (4.4%)         | 0.20             | 47 (26.1%)                                 | 20 (17.4%)       | .08          |
| Harassed me at work                       | 10 (0.9%)            | 7 (1.1%)          | 0.75             | 17 (9.4%)                                  | 10 (8.8%)        | 0.84         |

\* A chi-square test was used for each dichotomous item never = 0", and "only once to daily=1"

## **Chapter Five: Economic factors and IPV**

This chapter includes a published paper cited as:

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## **Abstract**

**Background and objectives:** Poverty and socio-economic disadvantage place demands on intimate relationships and provide fertile ground for disagreements and conflicts. It is not known whether poverty also leads to intimate partner violence (IPV). This study investigates the association between income and forms of intimate partner violence victimization for both males and females. We also examine whether income inequalities are related to IPV and whether the gender balance of household income contributes to IPV victimization.

**Methods:** Data are obtained from a cohort of 2401 young offspring (60.3% females) who participated at the 30-year follow-up of the Mater-University of Queensland Study of Pregnancy in Brisbane, Australia. Participants completed questionnaires including their income details and the Composite Abuse Scale.

**Results:** Within low-income families, both partners experience higher levels of intimate partner violence. Females' income is not independently related to experiencing IPV for either females or males. Females and males experience a higher rate of IPV when the husband earns a low income. When considering partners' relative income, families in which both partners earned a low income experienced higher levels of almost all forms of IPV. Income [im]balance in which females earn more or partners both have higher income, were less often associated with the experience of IPV.

**Conclusion:** IPV appears to be mutually experienced in the setting of the poverty. Objective economic hardship and scarcity create a context that facilitates IPV for both partners in a relationship.

**Keyword:** Income, Intimate partner violence victimization, Gender, A birth cohort study

## Introduction

While intimate partner violence (IPV) is a globally widespread public health concern (1-4), there is relatively little research about its characteristics or causes. Understanding the context in which IPV is experienced, should contribute to more informed policy responses (14). IPV cannot be understood in isolation; it is associated with a wide range of biological and psychological characteristics as well as social, environmental and economic factors (10-14). Contrary to popular belief that IPV may occur in all socio-economic settings, a body of research has established a robust link between the poverty, low socio-economic status (SES), disadvantage circumstances and IPV perpetration and victimization (6-9).

Poverty, as argued by *Family Stress Theory* (173), causes IPV because it involves socio-economic strains and financial insecurity which contributes to frustration and powerlessness and encourages men to display violent behaviors against women (6, 14, 172). It is also possible that poverty related IPV might affect both partners in a marital relationship. Within a dysfunctional family system, affected by economic distress, poverty might be both a cause and consequence of IPV (9).

While there is some evidence that low income families are more likely to engage in IPV, relatively little has been written about the separate role of husband's and wife's income as these might be related to IPV (103). Existing theoretical models and the findings related to these models, which link gender, economic issues and domestic violence are not consistent (104). *Feminist* scholars (28, 46, 47) emphasize IPV as a "gendered problem" emerging from the domination and control of women by men. They propose women's status empowerment and gender equality as solutions to IPV (240). *Dependency theory* highlights females' dependency reflecting lower resources or the competition for resources, as the root of violence against women. Women who are economically independent and have higher status in their relations may be able to negotiate more effectively and not stay in abusive relationships (95-97, 105). Conversely, from *the Social Exchange and Resource Theory* perspective, partners use resources, like violence or income, to achieve more power in their relationships. In situation where there is a lack of socioeconomic resources, violence can be used and exchanged. As a result, it might be that higher economic resources place women at greater risk of IPV (107, 108). In the context of societies, which are largely patriarchal, *Relative Resource Theory* suggests that women with higher relative status constitute a challenge to established male dominance and are more vulnerable to abuse (109, 110).

*Gendered resources theory*, in contrast, argues that *Relative Resource Theory* ignores the cultural context under which masculinity is constructed and assumes that all males desire to be the main provider; whereas females' higher resource increases the risk of IPV only if the male partner holds less egalitarian gender views (111). Despite Australia historically having been characterized as a strong male-breadwinner culture (41, 112), over the most recent decades, women's labour force participation rates and the proportion of women with a Bachelor degree has increased to 58% and 25% respectively. Egalitarian gender beliefs about work and family roles have become more common and couples with similar socio-economic status or dual earner families have emerged to be increasingly common (113). Perhaps as a consequence of these social and economic changes, IPV in Australia may have particular characteristics. For instance, recent evidence suggests a growing rates of males' IPV victimization (20, 26).

While feminist theory focuses more on female victimization (28, 46, 47, 240), a family violence perspective suggests that both men and women engage in domestic violence (40, 49, 50, 54, 227, 229, 231). Based on typology of Johnson (31), IPV encompasses both severe and unidirectional forms of violence (as feminist scholars indicate) and minor and/or reciprocal violent behaviors (as family violence theory suggests). However, few studies have included different types of intimate partner violence (38, 241, 242). Economic factors might have different effects on different types of IPV. In one study, for instance, a clear association was found between husband's low socio-economic status (SES) and female's higher risk of physical abuse, but not psychological abuse (243).

Furthermore, previous measurements of intimate partner violence have been criticised because they have provided inconsistent, biased and limited information; For the example the Conflict Tactics Scale (21), is the most widely used measure of IPV, however, it has been suggested that it lacks cultural validity, concentrates mostly on physical abuse and does not comprise a comprehensive assessment of emotional, economic and sexual abuse (219, 220). Hence, there is a need to use a validated and multidimensional measure that reflects the full range of types of intimate partner violence.

Another concern is that the most influential studies in the field have involved clinical and selective samples (229, 244). Controversies about rates of IPV highlight the importance of the type of sample from which the data is gathered; For example, rates of male violence tend to be much higher when the findings come from a non-representative population like abused women (229). Using a large population-based sample comprising men and women can bridge the existing gap in our comprehension of IPV.



## **Current Study**

Different and inconsistent theoretical perspectives in the field make it hard to anticipate how partners' income matters in a relation to IPV. It is simply not known whether wife's income affects the risk of IPV, not only for females but also for the male partner. In addition, income may range from low to high; it is unclear whether equality or inequality at all income levels might be related to risk of intimate partner violence. This study involves the analysis of survey data, which examines the association between income (personal income, family income and balance in contribution to family income) and IPV for both males and females. It investigates the relationship between family income and different types of IPV namely, whether wife's income matters in experiencing IPV for both partners and whether income [im]balance between wife and husband might be important in relation to IPV.

## **Methods**

### **Participants**

Data for the current study were taken from the Mater\_University of Queensland Study of Pregnancy (MUSP). Baseline data were collected at the first antenatal visit to the Mater Public Hospital in Brisbane between 1981 and 1983 from 7223 consecutive women and additional assessments were conducted when the study children were 6 months, 5 years, 14 years, 21 and 30 years old. The Mater Hospital and the University of Queensland Ethics committees approved this study and written informed consent was obtained from the young adults. The study design and sampling method have been previously discussed (184, 185). The present analysis used data from the 30-year follow-up surveys with 40% of the cohort participating in that phase of the study. While recruitment to the study included some 99% of those invited to participate, losses to follow-up (that is the 30-year follow-up), are disproportionately of young, single, separated/divorced, economically disadvantaged and more emotionally distressed participants (186). In practice and based on several previously published papers, results of weighted analyses and multiple imputation suggest that loss to follow-up rarely has an impact on findings (186, 245). The participants at the 30-year follow-up were a subsample of 2401 heterosexual persons (952 males and 1449 females) who completed self-report questionnaires about intimate partner violence and economic factors.

## **Measurement**

### **Dependent Variable: Intimate partner violence**

Based on criteria used by The World Health Organization IPV is defined as “behavior by an intimate partner or ex-partner that causes physical, sexual or psychological harm, including physical aggression, sexual coercion, psychological abuse and controlling behaviors” (246). We measured IPV at 30 years using the Composite Abuse Scale (CAS) (37, 38). The CAS is a validated and widely used scale (196-198) to assess frequency of violence in intimate relationships (current or previous relationships) in a twelve-month period. The scale comprises 30 items ( $\alpha = .95$ ) and 4 subscales: Severe Combined Abuse ( $\alpha = .79$ ; comprises 8 items which include rape, keep from obtaining medical care, locked in the bedroom), Emotional Abuse ( $\alpha = .90$ ; comprises 11 items which include insults, verbal, psychological, dominance and separation from friends and family), Physical Abuse ( $\alpha = .89$ ; comprises 7 items which include Slapping, Throwing, Hitting, shaking) and Harassment ( $\alpha = .72$ ; comprises 4 items include actual harassment like following, harassing over the telephone and at work); Response options ranged from never, only once, several times, once a month, once a week and daily which were scored from 0 (= never) to 5 (=daily). Total scores for each of the four subscales were calculated by summing the response to the relevant items. Then the recommended cut-off scores for the individual subscales (Severe Combined Abuse ( $\geq 1$ ), Physical Abuse ( $\geq 1$ ), Emotional Abuse ( $\geq 3$ ), and Harassment ( $\geq 2$ ) and Total Scale ( $\geq 3$ ) were applied. Participant with equal or higher scores than the cut-off score, were considered to have experienced abuse (38).

### **Independent variables**

#### **Absolute personal income**

All the 30-year follow-up respondents were asked to choose their own and their partners' income from 11 categories (no income to 3000\$ or more per week) separately. Income was defined as “gross income before tax and other deductions; including wages, pensions, government payments and income from other sources such as investments”. Own and partner absolute income were separately categorized into three categories: low (income under 600\$ per week) middle (600\$ to 1300\$ per week) and high (more than 1300\$). Respondents who had no partner were excluded from further analysis.

#### **Family income**

Using the midrange of own and partner's income categories and adding them up, we created a weekly family income variable with 5 categories \$0-\$999, \$1000-\$1499, \$1500-\$1999, \$2000-\$2499 and \$2500 and more.

### **Gender [im]balance in income**

We combined respondents' income with their partners'. Calculated variable comprised 9 states (3 own stats× 3 partner state). Then we categorized them into 3 main groups of "Husband (male) earn more", "Wife (female) earns more" and "Balanced". Balance earning itself was classified into three groups of "both [partners] earn low" "both earn middle" and "both earn high". This category is different from Kaukinen's *income incompatibility* measurement (103), which ignores different levels of income parity. Husband-higher income is the reference group for analysis.

### **Demographic variables and covariates**

We adjusted for a number of demographic variables that may be related to both income and IPV. Evidence shows that both income and IPV are related to covariates like age, marital status, length of relationship or education level. For example, partners with a lesser education level, those who are cohabitating and couples with children are more likely to report financial problems as well as violence in their intimate relationships (13, 247, 248).

All respondents are around 30 years of age, so there is no adjustment for age variation in the sample. We control for respondents' and their partners' education level categorized into *high school completion or less* (primary, started secondary, completed secondary) *diploma and college* and *university* (reference category). Having had children was dichotomized into no and yes. *Marital status*, which was created from three questions of "What is your present marital status" "Have you ever been divorced" and "Do you live with your partner". Removing "single ever" and "*single now before in relation*" respondents, this variable comprised two categories, *living together* and *married*. The married group was considered as the references group. Length of relationship was asked with a question "For how long your current live-in relationship has lasted (in years)".

### **Data analysis**

The prevalence of each type of IPV was determined across the gender groups. For describing demographic characteristics, descriptive statistics, chi square and t-test were used. IPV forms (Physical Abuse, Emotional abuse, Severe Combined and Harassment) were not mutually exclusive. For each form of IPV, the bivariate relationship with own, partner and family income and gender income differences were modeled using logistic regression. Each of these models was then adjusted for respondent's education, marital status, duration of relation

and having children. Unadjusted and adjusted odds ratios with 95 % confidence intervals (ORs; 95 % CIs) are reported. We also assessed interactions between family income and gender differences in income. Statistical analyses were conducted using STATA-13 and SPSS-24 softwares.

## Results

Although this cohort of males and females are that the same average age (Male = 30.39; Female = 30.25), the socio-demographic characteristics of respondents are different in a number of important respects (Table 5.1). At 30 years of age, women are more likely to be married (men are more often single), to report they have had a child and a university degree (even men more often reported their partners had higher degrees). Female are more likely to have low income, but males and females understandably report a similar family income. Level of IPV appeared similar for males and females' respondents, with one exception. Males reported experiencing physical abuse more often than females. Bivariate associations between covariates and different forms of IPV are presented in Supplementary Tables S5.1 and S5.2.

Table 5.2 presents the association between total family income and gender differences in experiences of IPV. Lower family income is associated with severe combined IPV as well as physical and emotional abuse for females and severe combined victimization and harassment for males. While the specific details may vary, IPV tends to be experienced by both partners in low income families.

Table 5.3 presents the association between husband's and wife's income and IPV after adjusting for socio-demographic variables. Females whose partners (husbands) earn low income are at greater risk of most forms of IPV with the exception of harassment. Males whose income is low are more likely to report IPV victimization except physical abuse. The income level of women (wives) in contrast to their partners' income appears unrelated to the level of IPV experienced by women or men in this study. These associations are presented graphically in Figures S5.1 and S5.2. Table 5.3 also shows that couples who earn equally low income (compared to higher husband's income), are at greater risk of IPV. Both males and females' respondents in families in which both partners have a low income are at substantially increased risk of almost all forms of IPV.

## Discussion

Previous studies have suggested that females are disproportionately the victims of intimate partner violence, that family poverty may predict and be a cause of IPV and that income disparities between partners may contribute to IPV. First, we find that levels of IPV as reported by male and female respondents are similar. This raises the possibility that IPV is characteristic of a relationship, and that IPV may be bidirectional. Surprisingly, males report experiencing physical abuse more often than females. Secondly, we find that low household income is associated with an increased risk of IPV for both females and males. Females in low-income families are at higher risk of physical abuse, emotional abuse and severe combined abuse. Within a low SES family, males are disproportionately likely to experience severe combined abuse and harassment. Thirdly, against expectations, females' absolute income is not related to the experience of IPV for either females or males. Females and males experience a higher rate of IPV when the husband (usually the primary income earner) earns a low income. Lastly, when considering partners' relative income, families in which both partners earned a low income are at greater risk of almost all forms of IPV. Surprisingly, income [im]balance in which females earn more or partners both have higher income, are less often associated with the experience of IPV.

In the current study, although the prevalence of physical abuse generally was higher for males, it was not associated with family or personal income in men. Further studies are needed to investigate predictors of males' victimization within the family. When total family income is low, females are substantially more likely than men to experience physical abuse. These associations are independent of a variety of potential confounding factors including partners' education level, marital status, duration of relationship and having children. In line with our finding, we could only find one study in England, which reported an association between low social class and physical abuse victimization among women but not among men (249). It remains the case in contemporary western societies that gender role expectations of men to be the main income earner may make them vulnerable to multiple economic stressors. Our finding supports a *Relative Resource Theory* explanation, which suggests that when there is a lack of economic resources, men might exchange force and physical violence in their intimate relationships. Another possibility is that there may be circumstance where incomes are nominally pooled, but in practice, one partner controls the household money (250). Due to the lower share of money in the household pool, women may be more vulnerable to the

consequences of financial deprivation or engage in conflict in order to improve their access to resources.

When family income is disaggregated into the husband's income, the wife's income and the gender [im]balance in income, there are some important differences in the gendered basis of IPV. When the husband's income is low, he is much more frequently likely to report experiencing most forms of IPV with the exception of physical abuse. This finding again suggests that despite men reporting physical abuse more often, there is no association between family or personal income and males' physical victimization. Female partners of a low-income males also more often experience most types of intimate partner violence, with the except of harassment. In broad terms, a low-income earning male is substantially more likely to live in a household in which both partners report higher rates of various forms of IPV; by contrast, where the wife's income is low, this appears to be unrelated to experiences of IPV.

The finding that wife's income is unrelated to IPV experience for females may challenge explanations associated with *Dependency Theory*, which suggests wives' economic dependency is a risk factor for IPV victimization (95-97, 105). Although wife's income can increase family well-being (251), in the current study female income made a smaller contribution to the family income than male's (34.1% vs. 65.9%  $p < 0.0001$ ). It is not surprising that regardless of the male partner's income, wife's income is unrelated to the level of IPV for both females and males. Feminist theory and intersectionality perspective argue that women's status is complex and multidimensional including political, legal, social and economic dimensions. Income is only one marker of a broader range of interdependent characteristics associated with gender inequality (28, 46, 47, 252).

When we consider the gender balance of income, relative experiences of almost all forms of IPV (with the expect of physical abuse in males and harassment in females) are highest when both partners report receiving low income. Disagreements over the allocations of limited resources may contribute to the experience of intimate partner violence. Money has been reported to be the most critical and pervasive source of interpersonal conflicts (253, 254). Families with inadequate funds have to struggle with recurrent and unsolvable issues including making decision about who, when, why, and how limited funds are to be allocated. Money is also related to the power and to the sense of self-worth. Partners in a low-income family may engage in more aggressive pattern of behaviors which is consistent with the view that partners in such relationship become simultaneously both victims and perpetrators. It may also be the case that the division of household labour in a low income family may be a source of conflict and violence (237). Our findings challenge the significance of subjective dimensions of

financial issues (e.g., symbolic meanings) in interpersonal relationships. The data suggests that objective economic hardships and resource scarcity create a context for competition, conflict and abuse.

We find that in a low-income context males exclusively experience harassment, while females are at increased risk of physical abuse. This repeating pattern raises the possibility that males and females may use distinctive aggressive strategies in response to constraints of living in a poor family. This finding is consistent with some previous studies suggesting that females tend to display verbal and indirect violent behaviors, whereas distressed males may show direct and physical aggression (see, e.g., 255).

The current study has several strengths: We have used a relatively large population-based sample including both men and women, which enabled us to examine different types of intimate partner violence as well as to adjust for a range of demographic factors associated with IPV. We also used a validated and comprehensive measurement of intimate partner violence which was reliable for both genders; Testing the reliability of the IPV subscales separately for females and males, we found that the Cronbach's Alpha of all subscales, were higher than 0.80 (except harassment in men = 0.63). We asked about recent experience of IPV to reduce the probability of memory bias (228).

However, our results should be interpreted with regard to some limitations: the cross sectional nature of our study does not allow us to make a causal inference about the relationship between income and IPV (249). Small sample size, especially in the severe combined victimization group, widened the confidence intervals and decreased the precision of the estimate. We modeled each form of IPV separately, but recognize that they may overlap and co-occur (242). In an abusive relationship, each partner may be both victim and perpetrator. Our findings relied on only one partner's report of victimization, which might be subject to self-serving bias or less accurate reports of IPV (239). For instance, there is a possibility that men might have over-reported their experiences of physical abuse in the current study, because IPV is a more salient event for males. However, in an abusive relationship men may be less inclined to disclose their victimization, due to social shame and denial (Brown, 2004; Dutton & Nicholls, 2005). There is also a need to differentiate between the frequency and degree of physical violence. It is possible that although men report they experience physical violence more frequently, due to the lesser females' physical power, men might less be seriously *injured*. Regardless of the frequency of violence acts, men may do more physical harm when they are violent (60).

Our findings suggest the need to consider *the couple* as the unit of interest. Public health initiatives should be targeted not only at women's victimization but also at males' vulnerability to IPV in the context of relationships. Lack of knowledge about women's violence hinders identification of potential intervention targets. The vast majority of IPV victimization does not appear in crime data or clinical settings. This study was based on cross-sectional reports of common couple violence which is relatively dyadic, minor and possibly consistent over time. It is not clear when, how this form of family violence may become severe, and under what circumstances this may occur. Further studies need to investigate whether IPV varies over life course stages. Looking for possible patterns of IPV over time may offer direction for policy and intervention.



**Table 5.1. Gender differences in study variables at 30-year follow-up**

|  | Male             | Female       | Chi <sup>2</sup> |
|--|------------------|--------------|------------------|
|  | %                |              |                  |
| <b>Marital status</b>                            | (n= 975)         | (n=1463)     | 27.75**          |
| Married  | 41.1             | 48.3         |                  |
| Living together                                  | 26.4             | 26.5         |                  |
| Single now, before in relation<br>single ever    | 12.5<br>20.0     | 12.7<br>12.5 |                  |
| <b>Having Children</b>                           | (n= 968)         | (n=1454)     | 53.55**          |
| No   | 59.6             | 44.4         |                  |
| Yes  | 40.4             | 55.6         |                  |
| <b>Own's education</b>                           | (n= 986)         | (n=1472)     | 20.91**          |
| University                                       | 22.9             | 31.1         |                  |
| Diploma & college                                | 41.3             | 38.7         |                  |
| High School and less                             | 35.8             | 30.2         |                  |
| <b>Partner's education</b>                       | (n=743)          | (n=1193)     | 52.24**          |
| University                                       | 39.0             | 24.9         |                  |
| Diploma & college                                | 27.5             | 40.5         |                  |
| Under Diploma                                    | 33.5             | 36.6         |                  |
| <b>Own's absolute income (per week)</b>          | (n= 985)         | (n=1461)     | 269.47**         |
| low (> \$ 600)                                   | 12.3             | 39.4         |                  |
| middle (between \$ 600 and 1300)                 | 43.5             | 39.0         |                  |
| high (< \$1300)                                  | 44.3             | 21.6         |                  |
| <b>Partner's absolute income (per week)</b>      | (n= 708)         | (n=1168)     | 259.85**         |
| low (> \$ 600)                                   | 41.0             | 11.0         |                  |
| middle (between \$ 600 and 1300)                 | 39.7             | 44.3         |                  |
| high (< \$1300)                                  | 19.4             | 44.6         |                  |
| <b>Family income (per week)</b>                  | (n=955)          | (n=1449)     | 2.10             |
| \$0-999  | 18.6             | 20.2         |                  |
| \$1000-1499                                      | 22.5             | 21.5         |                  |
| \$1500-1999                                      | 18.0             | 17.2         |                  |
| \$2000-2499                                      | 15.3             | 14.3         |                  |
| \$2500+  | 25.5             | 26.8         |                  |
| <b>Gender [im]balance in income</b>              | (n=708)          | (n=1161)     | 22.61**          |
| both earn low                                    | 3.7              | 6.6          |                  |
| both earn middle                                 | 19.5             | 20.4         |                  |
| both earn high                                   | 15.5             | 14.8         |                  |
| Wife earns more                                  | 6.2              | 10.8         |                  |
| Husband earns more                               | 55.1             | 47.4         |                  |
| <b>IPV victimization</b>                         | (n=952)          | (n=1449)     |                  |
| Severe combined (≥1)                             | 3.0              | 4.5          | 3.17             |
| Physical Abuse (≥1)                              | 12.6             | 9.7          | 4.90*            |
| Emotional Abuse (≥3)                             | 17.4             | 16.3         | 0.54             |
| Harassment (≥2)                                  | 8.2              | 7.0          | 1.10             |
| Total (≥3)                                       | 10.1             | 10.3         | 0.03             |
|  | <b>Mean (SD)</b> |              | <b>t-test</b>    |
| <b>Length of relationship</b> (range: 0-17years) | 4.67 (4.2)       | 5.85 (4.5)   | 6.33**           |

\*  $p < 0.01$  \*\*  $p < 0.001$ ;

**Table 5.2. Gender differences in association between family income & IPV victimization**

|                      | SC                                   |                                      | PA                 |             | EA                 |             | H                  |                     |
|----------------------|--------------------------------------|--------------------------------------|--------------------|-------------|--------------------|-------------|--------------------|---------------------|
|                      | Female                               | Male                                 | Female             | Male        | Female             | Male        | Female             | Male                |
| <b>Family income</b> |                                      |                                      |                    |             |                    |             |                    |                     |
| \$0-\$999            | <b>16.62</b><br><b>(2.06-134.36)</b> | <b>10.74</b><br><b>(1.11-103.58)</b> | <b>2.74</b>        | 1.02        | <b>2.13</b>        | 1.30        | 1.08               | <b>5.38</b>         |
|                      |                                      |                                      | <b>(1.16-6.48)</b> | (0.37-2.82) | <b>(1.09-4.14)</b> | (0.55-3.02) | (0.32-3.68)        | <b>(1.50-19.19)</b> |
| \$1000-\$1499        |                                      |                                      | 1.94               | 0.74        | <b>2.0</b>         | 1.18        | .72                | <b>3.47</b>         |
|                      |                                      |                                      | <b>(0.90-4.19)</b> | (0.34-1.62) | <b>(1.15-3.46)</b> | (.63-2.20)  | (0.23-2.22)        | <b>(1.14-10.53)</b> |
| \$1500-\$1999        | 3.77                                 | 3.76                                 | 0.93               | 0.89        | 1.29               | .61         | 0.34               | .78                 |
|                      | <b>(0.33-42.84)</b>                  | <b>(0.32-44.38)</b>                  | <b>(0.38-2.25)</b> | (.44-1.82)  | <b>(0.72-2.30)</b> | (.31-1.19)  | (.09-1.36)         | <b>(0.18-3.36)</b>  |
| \$2000-\$2499        | 2.13                                 | 1.87                                 | 1.63               | 0.60        | 1.59               | .53         | 0.60               | 1.82                |
|                      | <b>(0.13-34.60)</b>                  | <b>(0.11-31.16)</b>                  | <b>(0.72-3.73)</b> | (0.27-1.33) | <b>(0.89-2.84)</b> | (.27-1.05)  | <b>(0.15-2.36)</b> | <b>(0.58-5.75)</b>  |
| \$2500+              | 1                                    | 1                                    | 1                  | 1           | 1                  | 1           | 1h.                | 1                   |

SC: Severe Combined; PA: Physical Abuse; EA: Emotional Abuse; H: Harassment; each form of IPV is modeled separately for males and females who currently are in relationship; Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ). Model includes ORs (CI<sub>95</sub>) adjusted for own and partner education, marital status, length of relationship and having child. \*Due to insufficient sample size only for SC, two first categories were merged.

**Table 5.3. Summary of Logistic regression analysis for wife and husband's absolute and gender [im]balance income predicting IPV victimization**

|  | SC                          |                             | PA                         |                     | EA--                       |                            | H                   |                              |
|--|-----------------------------|-----------------------------|----------------------------|---------------------|----------------------------|----------------------------|---------------------|------------------------------|
|  | Female                      | Male                        | Female                     | Male                | Female                     | Male                       | Female              | Male                         |
| <b>Model 1: Absolute income *</b>            |                             |                             |                            |                     |                            |                            |                     |                              |
| <b>husband's income</b>                      |                             |                             |                            |                     |                            |                            |                     |                              |
| Low  | <b>7.60</b><br>(1.37-42.11) | <b>4.68</b><br>(1.07-20.44) | <b>2.77</b><br>(1.32-5.82) | 1.67<br>(0.66-4.26) | <b>2.12</b><br>(1.22-3.68) | <b>2.60</b><br>(1.17-5.81) | 2.17<br>(0.72-6.57) | <b>8.25</b><br>(2.50 -27.25) |
| Middle                                       | <b>5.23</b><br>(1.12-24.41) | 0.71<br>(0.19-2.65)         | 1.42<br>(0.78-2.60)        | 0.77<br>(0.43-1.35) | 1.13<br>(0.74-1.71)        | 1.13<br>(0.71-1.82)        | 1.04<br>(0.41-2.61) | <b>3.22</b><br>(1.29-7.99)   |
| High   | 1                           | 1                           | 1                          | 1                   | 1                          | 1                          | 1                   | 1                            |
| <b>wife's income</b>                         |                             |                             |                            |                     |                            |                            |                     |                              |
| Low  | 2.0<br>(0.38-10.54)         | 1.36<br>(0.39-2.65)         | 1.71<br>(0.72-4.10)        | 0.79<br>(0.35-1.78) | 1.70<br>(0.94-3.05)        | 0.77<br>(0.38-1.56)        | 0.63<br>(0.18-2.21) | 0.65<br>(0.20-2.15)          |
| Middle                                       | 1.06<br>(0.19-5.83)         |                             | 1**                        | 1.47<br>(0.62-3.48) | 0.69<br>(0.32-1.47)        | 1.39<br>(0.79-2.46)        | 0.81<br>(0.43-1.54) | 0.95<br>(0.27-3.29)          |
| High   | 1                           |                             | 1                          | 1                   | 1                          | 1                          | 1                   | 1                            |
| <b>Model 2: Gender [im]balance in income</b> |                             |                             |                            |                     |                            |                            |                     |                              |
| Both earn low                                | <b>3.46</b><br>(1.0-12.51)  | <b>5.59</b><br>(1.08-28.93) | <b>3.20</b><br>(1.52-6.80) | 2.36<br>(0.80-6.99) | <b>2.32</b><br>(1.26-4.29) | <b>3.26</b><br>(1.24-8.58) | 2.52<br>(0.83-7.60) | <b>6.77</b><br>(1.98-23.14)  |
| Both earn middle                             | 1.38<br>(0.39-4.89)         | 0.46<br>(0.5-3.93)          | 1.37<br>(0.69-2.72)        | 0.89<br>(0.43-1.87) | 1.16<br>(0.71-1.90)        | 1.24<br>(0.69-2.25)        | 0.96<br>(0.30-3.08) | 1.90<br>(0.72-4.98)          |
| Both earn high                               | 1.03<br>(0.19-5.47)         | --                          | 0.90<br>(0.35-2.33)        | 1.24<br>(0.54-2.86) | 0.84<br>(0.45-1.58)        | 1.12<br>(0.55-2.28)        | 1.69<br>(0.55-6.47) | 1.79<br>(0.45-6.60)          |
| Wife earns more                              | 0.69<br>(0.08-5.98)         | 1.02<br>(0.11-9.64)         | 0.95<br>(0.34-2.61)        | 1.24<br>(0.44-3.49) | 0.80<br>(0.40-1.61)        | 1.98<br>(0.87-4.50)        | 1.20<br>(0.25-5.72) | 3.25<br>(0.92-11.40)         |
| Husband earns more                           | 1                           | 1                           | 1                          | 1                   | 1                          | 1                          | 1                   | 1                            |

SC: Severe Combined; PA: Physical Abuse; EA: Emotional Abuse; H: Harassment; T: total IPV; each form of IPV is modeled separately for males and females; Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ). Models include ORs (CI<sub>95</sub>) adjusted for own and partner education, marital status, length of relationship and having child. \* In model 1, husband's and wife's income were adjusted for each other. \*\*Due to insufficient sample size high and middle income were merged and considered as the reference group.

## Supplementary Information

**Table S 5.1. Univariate logistic regression analysis for variables predicting IPV victimization in females**

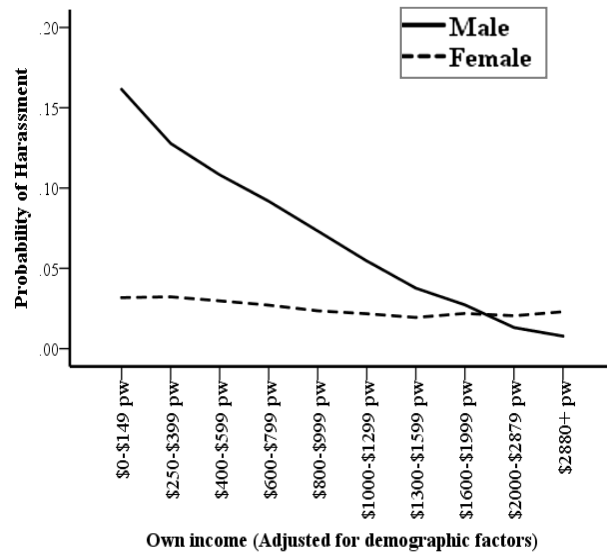
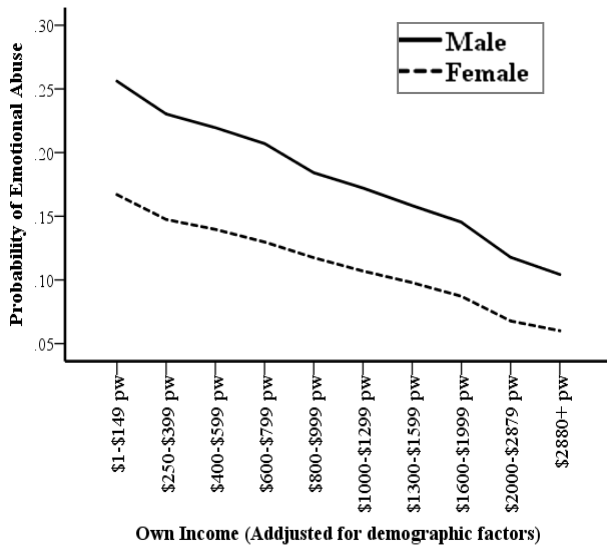
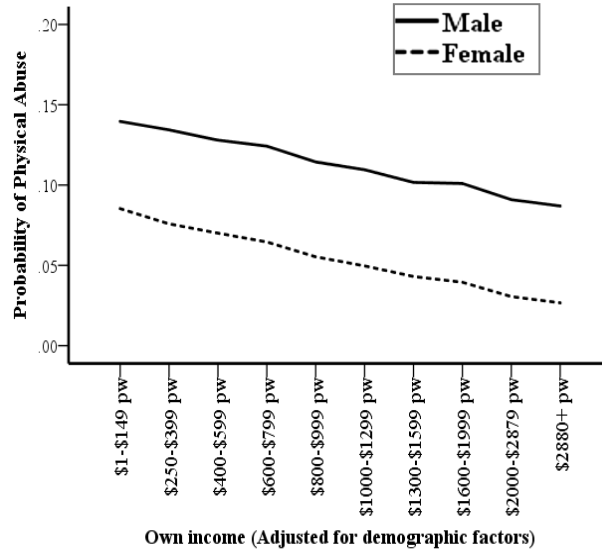
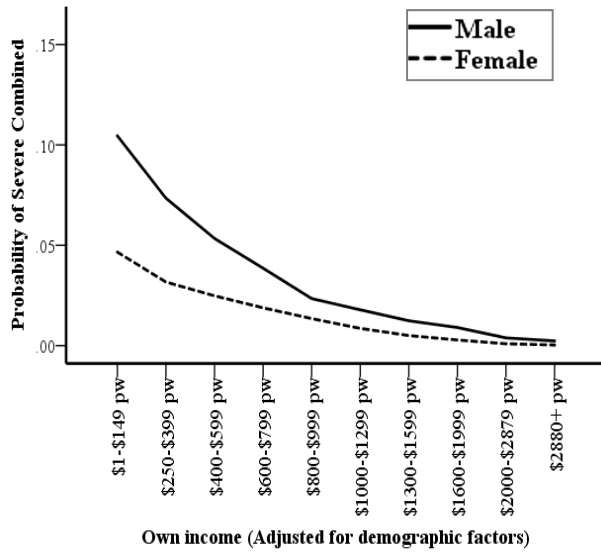
|  | SC             |                            | PA             |                          | EA             |                         | H              |                           |
|--|----------------|----------------------------|----------------|--------------------------|----------------|-------------------------|----------------|---------------------------|
|  | Yes<br>(n (%)) | OR<br>(95% CI)             | Yes<br>(n (%)) | OR<br>(95% CI)           | Yes<br>(n (%)) | OR<br>(95% CI)          | Yes<br>(n (%)) | OR<br>(95% CI)            |
| <b>Marital status</b>                        |                |                            |                |                          |                |                         |                |                           |
| Single now                                   |                |                            |                |                          |                |                         |                |                           |
| Before in relation                           | 29 (16.1)      | <b>16.44 (7.37-36.68)</b>  | 49 (27.2)      | <b>7.25 (4.50-11.67)</b> | 65 (36.1)      | <b>4.73 (3.21-6.97)</b> | 47 (26.1)      | <b>17.14 (9.17-32.02)</b> |
| Living together                              | 11 (2.9)       | <b>2.53 (1.01-6.34)</b>    | 29 (7.6)       | 1.59 (0.95-2.64)         | 58 (15.1)      | <b>1.49 (1.03-2.16)</b> | 13 (3.4)       | 1.70 (.79-3.66)           |
| Married                                      | 8 (1.2)        | 1                          | 34 (4.9)       | 1                        | 74 (10.7)      | 1                       | 14 (2.0)       | 1                         |
| <b>Having children</b>                       |                |                            |                |                          |                |                         |                |                           |
| Yes  | 41 (5.1)       | 1.38 (0.83-2.31)           | 95 (11.8)      | <b>1.73 (1.20-2.50)</b>  | 147 (18.3)     | <b>1.39 (1.04-1.85)</b> | 70 (8.7)       | <b>1.81 (1.18-2.79)</b>   |
| No   | 24 (3.7)       | 1                          | 46 (7.2)       | 1                        | 89 (13.9)      | 1                       | 32 (5.0)       | 1                         |
| <b>Own education</b>                         |                |                            |                |                          |                |                         |                |                           |
| Under Diploma                                | 24 (5.6)       | <b>2.19 (1.08-4.43)</b>    | 53 (12.4)      | <b>2.0 (1.25-3.19)</b>   | 83 (19.4)      | <b>1.68 (1.16-2.42)</b> | 46 (10.7)      | <b>2.76 (1.59-4.79)</b>   |
| Diploma & college                            | 29 (5.2)       | <b>2.02 (1.02-4.0)</b>     | 57 (10.2)      | <b>1.61 (1.01-2.54)</b>  | 94 (16.8)      | 1.41 (0.99-2.01)        | 37 (6.6)       | 1.62 (0.92-2.86)          |
| University                                   | 12 (2.6)       | 1                          | 30 (6.6)       | 1                        | 57 (12.6)      | 1                       | 19 (4.2)       | 1                         |
| <b>Partner's education</b>                   |                |                            |                |                          |                |                         |                |                           |
| Under Diploma                                | 13 (3.2)       | 1.60 (0.60-4.26)           | 31 (7.7)       | <b>2.64 (1.24-5.64)</b>  | 59 (14.6)      | <b>1.77 (1.09-2.88)</b> | 19 (4.7)       | <b>3.59 (1.21-10.67)</b>  |
| Diploma & College                            | 5 (1.1)        | 0.51 (0.16-1.69)           | 30 (6.3)       | <b>2.14 (1.0-4.57)</b>   | 59 (12.4)      | 1.46 (0.90-2.39)        | 10 (2.1)       | 1.56 (0.49-5.02)          |
| University                                   | 6 (2.0)        | 1                          | 9 (3.1)        | 1                        | 26 (8.8)       | 1                       | 4 (1.4)        | 1                         |
| <b>Own income*</b>                           |                |                            |                |                          |                |                         |                |                           |
| Low  | 12 (2.8)       | 6.79 (0.88-52.56)          | 33 (7.6)       | <b>2.39 (1.08-5.25)</b>  | 66 (15.1)      | <b>1.87 (1.11-3.14)</b> | 13 (3.0)       | 1.45 (0.51-4.12)          |
| Middle                                       | 5 (1.3)        | 3.13 (0.36-26.91)          | 21 (5.4)       | 1.66 (0.72-3.81)         | 45 (11.6)      | 1.37 (0.80-2.36)        | 9 (2.3)        | 1.12 (0.37-3.38)          |
| High   | 1 (0.4)        | 1                          | 8 (3.3)        | 1                        | 21 (8.7)       | 1                       | 5 (2.1)        | 1                         |
| <b>Partner's income*</b>                     |                |                            |                |                          |                |                         |                |                           |
| Low  | 5 (4.2)        | <b>21.06 (2.44-182-05)</b> | 14 (11.9)      | <b>3.25 (1.58-6.68)</b>  | 25 (21.2)      | <b>2.35 (1.38-3.99)</b> | 6 (5.1)        | 2.50 (0.89-7.03)          |
| Middle                                       | 11 (2.4)       | <b>11.48 (1.48-89-30)</b>  | 29 (6.2)       | 1.60 (0.88-2.89)         | 57 (12.2)      | 0.35 (0.81-1.82)        | 10 (2.1)       | 1.02 (0.42-2.48)          |
| High   | 1 (0.2)        | <b>1</b>                   | 19 (4.0)       | <b>1</b>                 | 49 (10.3)      | <b>1</b>                | 10 (2.1)       | <b>1</b>                  |
| <b>Length of relationship<br/>Mean (SD))</b> | 2.29 (3.62)    | <b>0.78 (0.72-0.85)</b>    | 4.17 (4.92)    | <b>0.90 (0.87-0.95)</b>  | 5.19(4.76)     | <b>0.96 (0.93-0.99)</b> | 2.81 (4.40)    | <b>0.82 (0.77-0.87)</b>   |

SC: Severe Combined; PA: Physical Abuse; EA: Emotional Abuse; H: Harassment; T: total IPV; Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ); \* Singles were omitted from the analysis, because we ask them about current income which might be different from when they were in the relation.

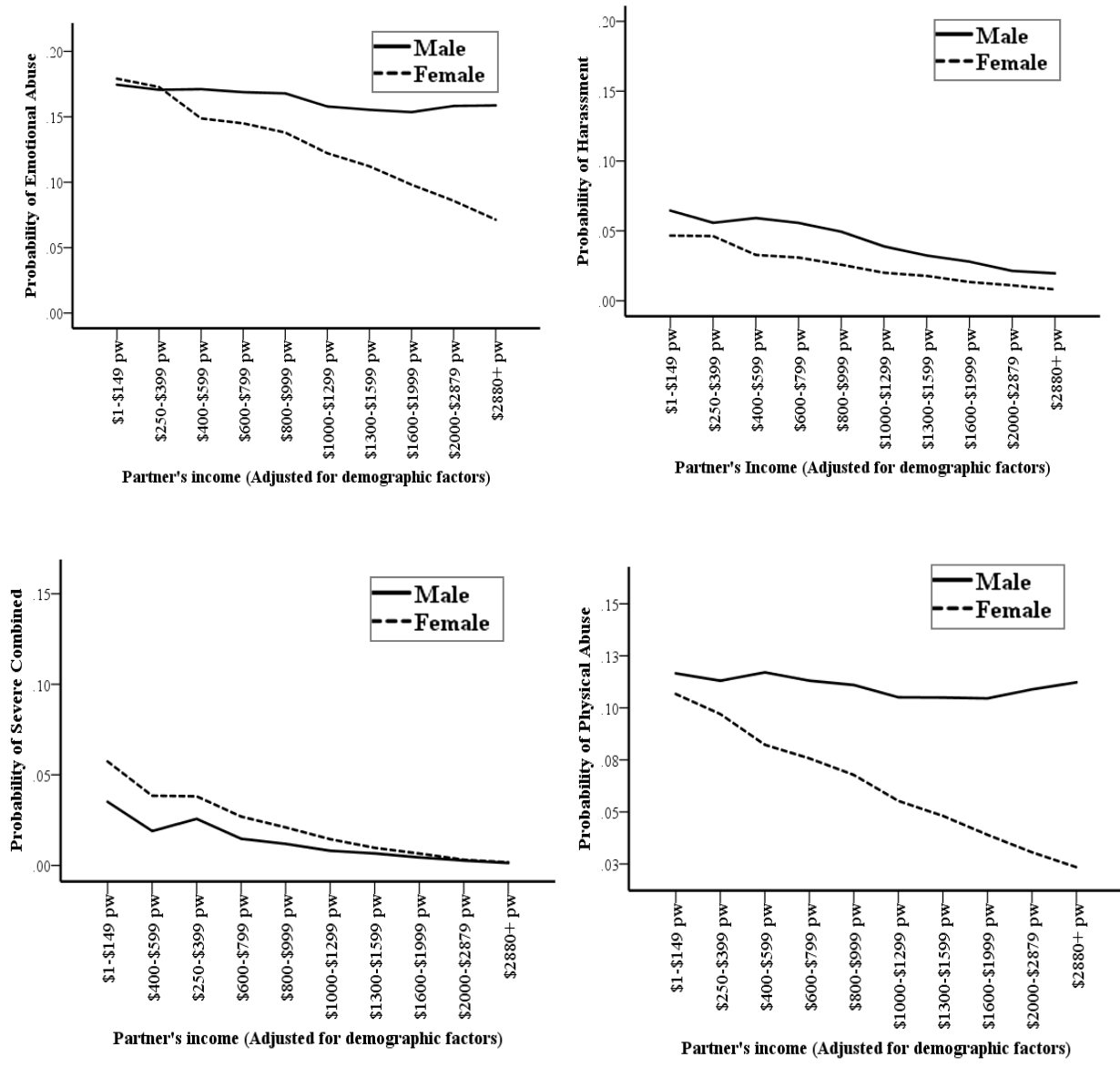
**Table S 5.2. Univariate logistic regression analysis for variables predicting IPV victimization in males**

|                               | SC             |                          | PA             |                          | EA             |                         | H              |                          |
|-------------------------------|----------------|--------------------------|----------------|--------------------------|----------------|-------------------------|----------------|--------------------------|
|                               | Yes<br>(n (%)) | OR<br>(95% CI)           | Yes<br>(n (%)) | OR<br>(95% CI)           | Yes<br>(n (%)) | OR<br>(95% CI)          | Yes<br>(n (%)) | OR<br>(95% CI)           |
| <b>Marital status</b>         |                |                          |                |                          |                |                         |                |                          |
| Single now                    | 13 (11.3)      | <b>6.15 (2.48-15.24)</b> | 26 (22.6)      | <b>2.32 (1.35-3.97)</b>  | 33 (28.7)      | <b>2.43 (1.48-3.98)</b> | 23 (20.0)      | <b>7.95 (3.82-16.58)</b> |
| Before in relation            |                |                          |                |                          |                |                         |                |                          |
| Living together               | 4 (1.6)        | 0.79 (0.24-2.65)         | 33 (13.3)      | 1.22 (0.75-1.98)         | 49 (19.8)      | 1.49 (0.98-2.26)        | 22 (8.9)       | <b>3.10 (1.50-6.38)</b>  |
| Married                       | 8 (2.0)        | 1                        | 44 (11.2)      | 1                        | 56 (14.2)      | 1                       | 12 (3.0)       | 1                        |
| <b>Having children</b>        |                |                          |                |                          |                |                         |                |                          |
| Yes                           | 20 (5.2)       | <b>3.39 (1.53-7.52)</b>  | 65 (16.9)      | <b>1.88 (1.28- 2.76)</b> | 84 (21.8)      | <b>1.64 (1.17-2.30)</b> | 31 (8.1)       | 0.97 (0.60-1.55)         |
| No                            | 9 (1.6)        | 1                        | 55 (9.7)       | 1                        | 82 (14.5)      | 1                       | 47 (8.3)       | 1                        |
| <b>Own education</b>          |                |                          |                |                          |                |                         |                |                          |
| Under diploma                 | 15 (4.5)       | <b>5.07 (1.15-22.36)</b> | 58 (17.2)      | <b>2.64 (1.48-4.73)</b>  | 67 (19.9)      | <b>1.59 (1.0-2.55)</b>  | 40 (11.9)      | <b>3.15 (1.50-6.63)</b>  |
| Diploma & college             | 12 (3.1)       | 3.49 (0.77-15.73)        | 45 (11.6)      | 1.68 (0.92-3.05)         | 68 (17.6)      | 1.35 (0.85-2.15)        | 28 (7.2)       | 1.83 (.85-3.95)          |
| university                    | 2 (0.9)        | 1                        | 16 (7.3)       | 1                        | 30 (13.6)      | 1                       | 9 (4.1)        | 1                        |
| <b>Partner's education</b>    |                |                          |                |                          |                |                         |                |                          |
| Under diploma                 | 8 (3.3)        | 1.92 (0.62-5.94)         | 35 (14.5)      | 1.49 (0.88-2.53)         | 4 (18.7)       | 1.32 (0.83-2.10)        | 21 (8.7)       | <b>2.16 (1.04-4.50)</b>  |
| Diploma & College             | 4 (2.0)        | 1.16 (0.31-4.39)         | 26 (13.3)      | 1.35 (0.77-2.37)         | 38 (19.4)      | 1.39 (0.86-2.45)        | 12 (6.1)       | 1.48 (0.65-3.36)         |
| University                    | 5 (1.8)        | 1                        | 29 (10.2)      | 1                        | 42 (14.8)      | 1                       | 12 (4.2)       | 1                        |
| <b>Own income*</b>            |                |                          |                |                          |                |                         |                |                          |
| Low                           | 3 (8.8)        | <b>6.27 (1.43-27.49)</b> | 7 (20.6)       | 1.93 (0.78-4.72)         | 9 (26.5)       | 2.11 (0.93-4.79)        | 6 (17.6)       | <b>8.60 (2.79-26.53)</b> |
| Middle                        | 4 (1.4)        | 0.95 (0.25-3.57)         | 31 (11.2)      | 0.94 (0.57-1.55)         | 48 (17.3)      | 1.23 (0.79-1.90)        | 20 (7.2)       | <b>3.12 (1.35-7.21)</b>  |
| High                          | 5 (1.5)        | 1                        | 39 (11.9)      | 1                        | 48 (14.6)      | 1                       | 8 (2.4)        | 1                        |
| <b>Partner's income*</b>      |                |                          |                |                          |                |                         |                |                          |
| Low                           | 7 (2.7)        | --                       | 33 (12.5)      | 0.93 (0.49-1.76)         | 44 (16.7)      | 1.13 (0.62-2.05)        | 18 (6.8)       | 1.39 (0.53-3.60)         |
| Middle                        | 4 (1.6)        |                          | 25 (10.3)      | 0.75 (0.38-1.46)         | 40 (16.5)      | 1.12 (0.61-2.05)        | 10 (4.1)       | 0.82 (0.30-2.30)         |
| High                          | 0              |                          | 16 (13.3)      | 1                        | 18 (15.0)      | 1                       | 6 (5.0)        | 1                        |
| <b>Length of relationship</b> |                |                          |                |                          |                |                         |                |                          |
| <b>Mean (SD)</b>              | 4.14 (0.92)    | 0.96 (0.88-1.06)         | 4.71 (4.16)    | 1.0 (0.95-1.05)          | 4.97 (4.11)    | 1.02 (0.98-1.06)        | 3.60 (4.16)    | <b>0.93 (0.87-0.99)</b>  |

SC: Severe Combined; PA: Physical Abuse; EA: Emotional Abuse; H: Harassment; T: total IPV; Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ); \* Singles were omitted from the analysis, because we ask them about current income which might be different from when they were in the relation.



**Figure 5.1. Gender difference in association between own absolute income and different forms of IPV victimization**



**Figure 5.2. Gender difference in association of partner’s absolute income and different forms of IPV victimization**

## **Chapter Six: Leaving an abusive partner and IPV**

This chapter includes a published paper cited as:

Ahmadabadi, Z., Najman, J Williams, G. M., Clavarino, A. M., d'Abbs, P., & Saiepour, N. (2018). Does leaving an abusive partner lead to a decline in victimization? *BMC Public Health* 18, 1-9. <https://doi.org/10.1186/s12889-018-5330-z>



## **Abstract**

**Background and objectives:** This paper investigates gender differences in persistence of intimate partner violence (IPV), for those remaining or leaving an abusive relationship. We followed a sample of males and females to examine whether leaving an abusive partner may alter the continuity of victimization.

**Methods:** Data were taken from the 21 and 30-year follow-ups of the Mater Hospital and University of Queensland Study of Pregnancy (MUSP) in Australia. A cohort of 1265 respondents, including 874 females and 391 males, completed a 21-item version of the Composite Abuse Scale.

**Results:** We found proportionally similar rates of IPV victimization for males and females at both the 21- and 30-year follow-ups. Females who reported they had an abusive partner at the 21-year follow-up were more likely to subsequently change their partner than did males. Harassment and then emotional abuse appeared to have a stronger association for females leaving a partner. For males, a reported history of IPV was not significantly associated with leaving the partner. There was no significant association between leaving (or not) a previous abusive relationship and later victimization, either for male or female respondents.

**Conclusions:** Changing a partner does not interrupt the continuity of victimization either for male or female respondents, and previous IPV victimization remained a determining factor of re-abuse, despite re-partnering.

**Keywords:** intimate partner violence, leave, revictimization

## Introduction

Intimate partner violence (IPV) may occur repeatedly in the context of some intimate relationships (77). There is some evidence to suggest that prior victimization/perpetration is a strong risk factor of further victimization/perpetration (78-81). Although remaining in an abusive relationship is often accompanied by continued victimization, it is unclear whether leaving that relationship and re-partnering leads to a reduced risk of later victimization. Answering this question is relevant to IPV interventions that often aim to encourage the victims to leave their abusive partner, as well more general policies intended to improve outcomes for those affected by IPV (256).

Prior research following those who have previously experienced IPV has been limited and inconclusive. Only a small number of scholars have suggested that changing a partner may reduce IPV perpetration (15, 82) and victimization (83). Capaldi et al (82) found that those who stayed with a partner, reported higher stability in aggressive behaviors compared to those who changed partner. They suggested that IPV is “dyadic in nature” and reinforced by relationships characterized by chronic conflict. It may be that changing a partner and leaving the hostile environment associated with that partner might interrupt destructive patterns of interaction. These results, however, were based upon couples from disadvantaged and at-risk neighborhoods and the findings reported may be confounded by ecological risk factors. In another study of low-income victimized women, leaving an abusive partner was found to decrease the risk of further victimization. Despite investigating a cohort of abused women, this latter study did not clarify whether these women were victimized by the partner they had left or by a new partner or both (83).

A recent body of research has cast doubt on the presumed advantages of leaving an abusive relationship. Interpreting findings from a *life course perspective* suggests that particular periods of the life course may be associated with higher rates of IPV. Characteristics of early adulthood (e.g., instability in emotions, interpersonal relationships, and career orientation) contribute to a greater risk of IPV in this period. Afterwards, developmental changes (e.g., maturing behaviors, personal achievements, interactional skills) may protect individuals from subsequent victimization/perpetration- regardless of leaving or staying with a partner (88-91).

Another group of scholars suggests that IPV perpetration and victimization continues across relationships (15, 60, 80, 84-87). Leaving a prior abusive partner, might arguably increase the risk of more severe IPV victimization, particularly homicide (92). Other than partner-related

characteristics, risk of [re]victimization is partly associated with victim-related factors, which may exist before the early experience of IPV. These factors include lower socio-economic resources and a history of child abuse experienced by the victims. Re-victimization might be exacerbated across relationships because of financial hardship, poor mental health, substance abuse and having children. Relationship break-up is itself a traumatic event, which may involve a long period of exposure to risk and affects further relationships (93-99).

Beside discrepancies in the literature, previous studies in the field have a number of limitations that need to be addressed: First, much of the research is restricted to female victimization (28, 46, 47). Therefore, males' [re]victimization as well as possible effects of leaving an abusive partner for males needs to be determined. Second, there is unresolved debate about gender differences in the consequences of leaving an abusive relationship. One group of scholars focus on the internal (e.g., psychological difficulties) and external (e.g. benefit of their children and economic dependency) barriers which influence females' ability to leave an abusive relationship (93, 100). By contrast, other scholars suggest that due to multiple obstacles (e.g., expectations that males are responsible even for an abusive partner), victimized men may be unwilling to terminate their violent relationships (61, 101). There is inadequate evidence about the extent to which different forms of IPV may predict leaving an abusive partner. Although physical and emotional abuse are mostly considered to be correlated, they might have different consequences (102). Further, pre-existing factors may confound the association between prior and later victimization, and the consequences of leaving an abusive relationship.

This paper uses data from a long running longitudinal study to investigate whether there are gender differences in patterns of IPV continuity after leaving an abusive partner. We examine the association between different forms of IPV victimization and leaving an abusive partner. We also test whether change of partner reduces further victimization and whether there are gender differences in IPV in these repartnered relationships.

## **Methods**

### **Participants**

Data for the current study were taken from the Mater Hospital and University of Queensland Study of Pregnancy (MUSP) in Australia (184), Baseline data were collected at the first antenatal visit to the Mater Public Hospital in Brisbane between 1981 and 1983 from 7223

consecutive women. Additional assessments were conducted when the study children were 6 months, 5 years, 14 years, 21 and 30 years old. The Mater Hospital and the University of Queensland Ethics committees approved this study. The present analysis uses data from the 21- and 30-year follow-up surveys. At these phases of the study, written informed consent was obtained from the participants. The sample was derived from 3271 and 2401 persons who participated in the 21 and 30-year follow-ups. A cohort of 1265 cases including 874 females and 391 males who participated at both phases and had a partner at the 21-year follow-up comprised the study sample. Some 69.1% of the sample were females. The mean age at the 21-year follow-up was 20.61 (SD±0.84) (Males = 20.61 ± 0.87; Females = 20.61 ± 0.83) and at the 30-year follow-up was 30.28 (SD± 1.12) (Males = 30.38 ± 1.17; Females = 30.23 ± 1.10). Participants' racial background was Caucasian (94.0%), Asian (3.1%) and Aboriginal/Torres Strait Islander (2.9%). In the 21-year follow-up 41.2% of respondents were single and were excluded from further analysis.

## **Measurement**

### **Intimate partner violence**

We measured IPV at 21 and 30 years using a modified version of the Composite Abuse Scale (CAS) (37, 38). The CAS is a validated and widely used measure to assess the frequency of experiences of violence in intimate relationships (in either current or previous relationships) (197, 198). It should be noted that despite similar items, these two measures have a difference in the timing of recall of each item: at 21 years, respondents were asked to recall “ever happened” incidences of IPV, but at 30 years, they were asked to recall their “last year” relationships. Both questionnaires ask about respondents’ current or previous relationships.

The scale consists of same 21 items ( $\alpha = 0.94$  for the 21 and 0.93 for the 30 year old follow-up) and 4 subscales: severe combined abuse (has two items including rape and assault with a knife or weapon; possible score 0-10), emotional abuse ( $\alpha = 0.91$  for 21 and  $\alpha = 0.90$  for 30 years; has 11 items that include keeping apart from friends and family, insults, blame and verbal violence; possible score 0-55), physical abuse ( $\alpha = 0.91$  for 21 and  $\alpha = 0.87$  for 30 years; has 4 items which include kicking, slapping, hitting; possible score 0-20) and harassment ( $\alpha = 0.83$  at 21 &  $\alpha = 0.72$  at 30 years; comprises 4 items including harassing at work and over the telephone; possible score 0-20). Response options are never (=0), only once (=1), several times (=2), once a month (=3),

once a week (=4) and daily (=5) (38). After adding the scores of each subscale, recommended cut-offs were applied (severe combined abuse ( $\geq 1$ ), physical abuse ( $\geq 1$ ), emotional abuse ( $\geq 3$ ), and harassment ( $\geq 2$ ). If a respondent's score is equal or higher than the cut-off score, they are considered as *abused*. Finally, respondents who experienced at least one type of IPV were recoded into *abused* and those who did not report any type of IPV were categorized into *non-abused*.

### **Changing partner at 21 years**

At 30 years, length of relationship was measured with a question: *for how long (in years) has your current live-in relationship lasted* (ranged from one month to 17 years). Average length of relationship for females was 7.3 years ( $\pm 3.8$ ) and for males was 6.3 years ( $\pm 3.6$ ). Length of relationship was subtracted from the duration between two surveys and categorized into *those who had stayed with the same partner since the 21-year follow-up* and *those who had changed partners after the 21-year follow-up*.

### **Covariates**

We adjust for a number of demographic and personal variables that may be related to both early and later IPV victimization as well as leaving a relationship. Previous research suggests that [re]victimization and staying in an abusive relationship, are related to the following factors: marital status, lower socio-economic status, presence of children, history of child abuse, and poor mental health (13, 63-65, 93, 223).

All participants were about 21 and 30 years of age at each follow-up, so we did not adjust for the age differences in the cohort. Marital status was measured by the question *what is your present marital status*. Categories comprised *single/never married, living together, married or separated*. Education levels included *high school or less, diploma, college, and university*. Having a child was dichotomized into *yes* and *no*. Participants were asked about their family income, which was defined as gross income before tax. Then using the Australian National Poverty Line as a guide (257), we categorized those respondents whose income was at or below the poverty line into *low income* and the rest into *higher income*. For measuring history of sexual child abuse 21-year respondents were asked whether they had experienced being pressured or forced to have sexual contact before they were 16 years. Depression was assessed using the Center for Epidemiologic Studies Depression Scale (CES-D) which is a widely-used self-report scale (258).

It contains 20 items measuring the current level of depressive symptoms over the past week (e.g., feeling hopeless, restless sleep, poor appetite) in a general population ( $\alpha = 0.88$ ). Response options range from 0 (rarely/less than 1 day) to 3 most of the time/5-7 days). Scores range from 0 to 60, with high score indicating a greater level of depressive symptoms. Based on the recommended cut-off score ( $>16$ ), respondents at 21-year follow-up were grouped into two categories: non-depressed and depressed (259, 260). Sexual orientation at 30 years was measured using a single question *during the last 12 months have your sexual partners been:* only the opposite sex, only the same sex and both sexes. We then categorised respondents into two categories of *heterosexual* and *homo/bisexual*.

## Data analysis

In table 6.1, the prevalence of each type of IPV was determined across the gender groups, chi square and t-test were used to test the significance of differences. In table 6.2, we performed a univariable logistic regression analysis for the association (expressed as the odds ratios with 95 % confidence intervals) between each covariate and IPV at 30 years. In figure 6.1, we compared percentages of abused or not abused males and females, based on their choice to stay or leave, using chi square test and set a  $p\text{-value} < 0.05$  for significance. In table 6.3, univariable and multivariable logistic regression models were used to examine the relationship between forms of IPV at 21 years and leaving the then abusive partner, separately for males and females. Finally, an interaction term (IPV at 21  $\times$  leaving/staying) was used to examine the effect of staying/changing an abusive partner on the association between IPV victimization at 21 and 30 years. Statistical analyses were carried out using STATA-13 and SPSS-24 statistical software packages.

## Results

Among 1265 21-year-old participants who were in a relationship, 6.1% were married and 93.9% were living together. 11.1% of respondents had children.

Table 6.1 presents comparative information for males and females. At 21 years females are more likely to have children, to be unemployed, depressed, and with a low income. Females also report higher rates of past childhood sexual abuse. At 21 years, severe combined victimization and harassment (borderline significance;  $p = 0.07$ ) is experienced more often by females. By contrast,

21-year-old males more frequent report being physically abused. At 30, there are no gender differences in any form IPV.

Table 6.2 presents the univariable associations between covariates and changing partner of 21-year-old and IPV victimization at the 30-year follow-up for males and females. Depression and unemployment at 21 years are significant predictors of IPV at 30 years in both males and females. Males with children and females with a history of child abuse more often report the experience of IPV at 30 years. Table 6.2 also shows that except for a history of sexual child abuse, none of study variables is statistically associated with changing a partner for males. Females who cohabit, who have depression and have no child are more likely to have changed partner by the 30-year follow-up.

A further detailed analysis (data not shown) suggests that although the association between having children and females' leaving their partners is negative (Table 6.2), when mothers experience emotional abuse (having children  $\times$  EA), the odds of changing partner increases [OR= 2.97 (95% CI= 1.13-7.83)]. We also found that while there is no significant association between females' low income and leaving a partner [OR= 1.0 (95% CI= 0.62-1.58)], low income women who experience physical abuse (low income  $\times$  PA), are significantly less likely to leave the abusive partner [OR= 0.43 (95% CI=0.20-0.94)].

Table 6.3 presents the univariable and multivariable associations between forms of IPV and changing a partner. Model 1 (unadjusted odds ratio) and Model 2 (adjusted for demographic variables) suggest that with the exception of severe combined abuse, females who experience physical abuse, emotional abuse and harassment at 21 years are more likely to change their partners. For males, there is no statistically significant association between the IPV and leaving their partner. The results remain significant after adjusting for the study variables (Table 6.3).

Figure 6.1 provides a flow diagram of the pattern of victimization-revictimization by change of partner for males and females. For males, we note that the percentage who changed partners between the 21- and 30-year follow-ups was similar, irrespective of whether they met the criteria for experiencing IPV. For males who had reported IPV at 21 years and changed partners, 18.6% reported experiencing IPV at the 30-year follow-up, a proportion below the 31.9% of abused males at 21 who remained with their partners (borderline significant,  $p=0.08$ ). For females we note that 55.7% of those experiencing IPV changed partners, while 42.9% of those not experiencing IPV changed partners ( $p<0.001$ ) by the 30-year follow-up. Females who reported

IPV at 21 years and remained with their partners, were no more likely to be abused at 30 years compared to females who had changed partners (22.4% vs. 17.8%,  $p = 0.35$ ). A further interaction term between the experience of IPV at 21 (non-abused/abused) as *primary variable* and change of partner (stay/change) as *moderator* was conducted to predict the experience of IPV at 30 (non-abused/abused) separately for females and males (data not shown in a table). Consistent with the findings in figure 6.1, this analysis showed no association between leaving an abusive relationship and later IPV victimization, neither for females nor for males. For females, there was no significant difference in experiencing IPV at 30 years between abused females who changed their abusive partners and abused females who stayed (OR= 0.77, CI<sub>95</sub>= 0.44-1.35). In contrast, the primary effect of experiencing IPV at 21 remains a robust significant predictor for experiencing IPV at 30 years. For males, no statistically significant difference in experiencing IPV at 30 years is observed between males who left their abusive or non-abusive partners (OR= 0.49, CI<sub>95</sub>= 0.23-1.09). These findings were independent of a range of potential confounding factors.

## Discussion

The current study has compared males and females in the continuity of IPV victimization at 21 and 30 years of age. A cohort of 1260 cases was followed to determine whether early IPV victimization was associated with leaving the prior partner and subsequent IPV. In addition, we followed both males and females to examine how a change of abusive partners may alter the continuity of victimization.

The results of this study suggest that rates of IPV victimization declined from 21- to the 30-year follow-up (41.1% vs. 20.1%;  $p < 0.0001$ ). Despite this decline in the IPV rate across time, there was a robust significant association between early victimization and re-victimization for both males and females. We also found that a substantial proportion of females (55.7%) and males (51.0%) who report experiencing IPV at 21 years left their partners ( $p > 0.05$ ). Victimized males at 21 years were no more likely to change partners, than those not experiencing IPV at 21 years. These findings were not affected by any of the sociodemographic factors that were considered. Harassment and then emotional abuse appeared to have a higher association with leaving partner in females. Relationship change did not appear to prevent males and females from the continued experience of victimization. We found experiencing IPV at 21 remains a robust significant predictor for experiencing IPV at 30 years, regardless of whether there is a change of partner.



The observed decline in IPV victimization from 21 to 30 years may reflect the longer period in which 21-year respondents were asked about their experiences, compared to that of 30 years (last year). Nevertheless, this finding is consistent with a *life course perspective*, which suggests higher rates of IPV victimization/perpetration in emerging adulthood (ages 18-25). Features of this life course stage include instability (in emotions, living residence and career) and tendency to postpone adults' responsibilities (e.g., commitment and parenting), which may contribute to a higher rate of IPV victimization at this period (89-91). Transition to adulthood is associated with long-term commitments, family formation, pro-social networks, employment, developing an independent personal identity and less risk-taking and anti-social behaviors (90).

A relationship between early and further victimization supports previous research, which suggests that earlier victimization may be taken to mean violence is considered a normal aspect of intimate relationships. Prior experiences of family violence may lead to cumulative disadvantages (mentally and socially) which negatively affect the nature of future relationships (81, 91, 261-264).

Slightly higher rates of leaving the abusive partner in females seems to be consistent with other research indicating that females have disproportionately higher rates of relationship termination than males (61). Considering different forms of IPV, the experience of harassment and then emotional abuse had a stronger association with leaving an abusive partner. This may be explained by females' emotion-focused preferences and expectations from an intimate relationship (238). Being in a relationship, characterised by harassment, controlling behaviors and hurting feelings threatens females' well-being, possibly more than the experience of physical abuse (102, 265). Consequently, females may more often decide not to remain in such a relationship.

We also found no support for the effectiveness of leaving an abusive partner. This finding is in line some previous studies, which find no significant difference between those who stayed or changed partners (86, 87). However, our results differ from those of Short, et al (15) which showed that re-partnering with a less aggressive woman disrupts males' psychological and physical aggressive behaviors.

A body of research has shown that earlier victimization may lead to long-lasting consequences for survivors like fear, posttraumatic stress, anxiety and disempowerment (266). Survivors may carry negative outcomes of earlier victimization to the future relationships. Further research might explore mediators and moderators between early and later IPV experiences. A third explanation for these findings might focus on socio-cultural factors, including acceptance of

violence and gender role norms, which remain across relationships (47). It may be the case that leaving a violent partner may not necessarily mean leaving the structural context of intimate partner violence. Lack of available social support for those who leave their abusive relationships may explain the ineffectiveness of leaving.

## **Conclusions**

This study has several strengths: IPV was assessed by a validated measure at 21 and 30 years. We also used the longitudinal data from a large prospective cohort of both males and females and adjusted for a range of confounding factors. We have found that leaving an abusive relationship makes no significant difference to experiencing further IPV and early IPV victimization remains the strongest predictor of re-abuse, despite changing partner. The current work has extended existing knowledge about IPV victimization experienced in relationships with different partners. Our findings raise the question of whether there are characteristics of those affected by IPV and socio-cultural factors, not measured in this study, that need to be identified and addressed if IPV and its consequences are to be reduced.

The findings of this study have significant implications for IPV reduction programs: first, gender differences in predictors of IPV and in its association with leaving a partner raise the need for *gender specific IPV interventions*. For example, we found similar rates of IPV for 30-year-old males and females and no association between the experience of IPV and males' leaving their partner. These findings lead to a recommendation that gender-specific prevention efforts should put greater emphasis on males' IPV victimization and their decision to stay in an abusive relationship.

The finding that early IPV victimization remained a determining factor of revictimization highlights the need for *early IPV prevention*. If it is possible to prevent first victimization experiences, then the subsequent victimization may be avoided (15). More importantly and before any intimate relationship and violence occurs, comprehensive primary prevention should address protective/risk factors of IPV. Continued efforts are needed to prevent childhood sexual abuse as an important risk factor for IPV in adulthood. We found that having a child at a young age (21 years old) was a strong risk factor for further males' victimization. This finding can be used to develop targeted interventions aimed at early fatherhood. Care of children exposed to IPV and their health and well-being should be acknowledged in IPV interventions.

IPV interventions, which protect and assist those affected by IPV, should address complex needs of survivors. For example, in the current study, depression was a significant predictor of both changing partner and IPV victimization. Clinical intervention efforts are required to target pre-existing as well as subsequent mental health problems of victims to minimize the risk of further abuse. Having a low income was also a significant barrier against abused females to leave an abusive partner. IPV interventions should therefore consider the policy of women's financial empowerment (96).

This study has a number of limitations: The data were collected using a self-report measure from one partner, which may associate with self-serving bias or over-reporting negative behaviors of partners. In addition, at 21 years respondents reported their life-time IPV in either their current or previous relationships, while at the 30-year follow-up, they described their most recent relationships during last 12 months (37). Males' lower sample size may decrease statistical power to detect differences for males. Another issue is that MUSP used a population sample which might not include those who have experienced very severe levels of intimate partner violence (31). The possibility of endogeneity has not been addressed in the study. There are a number of confounders that have not been considered (given the sample size there was a limit to the variables included in the final model). Further, some of the possible cause-effect associations could not be tested, for example, while the study has very detailed data on early life course aggression, introducing this detail would require a different paper. Given that the key research question is whether there is a reduction in IPV in the affected person leaves their partner, the findings are consistent and unlikely to change with the introduction of additional variables.

**Table 6.1. Gender differences in study variables**

|   | Male             | Female    | $\chi^2$ (p-value)       |
|---|------------------|-----------|--------------------------|
|   | %                |           |                          |
| <b>Marital status at 21 yr/fu <sup>a</sup></b>                                | (n=388)          | (n=872)   | <b>14.1 (&lt; 0.001)</b> |
| Living together/bf-gf   | 97.7             | 92.2      |                          |
| Married   | 2.3              | 7.8       |                          |
| <b>Have children at 21 yr/fu</b>  | (n=386)          | (n=870)   | <b>22.4 (&lt; 0.001)</b> |
| No  | 95.3             | 86.3      |                          |
| Yes   | 4.7              | 13.7      |                          |
| <b>Education level at 21 yr/fu</b>  | (n= 384)         | (n= 865)  | 3.3 (0.19)               |
| University  | 3.9              | 5.0       |                          |
| College   | 21.6             | 25.5      |                          |
| High School & less  | 74.5             | 69.5      |                          |
| <b>Employment at 21 yr/fu</b>   | (n=384)          | (n=867)   | <b>43.7 (&lt; 0.001)</b> |
| Full time   | 57.3             | 37.7      |                          |
| Part time   | 28.6             | 37.4      |                          |
| Unemployed  | 14.1             | 24.9      |                          |
| <b>Income at 21 yr/fu</b>   | (n=388)          | (n=871)   | <b>13.3 (&lt;0.001)</b>  |
| Higher  | 86.1             | 77.2      |                          |
| Low   | 13.9             | 22.8      |                          |
| <b>Depression (CES-D) at 21 yr/fu</b>   | (n=386)          | (n=870)   | <b>11.2 (0.001)</b>      |
| No  | 85.8             | 77.6      |                          |
| Yes   | 14.2             | 22.4      |                          |
| <b>History of sexual abuse</b>  | (n=386)          | (n= 869)  | <b>11.2 (0.001)</b>      |
| Non-abused  | 77.2             | 67.9      |                          |
| Abused  | 22.8             | 32.1      |                          |
| <b>Sexual orientation at 30 yr/fu:</b>  | (n=366)          | (n=822)   | 1.04 (0.31)              |
| Heterosexual  | 94.8             | 96.1      |                          |
| Homo/bisexual   | 5.2              | 3.9       |                          |
| <b>Change the partner of 21-year-old</b>                                      | (n= 305)         | (n= 698)  |                          |
| Yes   | 49.5             | 48.6      | 0.08 (0.79)              |
| <b>IPV victimization at 21 yr/fu <sup>b</sup></b>                             | (n= 383)         | (n= 868)  |                          |
| SC  | 2.9              | 6.5       | <b>6.7 (0.01)</b>        |
| PA  | 39.6             | 33.4      | <b>4.3 (0.04)</b>        |
| EA  | 27.2             | 31.0      | 1.9 (0.17)               |
| H   | 17.7             | 22.1      | <b>3.2 (0.07)</b>        |
| <b>At least one type</b>  | 48.6             | 44.9      | 1.4 (0.23)               |
| <b>IPV victimization at 30 yr/fu <sup>c</sup></b>                             | (n= 378)         | (n= 859)  |                          |
| SC  | 0.8              | 0.8       | 0.01 (0.96)              |
| PA  | 10.3             | 9.2       | 0.37 (0.54)              |
| EA  | 16.1             | 16.1      | 0.00 (1.0)               |
| H   | 7.1              | 6.5       | 0.16 (0.7)               |
| <b>At least one type</b>  | 20.9             | 18.6      | 0.9 (0.87)               |
| <b>Length of current relationship at 21 yr/fu</b><br>(Range: 1 month-8 years) | <b>Mean (SD)</b> |           | <b>t-test</b>            |
|   | 1.6 (1.3)        | 2.0 (1.6) | <b>4.2 (&lt; 0.001)</b>  |

<sup>a</sup> Respondents with no partner at 21 [single ever (n= 879) and single now before in relationship (n=12)] were excluded from the analysis; <sup>b</sup> IPV victimization at 21 years refers to life-time experiences; <sup>c</sup> IPV victimization at 30 refers to last year experiences; **Abbreviations:** IPV: Intimate partner violence; yr/fu: year follow-up; SC: Severe Combined; PA: Physical Abuse; EA: Emotional Abuse; H: Harassment

**Table 6.2. Univariable logistic regression analysis for study covariates and changing partner of 21-year-old and IPV at 30-year follow-up (OR; CI<sub>95%</sub>)**

| Predictors <sup>a</sup>                 | Change the partner of 21-year-old<br>(stay=ref) |                         | IPV victimization at 30 years <sup>c</sup><br>(no abuse=ref) |                         |
|---|---|-------------------------|--|-------------------------|
|   | Male (N= 306)                                   | Female (N= 700)         | Male (N= 380)  | Female (N= 861)         |
| <b>Marital status at 21 yr/fu</b>       |   |                         |  |                         |
| Cohabiting (Married=ref)                | <sup>d</sup>                                    | <b>4.41 (2.25-8.67)</b> | 0.92 (0.19-4.50)   | 0.88 (0.48-1.62)        |
| <b>Have children at yr/fu</b>           |   |                         |  |                         |
| Yes (No=ref)                            | <sup>d</sup>                                    | <b>0.54 (0.34-0.84)</b> | <b>3.0 (1.16-7.74)</b>                                       | 1.30 (0.80-2.06)        |
| <b>Education at 21</b>                  |   |                         |  |                         |
| <High School (higher=ref)               | 1.37 (0.84-2.27)                                | 1.29 (0.94-1.78)        | <b>0.56 (0.33-0.96)</b>                                      | 1.23 (0.84-1.80)        |
| <b>Employment at yr/fu</b>              |   |                         |  |                         |
| Unemployed (employed=ref)               | 1.09 (0.57-2.11)                                | 0.80 (0.56-1.14)        | <b>2.0 (1.05-3.76)</b>                                       | <b>1.87 (1.29-2.71)</b> |
| <b>Income at yr/fu</b>                  |   |                         |  |                         |
| Low (higher= ref)                       | 1.51 (0.78-2.94)                                | 0.98 (0.69-1.39)        | 1.12 (0.56-2.54)   | 1.30 (0.88-1.92)        |
| <b>Depression at 21 yr/fu</b>           |   |                         |  |                         |
| Yes (No=ref)                            | 1.45 (0.74-2.83)                                | <b>1.61 (1.11-2.33)</b> | <b>2.39 (1.28-4.46)</b>                                      | <b>1.92 (1.32-2.80)</b> |
| <b>Childhood sexual abuse</b>           |   |                         |  |                         |
| Yes (No=ref)                            | <b>1.80 (1.02-3.15)</b>                         | 0.98 (0.71-1.35)        | 1.54 (0.88-2.70)   | <b>1.54 (1.08-2.19)</b> |
| <b>Sexual orientation (at 30 years)</b> |   |                         |  |                         |
| homo/bisexual (heterosexual=ref)        | --  | --                      | 1.50 (0.52-4.32)   | 1.34 (0.57-3.17)        |
| <b>IPV at 21 yr/fu<sup>b</sup></b>      |   |                         |  |                         |
| Yes (No=ref)                            | 1.11 (0.71-1.75)                                | <b>1.67 (1.24-2.26)</b> | <b>1.73 (1.04-2.86)</b>                                      | <b>2.06 (1.45-2.91)</b> |

Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ).<sup>a</sup> Each variable is modelled separately for males and females; <sup>b</sup> IPV victimization at 21 years refers to at least one type IPV ever; <sup>c</sup> IPV victimization at 30 refers to at least one type IPV during last year; <sup>d</sup> Due to insufficient sample size, the analysis was not performed;

Abbreviations: IPV: Intimate partner violence; yr/fu: year follow-up; OR: odds ratio; CI: confidence intervals.

**Table 6.3. Univariable and multivariable logistic regression analysis for forms of IPV at 21 years predicting stay/change the partner of 21-year-old by 30 years, separately for males and females**

|   | Males         |               |                      |                      | Females        |                |                                   |                                   |
|---|---------------|---------------|----------------------|----------------------|----------------|----------------|-----------------------------------|-----------------------------------|
|   | n (%)         |               | OR (95% CI)          |                      | n (%)          |                | OR (95% CI)                       |                                   |
|   | Stay(ref)     | Change        | Model 1 <sup>b</sup> | Model 2 <sup>c</sup> | Stay(ref)      | Change         | Model 1 <sup>b</sup>              | Model 2 <sup>c</sup>              |
| <b>Individual IPV victimization at 21 yr/fu (yes=ref)<sup>a</sup></b> |               |               |                      |                      |                |                |                                   |                                   |
| SC <sup>d</sup>   | 3<br>(30.0%)  | 7<br>(70.0%)  | 2.43<br>(0.62-9.59)  | --                   | 23<br>(54.8%)  | 19<br>(45.2%)  | 0.87<br>(0.46-1.62)               | 0.70<br>(0.36-1.38)               |
| PA  | 56<br>(49.1%) | 58<br>(50.9%) | 1.09<br>(0.69-1.74)  | 1.23<br>(0.73-2.09)  | 110<br>(44.9%) | 124<br>(55.1%) | <b>1.47</b><br><b>(1.07-2.02)</b> | <b>1.54</b><br><b>(1.08-2.20)</b> |
| EA  | 38<br>(49.4%) | 39<br>(50.6%) | 1.06<br>(0.63-1.79)  | 0.93<br>(0.52-1.65)  | 88<br>(42.3%)  | 120<br>(57.7%) | <b>1.68</b><br><b>(1.21-2.34)</b> | <b>1.66</b><br><b>(1.16-2.38)</b> |
| H   | 25<br>(47.2%) | 28<br>(52.8%) | 1.18<br>(0.65-2.13)  | 0.95<br>(0.49-1.84)  | 52<br>(35.6%)  | 94<br>(64.4%)  | <b>2.26</b><br><b>(1.55-3.30)</b> | <b>2.12</b><br><b>(1.40-3.20)</b> |
| <b>At least one type</b>  | 70<br>(49.0%) | 73<br>(51.0%) | 1.11<br>(0.71-1.75)  | 1.25<br>(0.76-2.06)  | 136<br>(44.3%) | 171<br>(55.7%) | <b>1.67</b><br><b>(1.24-2.26)</b> | <b>1.70</b><br><b>(1.22-2.36)</b> |
| <b>Multiple IPV victimization at 21 yr/fu</b>                         |               |               |                      |                      |                |                |                                   |                                   |
| None (ref)  | 82<br>(51.6%) | 77<br>(52.1%) | 1                    | 1                    | 221<br>(57.1%) | 166<br>(42.9%) | 1                                 | 1                                 |
| One type  | 34<br>(47.9%) | 37<br>(52.1%) | 1.16<br>(0.66-2.03)  | 1.67<br>(0.89-2.15)  | 56<br>(50.0%)  | 56<br>(50.0%)  | 1.33<br>(0.87-2.03)               | 1.35<br>(0.86-2.11)               |
| Two and more  | 36<br>(50.0%) | 36<br>(50.0%) | 1.07<br>(0.61-1.86)  | 0.94<br>(0.50-1.75)  | 80<br>(41.0%)  | 115<br>(59.0%) | <b>1.91</b><br><b>(1.35-2.71)</b> | <b>1.97</b><br><b>(1.34-2.92)</b> |

Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ). <sup>a</sup> Each form of IPV is modelled separately for males and females. <sup>b</sup> Unadjusted odds ratios; <sup>c</sup> Adjusted for marital status, having children, education, employment, income, history of childhood sexual abuse, and depression, all measured at 21 years. In this model, IPV forms are not mutually exclusive

<sup>d</sup> Due to males' insufficient sample size in SC, multivariate regression analysis was not conducted.

Abbreviations: IPV: Intimate partner violence; yr/fu: year follow-up; SC: Severe Combined; PA: Physical Abuse; EA: Emotional Abuse; H: Harassment

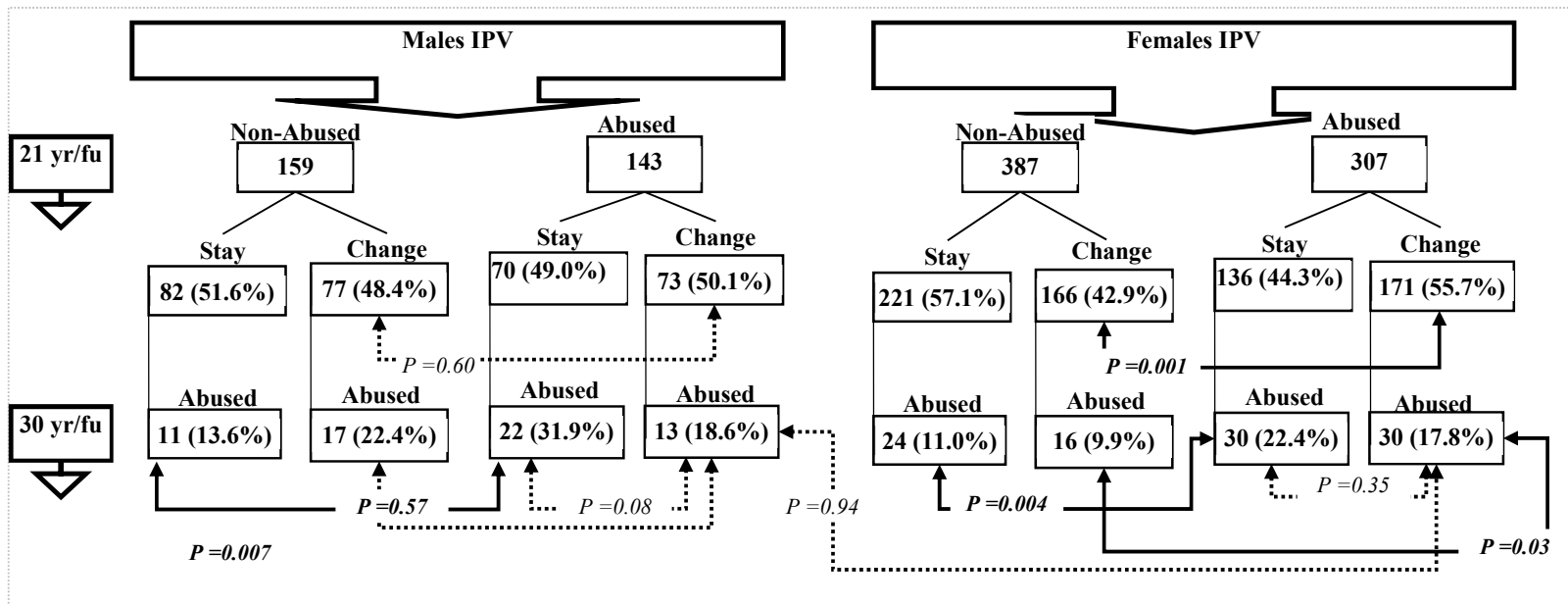


Figure 6.1. Gender differences in continuity of IPV at 21- and 30-year follow-ups by staying with/changing partner. Solid arrows represent statistically significant differences between the groups ( $p < 0.05$ ). Dashed arrows indicate non-significant associations ( $p > 0.05$ ). P-values were obtained from the chi-square test.

## **Chapter Seven: IPV and offspring's childhood maltreatment**

This chapter includes a published paper cited as:

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## **Abstract**

**Background and objectives:** There is some limited evidence of an association between maternal intimate partner victimization (IPV) and children's experience of maltreatment. Using data from a longitudinal study, we examine whether this relationship is independent of range of potential confounders including socio-economic, familial and psychological factors.

**Method:** Data were taken from the 14 and 30-year follow-ups of the Mater-University of Queensland Study of Pregnancy (MUSP) in Australia. A subsample of 2064 mothers and children (59.0% female) whose data on maternal IPV and child maltreatment was available, were analyzed.

**Results:** In families with maternal IPV, two in five children reported being maltreated, compared to one in five children maltreated in families without maternal IPV. Except for sexual maltreatment, which was consistently higher in female offspring, there was no gender differences in experiencing different types of maltreatment in families manifesting maternal IPV. Although both males and females were at increased risk of child maltreatment in families where mothers were victimized by their male partners, male children were more likely to be emotionally maltreated. The main associations were substantially independent of measured confounders, except for father's history of mental health problems, which attenuated the association of maternal IPV victimization and male offspring's physical abuse.

**Conclusion:** Our findings confirm that there is a robust association between maternal IPV and child maltreatment. Both maternal IPV victimization and child maltreatment co-occur in a household characterized by conflict and violence. Consequences of IPV go beyond the incident and influence all family members. Efforts to reduce child maltreatment may need to address the greater level of IPV associated with the cycle of family violence.

**Keywords:** maternal intimate partner violence, child maltreatment

## Introduction

Intimate partner violence (IPV) and child maltreatment are major public health concerns worldwide (4, 267, 268). There are controversies about whether these phenomena are distinct, causal, sequential, or co-occurrent (269). Children's exposure to parents' IPV has been described as a type of child maltreatment (270). Literature about the association between IPV and child maltreatment has mostly focused on adult experiencing IPV as a consequence of childhood maltreatment and not vice versa (165, 271, 272). Our knowledge about whether IPV victimization might be associated with or predicts child maltreatment is limited (273).

Two major approaches have been developed to explain *domestic violence*, which includes both partner-to-partner and parent-to-child, violence: one is the feminist perspective (28, 30, 46, 47) which views the domestic violence essentially *male-perpetrated and* a reflection of unequal power relationships in the family. From this perspective, gendered social norms are at the intersection of intimate partner violence and child abuse (274). An alternative approach is the *gender symmetry model* of family violence, which focuses on bidirectional and common couple violence and suggests that both men and women engage in domestic violence (40, 50, 54, 229).

Given pathways to child maltreatment are complex (275), the association between parents' IPV and their children's experience of maltreatment may reflect a broader context for both exposure and outcomes of interest. IPV and child maltreatment may occur as consequences of common social, environmental, familial or individual risk factors (171). These different conceptual orientations can be incorporated into a three-level social-ecological model:

At the societal level are social, cultural and economic factors, which create a context for family violence. Beside gender inequality, limited or unequal resources that family members possess (e.g., income or education) may enhance competition, disagreement and abuse (Resource theory; 107, 109, 276). Stressful life events might contribute to a sense of frustration and powerlessness, diminish family's coping mechanisms, and ability to problem solve and contribute the level of interpersonal violence (Family stress theory; 277, 278). Social isolation and living in a non-supportive, disadvantaged and high-crime residential neighbourhood is associated with a greater risk of family violence (Social disorganization theory; 279, 280).

The familial-level, risk factors for spousal and child abuse include marital instability, changes in family structure, single-parent or step families and large family size (Family composition perspective; 176, 177). It has been suggested that members of a fragile, incomplete

and transitional household experience difficulties in attachment, communication, adjustment and conflict resolution (178, 281).

Finally are individual characteristics including age, psychopathology and behavioural factors (282, 283). Violence perpetration – toward a partner or children- is associated with poor psychological health including depressive symptoms, anxiety, impulsivity, and emotional dysregulation (181, 284). IPV victimization may lead to devastating and long-lasting outcomes including psychological impairment (9, 227). There is evidence showing that women’s poor mental health may be an independent risk factor for partner’s violence (285, 286). In addition, some behavioural difficulties manifested by children, including aggressive behaviors or attention deficit hyperactivity disorder (ADHD) may be less tolerated by the parents, especially those involved in IPV, and place children at increased risk of maltreatment. These problems may also stimulate stress and contribute to conflict and violence in the family (287).

Although the literature suggests that socio-economic, familial and individual risk factors may all contribute to IPV and child abuse (182), no empirical study has been carried out to test this possibility. Understanding the nature of the association between maternal IPV victimization and child maltreatment should contribute to better efforts and resources to initiate successful child maltreatment prevention (284). There is increasing concern that despite the existence of a range of programmes for the reduction of child maltreatment, effective interventions targeted at reducing parental violence are not easily found (288).

Previous research has a number of limitations that need to be addressed: An influential body of the relevant literature has been based on reports of government agencies or the clinical settings, neither of which comprises a representative sample of the population (244, 289). Moreover, concerns have been raised about the accuracy of retrospective reports of inter-parents’ violence made by children and that there is a need to use women’s own reports of victimization (290, 291). Importantly, evidence about gender differences in the association of maternal IPV victimization and child maltreatment is complicated and inconsistent (292, 293). With the exception of sexual abuse, which is more often experienced by female children (294), gender differences in other forms of child maltreatment have not consistently been reported (295). Particularly, it is still not known whether male and female offspring are maltreated differently in a family characterized by maternal victimization.

Using data from a longitudinal birth cohort study of a large population-based sample, this research investigates the association between maternal IPV victimization in a heterosexual relationship and child maltreatment, separately for male and female offspring. We also examine

whether this association is independent or reflects a range of potential confounders including socio-economic, familial and psychological factors.

## **Method**

### **Participants**

We used data from the Mater Hospital and University of Queensland Study of Pregnancy (MUSP) (296). MUSP is a prospective study of 7223 consecutive women and their offspring who were recruited initially at their first antenatal visit to the Mater Public Hospital in Brisbane between 1981 and 1983. The cohort was followed up when the study children were 6 months, 5 years, 14 years, 21 and 30 years old. At each phase of the study, written informed consent was obtained from mothers and /or their children. The analyses for the present study were conducted on the data from baseline, 5, 14- and 30-year follow-ups. At the 14-year follow-up, 4444 mothers completed questionnaires about their occupational, financial and marital status as well as their own experience of IPV. At the 30-year follow-up, 2425 offspring completed the Childhood Trauma Questionnaire (202). The main analysis for this study was conducted on a subsample of 2064 mothers and children whose data on IPV victimization and child maltreatment was available. Overall 59.0% of the offspring participants were females and the mean age was 30.30 (SD = 1.13). The average age of mothers at the 14-year follow-up was 39.8 years (SD = 4.9).

### **Measurement**

#### **Maternal IPV victimization**

At the 14-year follow-up, mothers completed a 7-item questionnaire about their last year experiences of victimization by a male partner. They were asked whether their partners had done any of the following during a disagreement: yelled at, insulted, sulked or refused to talk, threw something at, pushed grabbed or shoved, tried to hit and hit then. These items are taken from other measures of domestic violence, such as the Conflict Tactics Scale (200). Response options comprised never (=1), sometimes (=2) and often (=3). Items were summed and averaged ( $\alpha=0.70$ ; mean: 1.31 (SD= 0.2)) and cases with score one standard deviation above the mean ( $\geq 1.51$ ) were considered as *victimized*.

#### **Childhood Trauma Questionnaire**

For measuring child maltreatment, we used the Childhood Trauma Questionnaire (CTQ-SF) (201, 202). The CTQ is a retrospective and self-administered questionnaire, which

has been used worldwide. It has good psychometric properties in general population and clinical samples (201-203). It contains 25 items to measure five dimensions of childhood maltreatment: emotional abuse (5 items including being hated, hurt or insulted;  $\alpha$  in the current study =0.85), physical abuse (5 items including being beaten, bruised or punished with object;  $\alpha$ = 0.76), sexual abuse (5 items including being sexually touched, molested or abused;  $\alpha$ =0.95), physical neglect (5 items including not having enough food or wearing dirty clothes;  $\alpha$ =0.55), and emotional neglect (5 items including not felt loved or important or close to family members;  $\alpha$ =0.89). Participants were asked to respond to each item with regard to “when they lived with parents”. Response options comprise from never (=1) to very often (=5), producing scores of 5 to 25. We used the recommended cut-off scores to categorize cases into abused and not-abuse (emotional abuse ( $\geq 13$ ), physical abuse ( $\geq 10$ ), sexual abuse ( $\geq 8$ ), emotional neglect ( $\geq 15$ ) and physical neglect ( $\geq 10$ ). We combined two forms of neglect to have a more stable and consistent measure of child maltreatment.

### **Possible Confounders**

#### **Socio-economic factors**

Maternal education was measured at first clinic visit and included high school or less, diploma, college, and university. At the 14-year follow-up mothers were asked about their own and their partner’s gross income. The Australian poverty line at each phase was used to categorize the pooled family income into two categories of poor and higher. Present occupational status was separately asked for mothers and their partners. Social problems of the residential environment at 14 years was assessed using the question *How much are the following a problem in the area where you live?* Problems included vandalism, house burglary, car theft, drug abuse, violence on streets, unemployment, noisy driving, alcohol abuse and school truancy. Areas with 8 or 9 problems were considered as *problem area*. Family social network was measured by 5 questions which comprised how many friends and relatives to which they felt close, met regularly and from whom they received support. For each question respondents chose from five-point scale (none=1 to more than 15=5). After summing the items up, network size below 2 was categorized as *small*.

#### **Familial factors**

At 14 years, maternal marital status was measured by the question *what is your present marital status*. Single and separated/divorced/widowed women were excluded, and present marital status included two categories of living together and married. Length of relationship was assessed by the question *how long has the present relationship lasted* (recoded to less than

10 years and more). Mothers were also asked *if their present partner was the father of the child* (stepfather vs. biological father). Number of children who usually lived with the mother at the 14-year follow-up were classified into nil to two children and 3 children and more.

### **Psychological factors**

Maternal depression was assessed at first clinic visit, 5 and 14 year follow-ups using a modified version of Delusions-Symptoms-States Inventory (DSSI) (297). Seven questions measured how frequently the respondent had recently felt such symptoms as hopelessness, loss of interest or difficulty sleeping. A symptom was counted if the respondent sometimes and more experienced the feeling (depression scores ranged from 0 to 7). To create the variable *Maternal chronic depression over 14 years*, three depression scales were averaged and mothers were classified into chronically depressed (>2.5) moderately depressed (1-2.5) and non-depressed (<1). At 14 years, mothers were asked whether their partners had ever been treated for mental or emotional problems. For measuring child mental health, mothers completed a modified child behaviour checklist (CBCL) (298) at 5 years. This questionnaire measures internalizing behaviour (anxious/ depressive, withdrawn and somatic behaviors), aggression and Attention Deficit Hyperactivity Disorder (ADHD). In this study, a total score was used and those who scored above the 90<sup>th</sup> percentile were considered as *having behavioural problems*.

All offspring respondents in the 14- and 30-year follow-ups were about 14 years old (male= 13.90, SD= 0.32; female=13.91, SD=0.31) and 30 years old (male = 30.39, SD= 1.17; female = 30.25, SD= 1.11), so we did not adjust for age variability in the sample.

### **Statistical analysis**

For comparing males and females by study variables, descriptive statistics and chi square were used. Univariate and multivariate logistic regression were conducted to estimate the risk of each form of child maltreatment and Odds ratio (OR) and 95% confidence intervals (CI) were reported. In the current study child maltreatment forms were not mutually exclusive. Statistical analyses were carried out using STATA-13 and SPSS-24.

### **Results**

Table 7.1 presents information about the total sample and compares male and female offspring using potential covariates, maternal IPV victimization and experience of childhood maltreatment. About 14.0% of mothers reported experiencing IPV in their relationships at 14-year follow-up. Some 8.8% of offspring reported experiencing emotional abuse, 7.5% physical

abuse, 7.4% sexual abuse and 14.3% neglect. No significant gender difference was found in covariates and maternal IPV, except female offspring reported higher rates of childhood emotional and sexual abuse than did males.

Bivariate associations between possible confounders and maternal IPV victimization and child maltreatment for female and male children are represented in Table 7.2 amongst socio-economic variables, being Aboriginal/Torres Strait Islander, mother's teenage pregnancy, small social network, low family income, and mother's partner's unemployment significantly predicted both females' child maltreatment and maternal IPV victimization. Residential problems was the only significant predictor of exposure and outcome in male offspring. Interestingly, mother's low education and unemployment were not significant predictors of maternal IPV victimization. Among familial factors, being in a stepfamily, cohabiting and length of relationship less than 10 years were the most significant risk factors for maternal IPV and child maltreatment. Number of children living with mother had no significant association with her victimization. All measured psychological problems of mother, father and child were associated with both maternal IPV victimization and child maltreatment for males and females.

To examine the effect of possible confounders on the primary association between maternal IPV and child maltreatment, we progressively developed 4 multivariate models for each category of potential confounders, which were associated with both exposure and outcome of interest (Table 7.3). The first model presents the crude association of maternal victimization and forms of child maltreatment (model 1). For model 2, the primary association was adjusted for socio-economic factors. Family structure characteristics were then added to model 3. In the final model, psychological variables, including maternal depression, mother's partner mental problem and child behaviour problems, were included.

IPV was strongly associated with emotional abuse for males, but this was not observed for females. In a family, male children report less emotional abuse than do females (Figure 7.1), but they are more likely than females to be emotionally abused when mothers experience IPV victimization. The difference between male's and female's odds ratio is statistically significant ( $p=0.049$ ). Maternal experience of IPV had a consistent and significant association with physical abuse and neglect for both male and female offspring.

Table 7.3 also shows that the associations between maternal IPV victimization and almost all forms of child maltreatment were independent of a wide range of socio-economic, familial and psychological factors. Only for male children, adjustment for psychological factors attenuated the link between maternal IPV victimization and physical abuse. A further detailed

analysis showed that amongst psychological variables, father's history of mental health problems was confounding the association.

Figure 7.1 compares rates of child maltreatment within and between male and female offspring in families with and without maternal IPV victimization. Except for the sexual abuse in males, all children - either males or females - experience higher rates of emotional and physical abuse as well as neglect in families with maternal IPV victimization. Rates of child maltreatment are similar for male and female offspring within these families.

## **Discussion**

This study has investigated the association between maternal IPV victimization and child maltreatment, separately for male and female offspring. We assessed whether children in families with maternal victimization are more likely to be maltreated. We also tested three categories of variables including social and economic determinants, family structure and individual mental health problems, which might confound the relationship between maternal IPV victimization and child maltreatment. The main hypothesis was that the association between maternal IPV victimization and child maltreatment might reflect confounding and common causes.

We found that two in five victimized mothers (36.1%) and one in five (21%) non-victimized mothers had children who reported being maltreated ( $p < 0.001$ ). Neglect followed by sexual abuse in females and physical abuse in males were the most frequent forms of maltreatment reported by children whose mothers were victims of intimate partner violence. Rates of maltreatment in female offspring appeared to be greater than rates experienced by males, however, male children in the context of maternal intimate partner violence, were at higher risk of self-reported emotional maltreatment. The main associations between IPV and most forms of maltreatment were independent of almost all measured confounders, except for father's history of mental health problems, which attenuated the primary association.

Taken together, our findings show that there is a robust association between maternal IPV and child maltreatment and both co-occur in affected families. A number of possibilities need to be considered when interpreting the findings:

It is possible that the male-parent/partner perpetrated both partner violence and child maltreatment. Although our measures did not show which parent has perpetrated the maltreatment, a body of research has suggested that physical and sexual child maltreatments are mostly frequently perpetrated by fathers (299, 300). Higher rates of sexual abuse of female



offspring in families with maternal IPV and the confounding effect of father's mental health might support the suggestion of father perpetration.

Given IPV victimization negatively affects mothers' parenting, emotional functioning or discipline strategies (301, 302), another possible explanation is that victimized mothers react to their stress and anger of experiencing IPV by maltreating their children. Victimized women have been shown to abuse or neglect their children, mostly in response to stress of victimization (303, 304). They may also have difficulties in bonding with their male child, as he is a man and potentially an "*IPV perpetrator*". Mothers may be less patient, view their sons' behaviors more problematic, become more easily angered and have coercive parenting styles. Arguably, IPV victimization may make women emotionally unavailable and distract them from caring for their children (305-307). It may be the case therefore that family violence is a process, in which the consequences of IPV go beyond the incident and influence all family members (274). This implication that there is a sequence of violence is supported by other research (269).

The findings of this study must be considered with respect to a number of limitations:

The finding that almost no confounding effect was found may reflect our methodological approach. In the current study, we converted continuous variables into categorical or dichotomous variables (at-risk cases vs. normal group). There are debates about the efficiency of dichotomous variables in removing confounding effect when using a regression analysis (308). Although we used studied and valid cut-points to group cases, dichotomization of variables may increase the risk of misclassification and loss of information and reduce variance and explanatory power (308). Despite adjustment for a wide range of confounders, still, there is a possibility of endogeneity in the current study. Our data have been taken from women and their children, and the fathers' report of family violence is not available. In addition, the Childhood Trauma Questionnaire (CTS) was used to measure child maltreatment in this study. This is a retrospective self-report questionnaire, which refers to children experiences when they lived at home, without any details about who perpetrated the maltreatment. Retrospective self-reports of child maltreatment might be affected by desirability bias and inaccurate recall of childhood experiences which arguably measure *subjective perception of maltreatment experiences* rather than the *actual experiences* (309). Different time points in measuring the exposure and outcome of interest is another limitation of this study. We were unable to collect offspring's data of child maltreatment at the time mothers' reports of IPV victimization were gathered, as asking a child questions about traumatic experiences like being maltreated by parents could be distressing, and impractical (310). On the other hand, intimate partner violence essentially is recurrent and chronic (15) and arguably a representative

of mothers' general intimate relationships. Conclusions about the impact of maternal IPV on the risk of child maltreatment should be made with caution.

### **Conclusion and clinical implications**

This study has used a relatively large population-based data set including a cohort of both males and females, which enabled us to adjust for a range of confounding factors. Our finding suggests that both IPV and child maltreatment co-occur in households. Efforts to reduce child maltreatment may need to address the greater level of IPV that is common in affected households.

Findings of this study have significant implications for the child abuse prevention: First, the robust association of IPV and child maltreatment suggests that preventing the IPV itself may be the most direct way of reducing child maltreatment and efforts for child abuse reduction may need to specifically address the parental relationships. In such families even those children who are not maltreated, may experience adverse consequences associated with witnessing the violence. Because intimate partner violence is recurrent and chronic, patterns of destructive interactions may gradually establish and create a stable hostile environment (15). Early IPV identification and intervention is needed to interrupt the sequence of violence. Second, the high association between forms of family violence suggests that integrated intervention efforts should address multiple forms of victimization simultaneously (311). Third, as child abuse generally happens behind closed doors, any sign or indicator of existence of IPV in parents' relationships should be considered as a matter of concern. Fourth, family programs like parenting interventions to reduce child maltreatment should take maternal IPV victimization and perpetration into account, as each may affect a parent's ability and responsiveness to the intervention. The confounding effect of father's mental health problem highlights the importance of psychological interventions for concurrent child and partner violence perpetrators. Lastly, we found that the majority of children of families with maternal IPV were not maltreated, with 36% of children in IPV families experiencing child maltreatment (compared to 21% of children in families without maternal IPV who experience maltreatment). Although intimate partner violence was independently associated with increased level of child maltreatment, sociodemographic differences in our sample were strong predictors of both maternal IPV and child maltreatment. For example, mothers' marital changes and living with stepfather were consistently associated with all forms of child maltreatment in both male and female children (Table 7.2). When planning for service delivery responses, the causes of both IPV and child maltreatment need to be considered.

**Table 7.1. Study variables by gender of offspring**

|   | % <sup>a</sup> |             | $\chi^2$ (p-value)       |
|---|----------------|-------------|--------------------------|
|   | Females        | Males       |                          |
| <b>Racial background at FCV</b>                       | (n=1185)       | (n=827)     |                          |
| Caucasian   | 93.7%          | 94.2%       | 3.24 (0.20)              |
| Asian   | 3.2%           | 3.9%        |                          |
| Aboriginal/Torres Strait Islander                     | 3.1%           | 1.9%        |                          |
| <b>Residential problem at 14 years</b>                | (n=1206)       | (n=845)     | 1.63 (0.20)              |
| Normal  | 92.1%          | 93.6%       |                          |
| Problem area  | 7.9%           | 6.4%        |                          |
| <b>Family income at 14 years</b>                      | (n=1197)       | (n=834)     | 0.22 (0.64)              |
| Higher (\$20800+)                                     | 87.6%          | 88.2%       |                          |
| Low (-\$20799)  | 12.4%          | 11.8%       |                          |
| <b>Mother's education at FCV</b>                      | (n=1206)       | (n=843)     | 0.00 (0.99)              |
| Complete high school and above                        | 87.1%          | 87.1%       |                          |
| Incomplete high school                                | 12.9%          | 12.9%       |                          |
| <b>Partner's employment at 14 years</b>               | (n=1202)       | (n=838)     | 0.00 (0.99)              |
| Employed (fully/self/Part time)                       | 88.5%          | 88.5%       |                          |
| Unemployed  | 11.5%          | 11.5%       |                          |
| <b>Social network size at 5 years</b>                 | (n=1119)       | (n=786)     | 1.11 (0.29)              |
| Adequate  | 91.7%          | 93.0%       |                          |
| Small   | 8.3%           | 7.0%        |                          |
| <b>Mother's age at pregnancy</b>                      | (n=1218)       | (n=846)     | 5.16 (0.02)              |
| 20+   | 86.8%          | 90.1%       |                          |
| 13-19   | 13.2%          | 9.9%        |                          |
| <b>Mother's partner at 14 years</b>                   | (n=1202)       | (n=835)     | 2.78 (0.1)               |
| Biological father of child                            | 80.7%          | 83.6%       |                          |
| Stepfather  | 19.3%          | 16.4%       |                          |
| <b>Mother's Marital changes over 7 to 14 years</b>    | (n=1215)       | (n=845)     | 4.90 (0.09)              |
| No change   | 81.6%          | 84.9%       |                          |
| 1-2 changes   | 14.7%          | 11.4%       |                          |
| 3+ changes  | 3.6%           | 3.8%        |                          |
| <b>Mother's marital status at 14 years</b>            | (n=1143)       | (n=803)     | 0.88 (0.35)              |
| Married   | 90.6%          | 91.8%       |                          |
| Living together                                       | 9.4%           | 8.2%        |                          |
| <b>Number of children at home at 14 years</b>         | (n=1189)       | (n=831)     | 0.41 (0.52)              |
| =< 2  | 45.2%          | 43.8%       |                          |
| 3+  | 54.8%          | 56.2%       |                          |
| <b>Mother's length of current relationship (year)</b> | (n=1187)       | (n=820)     | 2.48 (0.12)              |
| 11+   | 82.7%          | 85.4%       |                          |
| -10   | 17.3%          | 14.6%       |                          |
| <b>Maternal chronic depression over 14 years</b>      | (n=1218)       | (n=846)     | 4.4 (0.11)               |
| Non-depressed   | 75.9%          | 79.7%       |                          |
| Moderately depressed                                  | 17.3%          | 13.6%       |                          |
| Severely depressed                                    | 6.8%           | 6.7%        |                          |
| <b>Mother's Partner mental problem at 14 years</b>    | (n=1218)       | (n=846)     | 0.00 (0.96)              |
| No  | 93.4%          | 93.4%       |                          |
| Yes   | 6.6%           | 6.6%        |                          |
| <b>Child's behavior problem at 5 years</b>            | (n=1126)       | (n=792)     | 1.83 (0.18)              |
| Normal  | 95.6%          | 94.2%       |                          |
| Case  | 4.4%           | 5.8%        |                          |
| <b>Maternal IPV at 14 years</b>                       | (n=1218)       | (n=846)     | 2.36 (0.12)              |
| No  | 87.8%          | 87.8%       |                          |
| Yes   | 12.2%          | 12.2%       |                          |
| <b>Child maltreatment (Yes)</b>                       | (n=1218)       | (n=846)     |                          |
| Emotional abuse                                       | <b>11.1%</b>   | <b>5.4%</b> | <b>19.90 (&lt;0.001)</b> |
| Physical abuse  | 7.5%           | 7.6%        | 0.004 (0.95)             |
| Sexual abuse  | <b>10.9%</b>   | <b>2.4%</b> | <b>52.60 (&lt;0.001)</b> |
| Neglect   | 13.8%          | 15.1%       | 0.73 (0.39)              |
| Any   | 24.2%          | 21.0%       | 2.86 (0.09)              |

**Table 7.2. Univariate logistic regression of study variables predicting maternal IPV victimization and offspring maltreatment (OR (95% CI))**

|  | Females            |                    |                    |                    |                    | Males              |                    |                     |                     |                    |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|--------------------|
|  | Maternal IPV       | Emotional abuse    | Physical abuse     | Sexual abuse       | Neglect            | Maternal IPV       | Emotional abuse    | Physical abuse      | Sexual abuse        | Neglect            |
| <b>Socio-economic factors</b>              |                    |                    |                    |                    |                    |                    |                    |                     |                     |                    |
| <b>Racial background:</b>                  | <b>2.27</b>        | 1.79               | <b>2.39</b>        | <b>2.79</b>        | 1.35               | <b>1.76</b>        | 0.86               | <b>3.88</b>         | 4.13                | 1.18               |
| Aboriginal/ Islander (ref= other)          | <b>(1.40-3.69)</b> | (0.88-3.64)        | <b>(1.13-5.02)</b> | <b>(1.48-5.26)</b> | (0.67-2.73)        | <b>(1.09-2.85)</b> | (0.11-6.53)        | <b>(1.38-10.91)</b> | (0.91-18.77)        | (0.39-3.56)        |
| <b>Residential problem:</b>                | 1.23               | 0.97               | <b>1.84</b>        | 1.23               | 1.24               | <b>2.35</b>        | <b>2.44</b>        | 1.90                | 1.25                | 1.04               |
| Problem area (ref= normal)                 | (0.81-1.87)        | (0.53-1.78)        | <b>(1.03-3.29)</b> | (0.71-2.14)        | (0.75-2.05)        | <b>(1.64-3.67)</b> | <b>(1.05-5.67)</b> | (0.87-4.17)         | (0.29-5.42)         | (0.52-2.10)        |
| <b>Family income at 14:</b>                | <b>1.40</b>        | <b>1.71</b>        | <b>1.90</b>        | <b>1.87</b>        | <b>2.02</b>        | <b>1.71</b>        | 1.76               | <b>2.53</b>         | 1.76                | <b>1.60</b>        |
| Low (ref= higher)                          | <b>(1.02-1.93)</b> | <b>(1.17-2.50)</b> | <b>(1.23-2.94)</b> | <b>(1.29-2.71)</b> | <b>(1.42-2.83)</b> | <b>(1.27-2.29)</b> | (0.90-3.44)        | <b>(1.47-4.36)</b>  | (0.69-4.49)         | <b>(1.03-2.50)</b> |
| <b>Mother's education:</b>                 | 1.12               | <b>1.61</b>        | 1.27               | 1.44               | 1.43               | 1.02               | <b>2.61</b>        | 1.61                | 0.82                | <b>1.75</b>        |
| < High school (re= higher)                 | (0.82-1.54)        | <b>(1.07-2.44)</b> | (0.76-2.10)        | (0.95-2.20)        | (0.98-2.10)        | (0.74-1.40)        | <b>(1.40-4.88)</b> | (0.89-2.94)         | (0.24-2.76)         | <b>(1.13-2.71)</b> |
| <b>Mother employment:</b>                  | 1.22               | <b>1.61</b>        | 1.45               | <b>1.48</b>        | <b>1.52</b>        | 1.01               | 1.57               | 1.25                | 1.37                | 1.32               |
| Unemployed (ref=employed)                  | (0.96-1.55)        | <b>(1.16-2.24)</b> | (0.98-2.14)        | <b>(1.06-2.05)</b> | <b>(1.13-2.04)</b> | (0.80-1.28)        | (0.89-2.78)        | (0.77-2.04)         | (0.62-3.06)         | (0.93-1.89)        |
| <b>Mother's partner employment:</b>        | <b>1.42</b>        | <b>1.98</b>        | <b>2.0</b>         | 1.56               | <b>1.83</b>        | <b>1.80</b>        | 1.15               | 1.49                | 0.86                | 0.95               |
| Unemployed (ref=employed)                  | <b>(1.03-1.96)</b> | <b>(1.24-3.17)</b> | <b>(1.15-3.46)</b> | (0.94-2.58)        | <b>(1.18-2.85)</b> | <b>(1.32-2.46)</b> | (0.47-2.78)        | (0.73-3.03)         | (0.20-3.75)         | (0.52-1.73)        |
| <b>Family social network:</b>              | <b>1.59</b>        | <b>1.90</b>        | 1.73               | 1.14               | <b>1.83</b>        | 1.29               | <b>3.10</b>        | <b>3.27</b>         | <b>3.39</b>         | 1.41               |
| Small (ref=adequate)                       | <b>(1.07-2.37)</b> | <b>(1.15-3.16)</b> | (0.95-3.15)        | (0.65-2.02)        | <b>(1.15-2.89)</b> | (0.84-1.99)        | <b>(1.43-6.72)</b> | <b>(1.68-6.34)</b>  | <b>(1.22-9.42)</b>  | (0.77-2.57)        |
| <b>Mother's age at first pregnancy:</b>    | 1.26               | <b>1.92</b>        | <b>2.24</b>        | <b>3.08</b>        | <b>1.83</b>        | <b>1.53</b>        | 1.50               | <b>2.94</b>         | <b>3.95</b>         | <b>1.81</b>        |
| 13-19 years (ref=higher)                   | (0.91-1.73)        | <b>(1.28-2.87)</b> | <b>(1.43-3.51)</b> | <b>(2.11-4.48)</b> | <b>(1.26-2.65)</b> | <b>(1.13-2.08)</b> | (0.69-3.27)        | <b>(1.66-5.22)</b>  | <b>(1.67-9.33)</b>  | <b>(1.12-2.93)</b> |
| <b>Familial factors</b>                    |                    |                    |                    |                    |                    |                    |                    |                     |                     |                    |
| <b>Mother's marital changes:</b>           | <b>2.36</b>        | <b>1.80</b>        | <b>2.67</b>        | <b>2.77</b>        | <b>2.12</b>        | <b>2.38</b>        | <b>2.13</b>        | <b>2.03</b>         | 2.13                | <b>1.86</b>        |
| 2+ (ref=none)                              | <b>(1.81-3.07)</b> | <b>(1.27-2.56)</b> | <b>(1.80-3.97)</b> | <b>(1.97-3.87)</b> | <b>(1.55-2.89)</b> | <b>(1.84-3.07)</b> | <b>(1.17-3.87)</b> | <b>(1.21-3.41)</b>  | (0.93-4.90)         | <b>(1.27-2.74)</b> |
| <b>Mother's partner:</b>                   | <b>1.32</b>        | <b>2.23</b>        | <b>2.86</b>        | <b>2.83</b>        | <b>2.54</b>        | <b>1.37</b>        | <b>3.51</b>        | <b>3.78</b>         | <b>4.44</b>         | <b>2.39</b>        |
| Step-father (ref=biofather)                | <b>(1.0-1.75)</b>  | <b>(1.51-3.28)</b> | <b>(1.83-4.46)</b> | <b>(1.93-4.15)</b> | <b>(1.78-3.62)</b> | <b>(1.04-1.80)</b> | <b>(1.89-6.52)</b> | <b>(2.20-6.50)</b>  | <b>(1.81-10.93)</b> | <b>(1.54-3.71)</b> |
| <b>Mother's marital status:</b>            | <b>1.42</b>        | <b>2.43</b>        | <b>3.93</b>        | <b>2.71</b>        | <b>2.12</b>        | <b>1.66</b>        | 1.96               | <b>2.82</b>         | 2.15                | <b>2.17</b>        |
| Living together (ref= married)             | <b>(1.0-2.07)</b>  | <b>(1.47-4.01)</b> | <b>(2.31-6.70)</b> | <b>(1.63-4.49)</b> | <b>(1.31-3.44)</b> | <b>(1.14-2.42)</b> | (0.79-4.83)        | <b>(1.39-5.72)</b>  | (0.61-7.57)         | <b>(1.21-3.92)</b> |
| <b>Length of current relationship:</b>     | 1.25               | <b>2.13</b>        | <b>2.48</b>        | <b>2.52</b>        | <b>2.80</b>        | <b>1.56</b>        | <b>3.42</b>        | <b>4.20</b>         | <b>5.09</b>         | <b>2.71</b>        |
| -10 yrs (ref=11+)                          | (0.92-1.70)        | <b>(1.42-3.20)</b> | <b>(1.55-3.97)</b> | <b>(1.68-3.78)</b> | <b>(1.57-3.31)</b> | <b>(1.17-2.07)</b> | <b>(1.80-6.50)</b> | <b>(2.42-7.30)</b>  | <b>(2.06-12.57)</b> | <b>(1.73-4.25)</b> |
| <b>Number of children at home:</b>         | 0.93               | <b>1.49</b>        | <b>1.93</b>        | 1.27               | <b>1.43</b>        | 1.22               | <b>2.05</b>        | <b>1.71</b>         | 0.89                | 1.28               |
| 3+ (ref= -2)                               | (0.73-1.19)        | <b>(1.10-2.10)</b> | <b>(1.28-2.91)</b> | (0.92-1.77)        | <b>(1.10-1.94)</b> | (0.96-1.56)        | <b>(1.10-3.79)</b> | <b>(1.03-2.84)</b>  | (0.40-1.97)         | (0.89-1.84)        |
| <b>Psychological factors</b>               |                    |                    |                    |                    |                    |                    |                    |                     |                     |                    |
| <b>Maternal depression over 14 yrs:</b>    | <b>4.10</b>        | <b>2.16</b>        | <b>2.02</b>        | <b>2.69</b>        | <b>2.87</b>        | <b>3.54</b>        | <b>3.9</b>         | <b>2.72</b>         | 1.10                | <b>1.90</b>        |
| Severely depressed (ref=Non)               | <b>(2.86-5.88)</b> | <b>(1.31-3.59)</b> | <b>(1.12-3.66)</b> | <b>(1.67-4.31)</b> | <b>(1.85-4.44)</b> | <b>(2.49-5.0)</b>  | <b>(1.88-8.04)</b> | <b>(1.34-5.50)</b>  | (0.25-4.76)         | <b>(1.07-3.35)</b> |
| <b>Mother's partner ever treated:</b>      | <b>2.82</b>        | 1.50               | 1.39               | <b>2.20</b>        | <b>1.92</b>        | <b>3.16</b>        | <b>2.06</b>        | <b>2.21</b>         | 0.99                | <b>2.35</b>        |
| Yes (ref=No)                               | <b>(1.91-4.17)</b> | (0.99-2.29)        | (0.84-2.28)        | <b>(1.48-3.25)</b> | <b>(1.33-2.77)</b> | <b>(2.20-4.53)</b> | <b>(1.03-4.12)</b> | <b>(1.22-3.98)</b>  | (0.29-3.36)         | <b>(1.51-3.68)</b> |
| <b>Child's behavior problems at 5 yrs:</b> | <b>1.66</b>        | <b>3.36</b>        | <b>2.58</b>        | <b>2.61</b>        | <b>2.13</b>        | <b>1.83</b>        | <b>4.13</b>        | <b>2.66</b>         | 2.29                | <b>2.16</b>        |
| Case (ref=normal)                          | <b>(1.02-2.72)</b> | <b>(1.90-5.97)</b> | <b>(1.30-5.10)</b> | <b>(1.44-4.71)</b> | <b>(1.20-3.78)</b> | <b>(1.23-2.74)</b> | <b>(1.88-9.06)</b> | <b>(1.24-5.70)</b>  | (0.66-7.98)         | <b>(1.18-3.99)</b> |

Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ); Each variable is modelled separately for male and female offspring

**Table 7.3. Association between maternal IPV victimization and child maltreatment for female and male offspring (ORs (95% CI))**

|                | child maltreatment      |                         |                         |                         |                         |
|----------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                | Emotional abuse         | Physical abuse          | Sexual abuse            | Neglect                 | Any                     |
| <b>Females</b> |                         |                         |                         |                         |                         |
| Model 1        | <b>1.56 (1.0-2.45)</b>  | <b>2.43 (1.49-3.98)</b> | <b>2.20 (1.43-3.39)</b> | <b>2.00 (1.34-2.98)</b> | <b>2.17 (1.55-3.04)</b> |
| Model 2        | 1.19 (0.70-2.03)        | <b>2.20 (1.26-3.85)</b> | <b>1.95 (1.19-3.20)</b> | <b>1.88 (1.20-2.95)</b> | <b>1.97 (1.34-2.88)</b> |
| Model 3        | 1.29 (0.74-2.25)        | <b>2.28 (1.25-4.15)</b> | <b>2.0 (1.18-3.40)</b>  | <b>1.88 (1.16-3.05)</b> | <b>2.03 (1.35-3.04)</b> |
| Model 4        | 1.22 (0.63-2.01)        | <b>2.38 (1.28-4.43)</b> | <b>1.77 (1.01-3.10)</b> | <b>1.70 (1.03-2.80)</b> | <b>1.84 (1.21-2.79)</b> |
| <b>Males</b>   |                         |                         |                         |                         |                         |
| Model 1        | <b>3.50 (1.80-6.80)</b> | <b>3.50 (1.96-6.26)</b> | <sup>b</sup>            | <b>2.00 (1.21-3.27)</b> | <b>2.05 (1.31-3.21)</b> |
| Model 2        | <b>3.40 (1.39-6.51)</b> | <b>2.80 (1.40-5.57)</b> | <sup>b</sup>            | <b>2.00 (1.15-3.50)</b> | <b>1.82 (1.09-3.04)</b> |
| Model 3        | <b>3.14 (1.34-7.34)</b> | <b>2.32 (1.07-5.02)</b> | <sup>b</sup>            | <b>1.95 (1.07-3.56)</b> | <b>1.77 (1.01-3.10)</b> |
| Model 4        | <b>2.63 (1.05-6.60)</b> | 1.90 (0.83-4.29)        | <sup>b</sup>            | <b>1.83 (1.00-3.41)</b> | 1.62 (0.91-2.88)        |

Model 1: Unadjusted ORs

Model 2: Adjusted for socio-economic factors (racial background, family Income at 14, mother's partner occupational status, mother's age at pregnancy, social network, & residential problems at 14);

Model 3: previous + familial factors (mother's partner (bio/step father), mother's marital changes over 7-14 years, mother's marital status at 14, and mother's length of current relationship)

Model 4: previous + psychological factors (maternal depression over 14 years, mother's partner ever treated for mental health and child's behavior problems at 5 years)

<sup>a</sup> Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ).

<sup>b</sup> due to insufficient sample size in sexual abuse in males, the regression analyses were not conducted.

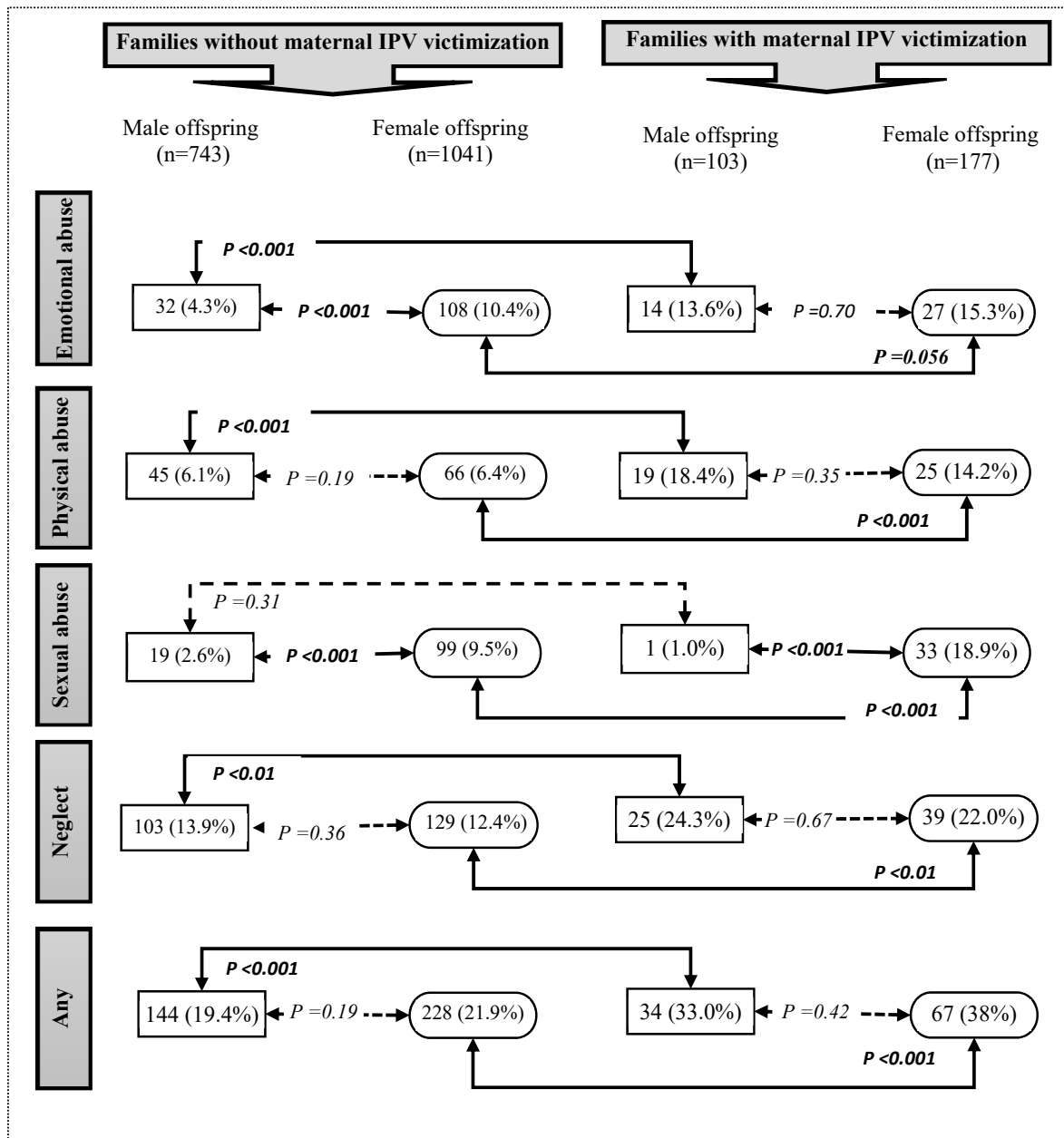


Figure 7.1. Gender differences in child maltreatment by families with/without maternal IPV victimization. Solid arrows represent statistically significant differences between the groups ( $p < 0.05$ ). Dashed arrows indicate non-significant associations ( $p > 0.05$ )

## **Chapter Eight: IPV and subsequent substance use disorders**

This chapter includes a published paper cited as:

Ahmadabadi, Z., Najman, J. M., Williams, G. M., Clavarino, A. M., d'Abbs, P., and Smirnov, A. (2019) Intimate partner violence in emerging adulthood and subsequent substance use disorders; Findings from a longitudinal study. *Addiction*, 114, 1264- 1273.  
<https://doi.org/10.1111/add.14592>.

## **Abstract**

**Background and objectives:** This study examines the temporal association between the experience of different types of intimate partner violence (IPV) at early adulthood (21 years) and substance use disorders in young adulthood (30 years).

**Methods:** Data were taken from the Mater-University of Queensland Study of Pregnancy (MUSP), which is a prospective birth cohort study in Brisbane, Australia. A cohort of 1353 cases including 822 females (60.8%) and 531 males comprised the study sample. IPV was measured using the Composite Abuse Scale (CAS) and alcohol, drug and nicotine disorders were assessed using the Composite International Diagnostic Interview (CIDI).

**Results:** The results of this study suggest that in females, the experience of different forms of IPV at 21 years remained robust risk factors for subsequent alcohol disorder [adjusted odds ratios (aORs) ranged from 1.6 to 2.6 (all  $p < 0.05$ )], drug disorder [aORs ranged from 2.1 to 4.0 (all  $p < 0.001$ )] and nicotine disorder [aORs ranged from 2.0 to 2.4 (all  $p < 0.05$ )] at 30 years, even after controlling for antecedent substance disorders. However, in males only physical and emotional abuse remained significant predicting alcohol disorder [aORs ranged from 1.4 to 1.8 (all  $p < 0.05$ )] and drug disorder [aORs ranged from 1.6 to 2.0 (all  $p < 0.05$ )] in the fully adjusted model, but not harassment.

**Conclusion:** Although both males and females are negatively affected by intimate partner violence, females are at higher risk of substance use disorder following IPV victimization.

**Keyword:** Intimate partner violence, alcohol, drug, nicotine, cohort study



## Introduction

IPV victimization has a wide range of adverse physical, mental and psychosocial consequences (2, 142, 159, 312-318). However, little research has explicitly focused on its long-term consequences related to substance use disorders.

The available literature addressing the relationship between IPV victimization and substance use disorder is controversial (131). While drug and alcohol use have been found to increase the risk of IPV victimization/perpetration (13, 14, 64, 66, 132-140), there is inadequate evidence concerning whether substance use/abuse may also be a consequence of IPV victimization. The *self-medication hypothesis* suggests that individuals who have experienced IPV may consume alcohol or drugs to alleviate their distress (141). While there are empirical studies consistent with the above theory (142-148), previous studies are generally cross-sectional and based on retrospective data. They consistently report the co-occurrence of IPV and substance use/abuse but are unable to determine the temporal precedence of either the substance use disorders or IPV.

Several attempts have been made to assess the short-term consequences of IPV victimization, as a stressful and traumatic event, and subsequent substance use. Some studies have investigated the likelihood of substance use/abuse in the few hours following the victimization (156) or in the same or following day (162, 319, 320). A short time interval may be suitable for detecting the acute effects of exposure to some stressors; however, some stressors affect mental health over a longer period of exposure (321, 322). IPV is not generally a short-term exposure; rather, it may reflect a recurrent pattern of destructive relationships (15). Hence, there is a need to determine the possible impact of IPV over an extended time period.

There are a number of available longitudinal studies with longer time lags between the experience of IPV and the assessment of substance use (149-155). For instance, research on a sample of college women and men over a three-year period (150) showed that only females who had experienced violence were more likely to have drinking problems later. Newlywed wives' experience of IPV was shown to predict subsequent alcohol use at the first wedding anniversary (149). Another study among poor and homeless single mothers reported that females with a history of IPV were three times more likely to use illegal drugs two years later (152).

Despite the extensive research having carried out on IPV and substance abuse, previous longitudinal studies have a number of limitations that need to be addressed:

**First:** a substantial body of longitudinal research has failed to take account of the effect of substance use history on later IPV and substance use. Pre-existing substance use problems might be responsible for both exposure and outcome of interest (154-158).

**Second:** most previous studies have been weighted towards female victimization and research about the consequences of male victimization is limited. There is evidence that the association between IPV and substance use disorders might vary by gender (159). Moreover, the existing literature offers contradictory findings: while males are reported to externalize interpersonal stress by drinking alcohol and using illicit drugs (160, 161), females might be at greater risk of alcohol and drug use, because they are more sensitive to intimate violence (150, 151, 162).

**Third:** while characteristics of a sample (e.g., clinical or selective versus representative samples) may affect the magnitude of association between IPV and alcohol use/abuse (131), some previous longitudinal studies have not included population-based samples.

**Fourth:** although some studies -mostly cross-sectional- have suggested different consequences of different types and patterns of IPV (159, 315, 323-326), our knowledge about the differential effects of forms of IPV on victims' substance abuse is limited.

**Fifth:** there are controversies about whether the association between IPV and substance use may be attributable to potential confounders. Evidence suggests that those who belong to the indigenous communities and/or are of lower socio-economic status, those with a history of child abuse and poor mental health are at increased risk of victimization and substance use problems (13, 64, 150, 152, 154, 155).

In this study, using longitudinal data from a population based sample, including females and males, we examine (1) the temporal association between the experience of different types of IPV at early adulthood (21 years) and subsequent substance use disorders in young adulthood (30 years), (2) whether this association is independent of a range of potential confounders and pre-existing substance use disorders, and (3) whether there is a gender difference in this association.

## **Methods**

### **Participants**

Data were taken from the Mater-University of Queensland Study of Pregnancy (MUSP), which is a prospective birth cohort study in Brisbane, Australia. From 8556 consecutive pregnant women who were approached at their first antenatal visit to the Mater

Public Hospital in Brisbane between 1981 and 1983, some 7223 met the entry criteria for recruitment to the study. Mothers and their children were followed up and assessed at 6 months, 5, 14, 21 and 30 years. For the current study, we included only offspring for whom there were data involving self-reports of IPV at 21 years and lifetime substance use data at 21 and 30 years using the Composite International Diagnostic Interview (CIDI; 207). A cohort of 1353 cases including 822 females and 531 males comprised the study sample. Some 60.8% of the sample were females. The mean age at the 21-year follow-up was 20.6 (SD±0.9). Participants' racial background was Caucasian (93.5%), Asian (3.2%) and Aboriginal/Torres Strait Islander (3.3%). At 21 years of age, 4.1% of respondents were married and 61.6% were living together. Some 8.8% of participants had children. About 20% of respondents were below the then Australian poverty line and Less than 30% had a post high school education.

## **Measurement**

### **Intimate partner violence**

IPV was measured using a modified version of Composite Abuse Scale (CAS) at 21 years. This scale is a validated and comprehensive self-report tool, which assesses frequency of ever having experienced violence in intimate relationships (in either current or prior relationships) (37, 38). CAS consists of four independent subscales of *severe combined victimization* (2 items included being raped, and assaulted with a weapon), *physical abuse* (7 items included being hit, thrown, pushed, shaken; Cronbach's alpha=0.89), *emotional abuse* (11 items included being kept apart from friends and family, insulted, blamed; Cronbach's alpha=0.90) and *harassment* (4 items included being followed, harassed over the telephone or at work; Cronbach's alpha=0.71). Each item was rated on a 6-point response scale: never (=0), only once (=1), several times (=2), once a month (=3), once a week (=4) and daily (=5). Each subscale's scores were summed and dichotomized into two categories of *abused* and *not abused* (reference group). This categorization was based on the cut-off scores recommended in the scale instruction (37, 38): severe combined abuse ( $\geq 1$ ), physical abuse ( $\geq 1$ ), emotional abuse ( $\geq 3$ ), and harassment ( $\geq 2$ ). Four dichotomous subscales were summed to generate a multiple victimization variable with three categories of none, only one type and two types and more.

### **Substance (alcohol, drugs and nicotine) disorders**

At 21 and 30 years, offspring substance disorder, including alcohol, nicotine and illicit drugs (cannabis, cocaine, opiates, hallucinogens, sedatives, and amphetamines) were measured using the Composite International Diagnostic Interview (CIDI). The CIDI-Auto is a widely-used and standardized diagnostic interview in population-based samples to detect

psychopathology including substance abuse and dependence (207). Participants were evaluated and coded to yield diagnoses using criteria in Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; 209). According to the DSM-IV, dependence required endorsement of a minimum of three out of seven criteria (tolerance to a substance, withdrawal, unplanned consumption, unsuccessful efforts to control, spending a great deal of time related to substance use, continued use despite physical/psychological problems and giving up interests in other activities to substance use). Diagnoses of abuse required the endorsement of at least one of the four criteria for abuse (role performance, hazardous use, legal problems, and social-interpersonal problems). For alcohol and drugs, we merged abuse and dependence and created variables *any alcohol use disorder* and *any drug use disorder*. For the nicotine disorder, we considered nicotine dependence based on whether or not smokers meet any three of the seven criteria. Participants were also considered to have lifetime substance disorders diagnosis, if they met the DSM-IV abuse or dependence criteria. We, then, summed three dichotomous substance disorders to generate a multiple disorder variable with three categories of *none*, *one disorder* and *two and more disorders*.

### **Potential confounders**

In the multivariable analyses, we adjusted the association between IPV and current substance use disorder for a range of socio-demographic variables, which may be related to both exposure and outcome of interest. At 21 years, we collected information about offspring marital status (single/never married, separated, living together and married), education level (high school or less, diploma and college and university) and having child (yes, no). Using the Australian National Poverty Line as a guide [44], personal income was categorized into *low* and *higher* income. History of sexual child abuse was measured using the question *did you experience being pressured or forced to have sexual contact before 16 years?* Lifetime major depressive disorder at 21 years was measured using the CIDI with the DSM-IV criteria.

### **Statistical analysis**

In table 1, males and females were compared for the study variables using chi-square and at the 5% level of significance. In table 2 and 3, a series of univariable and hierarchical multivariable logistic regression, separately for females and males, were performed. The hierarchical regression was chosen to examine whether the primary association between IPV and subsequent substance use disorder is robust with adjustment for pre-existing substance

disorder and potential confounders. In model 1, each form of IPV was modelled separately. In model 2, the primary association was adjusted for the relevant pre-existing disorder which had been assessed in the 21-year follow-up (for example, the association between physical abuse at 21 years and life-time alcohol disorder at 30 years was adjusted for lifetime alcohol disorder at 21 years). In model 3, then, potential confounders were added to the analysis. We presented crude and adjusted odds ratios and confidence intervals at the 95% level, separately for males and females.

### **Missing data**

Of the cohort of 2220 participants in the 21-year follow-up who completed both IPV and the CIDI, about 1353 (60.9 %) individuals were retained at 30 years and 867 (39.1%) participants were lost to follow-up. To assess the possibility of attrition bias affecting the results, we performed univariate and multivariable logistic regression analyses predicting loss-to-follow-up with the potential confounders measured at 21 years (education, income, marital status, racial background, history of childhood sexual abuse and alcohol, drug and nicotine disorders) separately for males and females. To account for the attrition bias, we then conducted the multiple imputation analysis and included available confounders as auxiliary variables in the multiple imputation to improve missing at random (212, 213). We finally imputed 20 data sets and repeated fully adjusted regression models. Statistical analyses were done using SPSS version 24.0 and multiple imputation was undertaken by STATA version 15.0.

### **Results**

The adjusted attrition analysis suggests that females in unstable marital circumstances and those with children at 21 years were more likely to be lost to follow-up. In males, having a history of sexual child abuse and being diagnosed with alcohol disorder at 21 years significantly predicted the rate of attrition (Supplementary Table S8.1).

Table 8.1 compares male and female offspring on the potential confounders, forms of IPV victimization and DSM-IV substance use disorders at 21 and 30 years. Females were more likely to be married and cohabiting, to have a child, lower income, and to report childhood sexual abuse. There was no gender difference in respondents' racial background. About 52% of males and 44% of females reported experiencing at least one type of IPV in their recent (either current or previous) intimate relationships at 21 years ( $p < 0.01$ ). Rates of emotional

abuse appeared similar for males and females' respondents. However, females more often reported severe victimization ( $p < 0.0001$ ) and males more often reported physical abuse ( $p < 0.001$ ). At 21 years females exhibited higher rates of lifetime major depressive disorders and males more often met the criteria for lifetime nicotine and drug disorders. Females were more likely reported higher lifetime alcohol disorder by 21 years, but this finding is at the borderline of statistical significance ( $p = 0.09$ ). At the 30 years follow-up, rates of alcohol and drug disorders were significantly higher for males.

The rate of IPV victimization at 21 years was higher for those with children, those who had a history of childhood sexual abuse and major depression. Aboriginal and Torres Strait Islander males and females were more likely to have reported experiencing IPV at 21 years. Childhood sexual abuse and major depression at 21 years were common risk factors for IPV victimization at 21 years as well as substance use problem at 30 years for both males and females. The data also suggests that all lifetime substance use disorders at 21 years were associated with the experience of IPV victimization at 21 years, for both males and females (Supplementary Table S8.2).

To examine the association between the experience of IPV victimization and later substance use disorders, we developed three logistic regression models, separately for females and males (Tables 8.2 and 8.3). The first model presents the crude association of IPV victimization at 21 years and lifetime disorders at 30 years. For model 2 the primary association was adjusted for the relevant pre-existing substance use disorder which had been assessed in the 21-year follow-up. In the model 3, we then added a number of key confounders, all measured at 21 years.

Table 8.2 presents results for univariate and multivariable logistic regression analyses in females. In unadjusted model, forms of IPV at 21 years were significantly associated with 30-year DSM substance use disorders. After adjusting for the relevant substance use disorder at 21 years (model 2) and confounding factors (model 3), females' experience of all types of abuse at 21 years remained robust and significant risk factors for all substance use disorders at 30 years.

Table 8.3 presents results for univariate and multivariable logistic regression analyses in males. In the unadjusted model, almost all forms of IPV appear to be related to substance disorders at 30 years. However, once adjusted for pre-existing substance use disorder at 21 years and confounders, only physical and emotional abuse remained significant predictors of alcohol and drug disorders at 30 year in the fully adjusted model.

Findings from repeated regression analyses with multiple imputation remained robust and consistent, showing that attrition did not affect the direction and strength of primary associations (Supplementary Table S8.3).

## **Discussion**

We examined the prospective association between different forms of IPV victimization at 21 years and alcohol, drugs and nicotine disorders at 30 years, adjusting for pre-existing substance use and potential confounders. A cohort of 1353 males and females followed about 9 years to assess gender differences in consequences of IPV victimization.

We found that in females, the experience of IPV at 21 years remained a robust risk factor for the subsequent substance disorders at 30 years, even after controlling for antecedent alcohol, drug and nicotine disorders. However, in males only physical and emotional abuse remained significant in the fully adjusted model, but not harassment.

Our findings are consistent with those of other longitudinal studies (149, 152, 153, 155) and support the *self-medication hypothesis*. Both males and females were negatively affected by IPV and experienced substance use disorder following IPV victimization.

We did not find a substantial gender difference in the association of IPV and subsequent substance use. However, we observed that the size of associations was relatively greater for females. This finding may suggest gender differences in vulnerability to physical and mental consequences of IPV. Due to females' situational vulnerability, they may experience IPV more intensely and severely. Our data confirms that females have experienced higher rates of severe combined abuse than do males (OR= 3.2; 95% CI= 1.7, 6.2). Although males in this study reported higher rates of physical abuse (OR= 1.4; 95% CI= 1.2, 1.6), the actual experience of a similar category of IPV (like physical abuse) can be more harmful and injurious for females than for males (327). The CAS's composite scale is unable to differentiate between *frequency* and *intensity* of physical violence. A gender comparison of CAS's individual items suggest that while males report being slapped, hit and kicked, females report being pushed, thrown and shaken, which may entail more physical power. It seems that although men experience physical violence more frequently, due to the lesser females' physical power, males' physical victimization lead to less adverse consequences (60). Moreover, females' emotion-focused priorities in an intimate relationship and unmet expectations from an abusive partner may leave greater adverse outcomes (depression, PTSD) on females, and affect their socio-economic status more negatively (134, 142, 147-149, 313, 314, 316, 326). Females have been reported to

use alcohol or nicotine -more than men- to cope with tension in their intimate relationships (238, 328).

We found that among forms of IPV, experiencing severe combined victimization had the strongest effect on subsequent substance use in females and harassment was not a robust predictor of males' substance use disorder. This finding supports other research's findings (e.g., 159, 315, 323, 324, 326) that different types of IPV have different consequences. However, caution must be applied when interpreting these results, as forms of abuse co-occur and it is difficult to distinguish their tangled effects (329). In this study, each form of IPV was modelled separately. Further studies are needed to adjust forms of IPV for each other.

Our results are subject to some other limitations: The baseline sample of MUSP included pregnant mothers who were receiving services at a public hospital. While mothers' sample was skewed to lower to middle socioeconomic status, their offspring have become more representative of the Australian population (184-186). The findings of this study are based on self-report measures, which may be affected by self-serving bias. The possibility of endogeneity has not been addressed. Some confounders (e.g., partners' and parents' IPV and substance use) have not been considered. While IPV experienced by females is more consistently associated with substance use disorders than it is for males experiencing IPV, it might be suggested this finding could be attributed to the smaller number of respondents available for estimating the association of IPV and substance use disorders experienced by males. This appears possible, but it is worth noting that the point estimates of magnitude of association (ORs) are generally of a lesser magnitude for males and that many of the p-values for males suggest differences are more likely attributable to chance. Although we had a high rate of attrition in our study, we attempted to minimize its effects by the multiple imputation analysis. The repeated analyses using the imputed data suggested consistency with the observed findings. Forms of IPV are inter-correlated, but given the numbers in some cells, we were unable to use a combined multivariate model. Regarding the co-occurrence of drug use and violence, we could not explicitly test the alternative explanation of a reverse relationship between substance use and IPV victimization. Given the illegal and deviant nature of drug use, it is possible that young people with substance disorder at 21-year follow-up were involved in delinquent networks and violent relationships. We were not able to adjust for this possibility though the adjustment for a wide range of other variables may partly implicitly adjust for this possibility.

Our findings may have a number of important implications for future practice: The association between IPV and substance use disorder is complex and needs a comprehensive



and informed policy action. Beside strategies to reduce substance use problems in IPV perpetrators (330), coordinated actions are needed to identify and screen needs of IPV victims. These efforts should include support strategies, improving victims' mental and physical health and active coping mechanisms. Alcohol and drug treatment interventions may be less successful if history of IPV victimization and self-medicating as a coping strategy are not addressed. The inter/intra correlations between forms of IPV and types of substances indicate that integrated intervention efforts should address them simultaneously. Our results support the need for gender-specific interventions: while women's vulnerability to the IPV victimization suggests intimate relationships as a high priority for their health behaviors, the confounding effect of pre-existing substance use in males highlights the importance of early substance use prevention. We found that early parenthood contributes to the experience of IPV as well as substance use problems in both females and males. Children's safety and well-being in families characterized by violence and substance use should be a key priority in policy and practice.

**Table 8.1. Gender differences in study variables**

| Variables  | Female            | Male (ref)        | $\chi^2$ (p-value) | OR<br>(CI95%)  |
|--|-------------------|-------------------|--------------------|----------------|
|  | (n=822;<br>60.8%) | (n=531;<br>39.2%) |                    |                |
| <b>n (%)</b>   |                   |                   |                    |                |
| <b>Racial background at FCV</b>                            |                   |                   | 1.6 (0.20)         |                |
| Caucasian & Asian  | 766 (95.8%)       | 505 (97.1%)       |                    | 1.0            |
| Aboriginal/Torres Strait Islander                          | 34 (4.2%)         | 15 (2.9%)         |                    | 1.5 (0.8,2.8)  |
| <b>Marital status at 21 yr/fu<sup>a</sup></b>              |                   |                   | 63.7 (0.0001)      |                |
| Married  | 35 (4.3%)         | 7 (1.3%)          |                    | 1.0            |
| Living together/bf-gf                                      | 542 (66.0%)       | 288 (54.2%)       |                    | 2.7 (1.2,6.1)  |
| Single, never married                                      | 239 (29.1%)       | 231 (43.5%)       |                    | 4.8 (2.1,11.1) |
| Separated/divorced   | 5 (0.6%)          | 5 (1.0%)          |                    | 5.0 (1.1,22.0) |
| <b>Have children at 21 yr/fu</b>                           |                   |                   | 31.4 (0.0001)      |                |
| No   | 723 (88.1%)       | 512 (96.8%)       |                    | 1.0            |
| Yes  | 98 (11.9%)        | 17 (3.2%)         |                    | 4.1 (2.4,6.9)  |
| <b>Education level at 21 yr/fu</b>                         |                   |                   | 2.7 (0.10)         |                |
| University & College                                       | 230 (28.1%)       | 127 (24.1%)       |                    | 1.0            |
| High School & less   | 589 (71.9%)       | 401 (75.9%)       |                    | 0.8 (0.6,1.0)  |
| <b>Income at 21 yr/fu</b>                                  |                   |                   | 6.2 (0.01)         |                |
| Higher   | 433 (82.2%)       | 627 (76.5%)       |                    | 1.0            |
| Low  | 94 (17.8%)        | 193 (23.5%)       |                    | 1.4 (1.1,1.9)  |
| <b>History of childhood sexual abuse</b>                   |                   |                   | 39.8 (0.0001)      |                |
| Non-abused   | 691 (85.7%)       | 506 (96.4%)       |                    | 1.0            |
| Abused   | 115 (14.3%)       | 19 (3.6%)         |                    | 4.4 (2.7,7.3)  |
| <b>Lifetime major depressive disorder at 21 yr/fu</b>      |                   |                   | 22.1 (0.0001)      |                |
| No   | 607 (74.1%)       | 450 (84.9%)       |                    | 1.0            |
| Yes  | 212 (25.9%)       | 80 (15.1%)        |                    | 2.0 (1.5,2.6)  |
| <b>Forms of IPV victimization at 21yr/fu</b>               |                   |                   |                    |                |
| Severe combined: yes (ref=no)                              | 52 (6.3%)         | 11 (2.1%)         | 13.15(0.0001)      | 3.2 (1.7,6.2)  |
| Physical Abuse: yes (ref=no)                               | 254 (30.9%)       | 215 (40.6%)       | 13.4 (0.001)       | 0.7 (0.5,0.8)  |
| Emotional Abuse: yes (ref=no)                              | 243 (29.6%)       | 159 (30.1%)       | 0.03 (0.86)        | 1.0 (0.8,1.2)  |
| Harassment: yes (ref=no)                                   | 202 (24.6%)       | 116 (21.9%)       | 1.3 (0.25)         | 1.2 (0.9,1.5)  |
| At least one type: yes (ref=no)                            | 363 (44.2%)       | 274 (51.6%)       | 7.2 (0.007)        | 0.7 (0.6,0.9)  |
| Multiple abuse: $\geq 2$ (ref= one)                        | 231 (63.3%)       | 148 (54.0%)       | 6.0 (0.01)         | 1.5 (1.1,2.1)  |
| <b>DSM-IV lifetime substance use disorders at 21 yr/fu</b> |                   |                   |                    |                |
| Any Alcohol disorder: yes (ref=no)                         | 140 (17.0%)       | 72 (13.6%)        | 2.9 (0.09)         | 1.3 (0.9,1.8)  |
| Any Drug disorder: yes (ref=no)                            | 140 (17.1%)       | 202 (38.1%)       | 74.9 (0.0001)      | 0.3 (0.2,0.4)  |
| Nicotine disorder: yes (ref=no)                            | 128 (15.7%)       | 153 (28.9%)       | 33.9 (0.0001)      | 0.5 (0.4,0.6)  |
| Multiple disorders: $>2$ (ref= one type)                   | 102 (37.1%)       | 130 (49.8%)       | 8.8 (0.003)        | 0.6 (0.4,0.8)  |
| <b>at 30 yr/fu</b>   |                   |                   |                    |                |
| Any Alcohol disorder: yes (ref=no)                         | 174 (21.2%)       | 217 (40.9%)       | 60.1 (0.0001)      | 0.4 (0.3,0.5)  |
| Any Drug disorder: yes (ref=no)                            | 134 (16.4%)       | 156 (29.7%)       | 33.3 (0.001)       | 0.5 (0.4,0.6)  |
| Nicotine disorder: yes (ref=no)                            | 210 (25.5%)       | 144 (27.1%)       | 0.4 (0.52)         | 0.9 (0.7,1.2)  |
| Multiple disorders: $\geq 2$ (ref= one)                    | 127 (37.0%)       | 152 (48.6%)       | 8.9 (0.003)        | 0.6 (0.5,0.9)  |

**Table 8.2. Univariable and multivariable logistic regression analysis for forms of IPV at 21 yr/fu predicting DSM-IV substance disorders at 30 yr/fu, in females (n=822; ORs (CI 95%))**

|  | DSM-IV substance disorders at 30 yr/fu |                 |                           |                 |                               |                 |  |                 |
|--|--|-----------------|---------------------------|-----------------|-------------------------------|-----------------|--|-----------------|
|  | Alcohol disorder<br>(ref=no)           |                 | Drug disorder<br>(ref=no) |                 | Nicotine disorder<br>(ref=no) |                 | Multiple disorder: $\geq 2$<br>(ref=one) |                 |
|  | OR (CI 95%)                            | <i>p</i> -value | OR (CI 95%)               | <i>p</i> -value | OR (CI 95%)                   | <i>p</i> -value | OR (CI 95%)                              | <i>p</i> -value |
| <b>Severe combined (ref=no)</b>                      |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 2.8 (1.8,4.5)                          | 0.0001          | 4.4 (2.8,7.1)             | 0.0001          | 2.4 (1.5,3.8)                 | 0.0001          | 2.8 (1.6,4.9)                            | 0.0001          |
| Model 2  | 2.7 (1.5,5.0)                          | 0.004           | 4.4 (2.4,8.1)             | 0.0001          | 2.6 (1.5,4.8)                 | 0.0001          | 3.4 (1.6,7.2)                            | 0.0001          |
| Model 3  | 2.6 (1.3,5.1)                          | 0.004           | 4.0 (2.1,7.9)             | 0.0001          | 2.0 (1.0,3.8)                 | 0.03            | 3.9 (1.7,9.2)                            | 0.0001          |
| <b>Physical abuse (ref=no)</b>                       |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 2.6 (2.0,3.5)                          | 0.0001          | 2.6 (1.9,3.6)             | 0.0001          | 2.4 (1.9,3.2)                 | 0.0001          | 1.7 (1.2,2.5)                            | 0.003           |
| Model 2  | 2.2 (1.6,3.1)                          | 0.0001          | 2.3 (1.6,3.4)             | 0.0001          | 2.3 (1.7,3.3)                 | 0.0001          | 1.9 (1.2,3.0)                            | 0.005           |
| Model 3  | 2.1 (1.4,3.1)                          | 0.0001          | 2.1 (1.4,3.2)             | 0.0001          | 2.2 (1.5,3.2)                 | 0.0001          | 1.8 (1.1,3.0)                            | 0.02            |
| <b>Emotional abuse (ref=no)</b>                      |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 2.3 (1.8,3.1)                          | 0.0001          | 2.7 (2.0,3.7)             | 0.0001          | 2.8 (2.1,3.6)                 | 0.0001          | 1.7 (1.2,2.5)                            | 0.003           |
| Model 2  | 2.0 (1.4,2.9)                          | 0.0001          | 2.6 (1.7,3.8)             | 0.0001          | 2.7 (1.9,3.8)                 | 0.0001          | 1.7 (1.0,2.6)                            | 0.03            |
| Model 3  | 1.9 (1.4,2.8)                          | 0.002           | 2.1 (1.4,3.2)             | 0.0001          | 2.4 (1.6,3.5)                 | 0.0001          | 1.4 (0.9,2.4)                            | 0.13            |
| <b>Harassment (ref=no)</b>                           |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 2.1 (1.6,2.8)                          | 0.0001          | 3.0 (2.4,4.3)             | 0.0001          | 2.6 (2.0,3.6)                 | 0.0001          | 1.8 (1.3,2.6)                            | 0.001           |
| Model 2  | 1.7 (1.2,2.5)                          | 0.005           | 3.4 (2.2,5.0)             | 0.0001          | 2.4 (1.7,3.4)                 | 0.0001          | 1.9 (1.2,3.1)                            | 0.006           |
| Model 3  | 1.6 (1.0,2.4)                          | 0.02            | 3.1 (2.0,4.3)             | 0.0001          | 2.2 (1.5,3.3)                 | 0.0001          | 2.1 (1.2,3.6)                            | 0.006           |
| <b>Multiple abuse: <math>\geq 2</math> (ref=one)</b> |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 2.2 (1.4,3.3)                          | 0.0001          | 3.2 (1.9,5.4)             | 0.0001          | 2.1 (1.5,3.2)                 | 0.0001          | 1.6 (1.0,2.9)                            | 0.05            |
| Model 2  | 1.8 (1.1,3.2)                          | 0.02            | 4.0 (2.1,7.6)             | 0.0001          | 2.1 (1.3,3.4)                 | 0.003           | 2.1 (1.0,4.2)                            | 0.03            |
| Model 3  | 1.8 (1.0,3.3)                          | 0.03            | 3.5 (1.8,7.0)             | 0.0001          | 1.8 (1.1,3.1)                 | 0.02            | 2.8 (1.3,6.1)                            | 0.009           |

IPV forms are not mutually exclusive; each form of IPV is modelled separately;

Model 1: Unadjusted ORs

Model 2: Adjusted for the relevant DSM-IV lifetime substance use disorder at 21 years of age (for multiple disorder, model 2 included adjustment for any type of substance disorder).

Model 3: Adjusted for model 2+potential confounders (racial background, history of childhood sexual abuse, education, income, marital status, having children and lifetime major depressive disorder at 21 years)

**Abbreviations:** OR: Odds ratio; CI: confidence interval; yr/fu: year old follow-up; IPV intimate partner violence; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, 4th Edition

**Table 8.3. Univariable and multivariable logistic regression analysis for forms of IPV at 21 yr/fu\* predicting DSM-IV substance disorders at 30 yr/fu, in males (n=531; ORs (CI 95%))**

|  | DSM-IV substance disorders at 30 yr/fu |                 |                           |                 |                               |                 |  |                 |
|--|--|-----------------|---------------------------|-----------------|-------------------------------|-----------------|--|-----------------|
|  | Alcohol disorder<br>(ref=no)           |                 | Drug disorder<br>(ref=no) |                 | Nicotine disorder<br>(ref=no) |                 | Multiple disorder: $\geq 2$<br>(ref=one) |                 |
|  | OR (CI 95%)                            | <i>p</i> -value | OR (CI 95%)               | <i>p</i> -value | OR (CI 95%)                   | <i>p</i> -value | OR (CI 95%)                              | <i>p</i> -value |
| <b>Physical abuse (ref=no)</b>                       |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 1.8 (1.4,2.5)                          | 0.0001          | 2.6 (1.9,3.7)             | 0.0001          | 2.3 (1.6,3.2)                 | 0.0001          | 2.0 (1.4,3.0)                            | 0.0001          |
| Model 2  | 1.6 (1.1,2.3)                          | 0.008           | 1.9 (1.3,2.9)             | 0.001           | 1.6 (1.1,2.5)                 | 0.02            | 1.6 (1.0,2.6)                            | 0.05            |
| Model 3  | 1.4 (1.0,2.1)                          | 0.05            | 2.0 (1.3,3.0)             | 0.002           | 1.5 (1.0,2.3)                 | 0.05            | 1.6 (1.0,2.7)                            | 0.05            |
| <b>Emotional abuse (ref=no)</b>                      |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 2.0 (1.4,2.7)                          | 0.0001          | 2.2 (1.6,3.1)             | 0.0001          | 2.2 (1.5,3.0)                 | 0.0001          | 2.1 (1.4,3.0)                            | 0.0001          |
| Model 2  | 2.0 (1.4,2.9)                          | 0.0001          | 1.7 (1.1,2.7)             | 0.009           | 1.5 (9.0,2.3)                 | 0.08            | 1.6 (1.0,2.6)                            | 0.56            |
| Model 3  | 1.8 (1.2,2.7)                          | 0.008           | 1.6 (1.0,2.5)             | 0.03            | 1.2 (0.7,1.9)                 | 0.47            | 1.4 (0.8,2.5)                            | 0.18            |
| <b>Harassment (ref=no)</b>                           |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 1.6 (1.1,2.2)                          | 0.01            | 1.8 (1.2,2.5)             | 0.003           | 2.0 (1.4,2.8)                 | 0.0001          | 1.5 (1.0,2.3)                            | 0.06            |
| Model 2  | 1.2 (0.8,1.9)                          | 0.36            | 1.2 (0.7,1.9)             | 0.48            | 1.2 (0.7,1.9)                 | 0.44            | 1.0 (0.6,1.7)                            | 0.98            |
| Model 3  | 1.0 (0.6,1.5)                          | 0.82            | 1.0 (0.6,1.7)             | 0.60            | 1.1 (0.6,1.8)                 | 0.85            | 0.9 (0.5,1.7)                            | 0.84            |
| <b>Multiple abuse: <math>\geq 2</math> (ref=one)</b> |  |                 |                           |                 |                               |                 |  |                 |
| Model 1  | 1.5 (1.0,2.3)                          | 0.03            | 1.7 (1.1,2.6)             | 0.01            | 1.9 (1.2,2.9)                 | 0.004           | 1.9 (1.1,3.1)                            | 0.01            |
| Model 2  | 1.3 (0.8,2.2)                          | 0.23            | 1.2 (0.8,2.1)             | 0.37            | 1.5 (0.8,2.6)                 | 0.13            | 1.6 (0.9,2.9)                            | 0.12            |
| Model 3  | 1.2 (0.7,2.0)                          | 0.51            | 1.1 (0.7,2.0)             | 0.56            | 1.2 (0.7,2.2)                 | 0.48            | 1.5 (0.8,2.9)                            | 0.23            |

\* Due to insufficient sample size, the analysis was not performed for severe combined in males.

IPV forms are not mutually exclusive; each form of IPV is modelled separately;

Model 1: Unadjusted ORs

Model 2: Adjusted for the relevant DSM-IV lifetime substance use disorder at 21 years of age (for multiple disorder, model 2 included adjustment for any type of substance disorder).

Model 3: Adjusted for model 2+ potential confounders (racial background, history of childhood sexual abuse, education, income, marital status, having children and lifetime major depressive disorder at 21 years)

**Abbreviations:** OR: Odds ratio; CI: confidence interval; yr/fu: year old follow-up; IPV intimate partner violence; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, 4th Edition

## Supplementary Information

**Table S 8.1. Univariate and multivariate attrition analyses predicting loss to follow-up at 30 yr/fu (ORs (CI 95%))**

|  | Females              |                       | Males                |                       |
|--|----------------------|-----------------------|----------------------|-----------------------|
|  | Unadjusted           | Adjusted <sup>a</sup> | Unadjusted           | Adjusted <sup>a</sup> |
| <b>Racial background at FCV</b>                          |                      |                       |                      |                       |
| Caucasian (ref)  | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Aboriginal/Torres Strait Islander                        | 1.3 (0.7,2.3)        | 1.0 (0.6,1.9)         | 1.5 (0.8,2.9)        | 1.4 (0.7,2.9)         |
| <b>Marital status at 21 yr/fu <sup>a</sup></b>           |                      |                       |                      |                       |
| Married (ref)  | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Living together/bf-gf                                    | <b>2.1 (1.0,4.6)</b> | <b>3.0 (1.3,7.1)</b>  | 0.6 (0.2,1.6)        | 0.7 (0.3,2.1)         |
| <b>Have children at 21 yr/fu</b>                         |                      |                       |                      |                       |
| No (ref)   | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Yes  | <b>1.9 (1.4,2.7)</b> | <b>2.1 (1.5,3.1)</b>  | 1.6 (0.8,2.9)        | 1.7 (0.9,3.5)         |
| <b>Education level at 21 yr/fu</b>                       |                      |                       |                      |                       |
| University & College (ref)                               | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| High School & less                                       | 1.0 (0.8,1.4)        | 0.9 (0.7,1.2)         | 1.2 (0.9,1.7)        | 1.2 (0.9,1.6)         |
| <b>Income at 21 yr/fu</b>                                |                      |                       |                      |                       |
| Higher (ref)   | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Low  | 0.8 (0.6,1.1)        | 0.8 (0.6,1.2)         | <b>0.6 (0.5,0.9)</b> | 0.7 (0.5,1.0)         |
| <b>History of sexual child abuse</b>                     |                      |                       |                      |                       |
| No   | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Yes  | 1.2 (0.8,1.7)        | 0.9 (0.6,1.3)         | <b>1.8 (1.0,3.2)</b> | <b>1.7 (0.9,3.1)</b>  |
| <b>Any DSM-IV Major depressive disorder at 21 yr/fu</b>  |                      |                       |                      |                       |
| No (ref)   | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Yes  | 1.2 (0.9,1.6)        | 1.2 (0.9,1.7)         | 0.7 (0.5,1.1)        | 0.5 (0.4,0.8)         |
| <b>Any DSM-IV lifetime Alcohol disorder at 21 yr/fu</b>  |                      |                       |                      |                       |
| No (ref)   | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Yes  | 1.2 (0.9,1.6)        | 1.1 (0.8,1.6)         | <b>1.8 (1.3,2.4)</b> | <b>1.7 (1.1,2.4)</b>  |
| <b>Any DSM-IV lifetime drug disorder at 21 yr/fu</b>     |                      |                       |                      |                       |
| No (ref)   | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Yes  | <b>1.4 (1.1,1.9)</b> | 1.3 (0.9,1.8)         | <b>1.3 (1.0,1.7)</b> | 1.2 (0.9,1.6)         |
| <b>Any DSM-IV lifetime nicotine disorder at 21 yr/fu</b> |                      |                       |                      |                       |
| No (ref)   | 1.0                  | 1.0                   | 1.0                  | 1.0                   |
| Yes  | 1.2 (0.9,1.6)        | 0.9 (0.6,1.3)         | 1.2 (0.9,1.6)        | 1.0 (0.7,1.4)         |

ORs in bold are significantly different to those of the reference category ( $p < 0.05$ ). <sup>a</sup> Model was adjusted for all variables listed.

**Abbreviations:** OR: Odds ratio; CI: confidence interval; yr/fu: year old follow-up; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, 4th Edition

**Table S 8.2. Summary of univariable associations between confounders and exposure and outcome in females and males: OR (95% CI)**

|  | Females             |   | Males                |   |
|--|---------------------|---|----------------------|---|
|  | IPV at 21<br>(any)  | substance<br>disorders<br>at 30 yr/fu<br>(any)- | IPV at 21<br>(any)   | substance<br>disorders<br>at 30 yr/fu<br>(any)- |
| <b>Confounders</b>   |                     |   |                      |   |
| <b>Racial background:</b> Aboriginal/ Islander<br>(ref=Caucasian)    | <b>2.0(1.2,3.2)</b> | 0.7(0.3,1.3)                                    | <b>2.9(1.5,5.4)</b>  | 2.0(0.7,6.2)                                    |
| <b>Marital status at 21 yr/fu:</b> Cohabiting<br>(ref=married)       | 1.1(0.6,2.3)        | 0.7(0.4,1.4)                                    | 0.9(0.3,3.0)         | 1.1(0.2,4.6)                                    |
| <b>Have children at 21 yr/fu:</b> Yes (ref=no)                       | <b>2.3(1.5,3.5)</b> | <b>1.7(1.1,2.6)</b>                             | <b>6.4(1.9,21.7)</b> | 3.2(0.8,7.2)                                    |
| <b>Education at 21:</b> <High School (ref=higher)                    | 0.9(0.7,1.3)        | 1.1(0.8,1.5)                                    | 0.9(0.6,1.2)         | 1.0(0.7,1.6)                                    |
| <b>Income at 21yr/fu:</b> Low (ref=higher)                           | <b>0.7(0.5,0.9)</b> | <b>0.7(0.5,0.9)</b>                             | 0.8(0.6,1.2)         | <b>0.6(0.4,0.9)</b>                             |
| <b>History of sexual child abuse:</b> Yes (ref=no)                   | <b>2.8(1.9,4.3)</b> | <b>1.9(1.3,2.9)</b>                             | <b>3.4(1.3,8.6)</b>  | <b>2.0(0.7,5.6)</b>                             |
| <b>Major depressive disorder at 21:</b> Yes<br>(ref=no)              | <b>2.5(1.8,3.5)</b> | <b>2.3(1.7,3.1)</b>                             | <b>5.2(2.1,12.7)</b> | <b>1.9(1.1,3.2)</b>                             |
| <b>Lifetime substance use disorders at 21 yr/fu:</b> Yes<br>(ref=no) |                     |   |                      |   |
| Alcohol disorder   | <b>2.7(1.8,3.9)</b> | <b>10.3(6.4,16.5)</b>                           | <b>2.5(1.5,4.3)</b>  | <b>6.7(3.2,14.4)</b>                            |
| Drug disorder  | <b>2.5(1.7,3.6)</b> | <b>3.4(2.5,5.5)</b>                             | <b>3.3(2.3,4.8)</b>  | <b>5.0(3.3,7.6)</b>                             |
| Nicotine disorder  | <b>2.7(1.8,3.9)</b> | <b>6.7(4.3,10.5)</b>                            | <b>3.0(2.0,4.5)</b>  | <b>9.1(5.3,15.7)</b>                            |

ORs in bold are significantly different to those of the reference category ( $p < 0.05$ ).

**Abbreviations:** OR: Odds ratio; CI: confidence interval; yr/fu: year old follow-up; IPV intimate partner violence; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, 4th Edition

**Table S 8.3. Multiple imputations (20 cycles) of the fully-adjusted\* regression model for forms of IPV at 21 yr/fu predicting DSM-IV substance disorders at 30 yr/fu, in females and males**

|                                     | Alcohol disorder<br>(ref=no) | Drug disorder<br>(ref=no) | Nicotine disorder<br>(ref=no) | Multiple disorder<br>≥2 (ref=one) |
|-------------------------------------|------------------------------|---------------------------|-------------------------------|-----------------------------------|
| <b>Females</b>                      |                              |                           |                               |                                   |
| <b>Severe combined (ref=no)</b>     | <b>2.6 (1.3,5.1)</b>         | <b>4.0 (2.1,2.9)</b>      | <b>2.0 (1.0,3.8)</b>          | <b>4.0 (1.7,9.4)</b>              |
| <b>Physical abuse (ref=no)</b>      | <b>2.1 (1.4,3.1)</b>         | <b>2.1 (1.4,3.2)</b>      | <b>2.2 (1.5,3.2)</b>          | <b>1.8 (1.1,3.0)</b>              |
| <b>Emotional abuse (ref=no)</b>     | <b>1.9 (1.3,2.8)</b>         | <b>2.1 (1.4,3.2)</b>      | <b>2.4 (1.6,3.5)</b>          | 1.5 (0.9,2.5)                     |
| <b>Harassment (ref=no)</b>          | <b>1.6 (1.0,2.4)</b>         | <b>3.1 (2.0,4.8)</b>      | <b>2.2 (1.5,3.2)</b>          | <b>2.1 (1.2,3.6)</b>              |
| <b>Multiple abuse: ≥2 (ref=one)</b> | <b>1.9 (1.1,3.5)</b>         | <b>3.5 (1.8,7.0)</b>      | <b>1.8 (1.1,3.1)</b>          | <b>2.9 (1.4,6.4)</b>              |
| <b>Males</b>                        |                              |                           |                               |                                   |
| <b>Severe combined (ref=no)</b>     | 2.0 (0.5,8.4)                | 0.9 (0.2,3.5)             | 0.5 (0.1,2.1)                 | 0.6 (0.2,2.3)                     |
| <b>Physical abuse (ref=no)</b>      | <b>1.4 (1.0,2.1)</b>         | <b>2.0 (1.3,3.0)</b>      | 1.5 (0.9,2.3)                 | <b>1.8 (1.1,2.8)</b>              |
| <b>Emotional abuse (ref=no)</b>     | <b>1.8 (1.2,2.7)</b>         | <b>1.6 (1.0,2.5)</b>      | 1.2 (0.7,1.9)                 | 1.4 (0.9,2.3)                     |
| <b>Harassment (ref=no)</b>          | 1.0 (0.6,1.5)                | 1.0 (0.6,1.7)             | 1.1 (0.6,1.8)                 | 0.9 (0.5,1.5)                     |
| <b>Multiple abuse: ≥2 (ref=one)</b> | 1.2 (0.7,2.0)                | 1.2 (0.7,2.0)             | 1.2 (0.7,2.2)                 | 1.4 (0.8,2.5)                     |

IPV forms, are not mutually exclusive; each form of IPV is modelled separately; ORs in bold are significantly different to those of the reference category ( $p < 0.05$ ).

\* Adjusted for all potential confounders (racial background, personal education, personal income, marital status, having children and sexual child abuse + pre-existing condition)

**Abbreviations:** OR: Odds ratio; CI: confidence interval; yr/fu: year old follow-up; IPV intimate partner violence

## **Chapter Nine: IPV and subsequent mental health disorders**

This chapter includes a paper under revision as:

Ahmadabadi, Z., Najman, J. M., Williams, G. M., Clavarino, A. M., d'Abbs, P., and Tran, N. Intimate partner violence and subsequent depression and anxiety disorders. *Social Psychiatry and Psychiatric Epidemiology*, under review

## **Abstract**

**Background and objectives:** The current longitudinal study examines the temporal association between different types of intimate partner violence (IPV) at early adulthood (21 years) and subsequent depressive and anxiety disorders in young adulthood (30 years).

**Methods:** Participants were from the Mater-University of Queensland Study of Pregnancy (MUSP). A cohort of 1529 were available for analysis. IPV was measured using the Composite Abuse Scale at 21 years. In the 21- and 30-year follow-ups, offspring's major depressive and anxiety disorders were measured using the Composite International Diagnostic Interview (CIDI).

**Results:** We found a temporal relationship between almost all forms of IPV at 21 years and females' new cases of depressive disorder at 30 years. This association was not found for females who had previously been diagnosed with depressive disorder. IPV did not predict the onset of new anxiety disorders, but it had a robust association with anxiety disorders in females with a previous anxiety diagnosis. We observed no significant link between IPV and males' subsequent depressive disorder. Interestingly, the experience of emotional abuse was a robust predictor of new cases of anxiety disorder but only for males.

**Conclusion:** Our results suggest the need for sex-specific and integrated interventions addressing both IPV and mental health problems simultaneously. IPV Interventions should be informed by the extent to which pre-existing anxiety and depression may lead to different psychological responses to the IPV experience. Increased risk of anxiety disorders predicted by emotional abuse experienced by males challenges beliefs about invulnerability of men in the abusive relationships and demands further attention.

**Keywords:** Intimate partner violence, depressive disorder, anxiety, sex



## **Introduction**

Intimate partner violence (IPV) is a prevalent public health concern across the world, associated with short-term and long-term negative outcomes (159, 312-314, 317, 318). There is growing evidence suggesting that those who have experienced IPV are at increased risk of mental health problems (114-116).

Despite having relatively large samples, most previous studies have been cross-sectional and have not allowed for the possibility of pre-existing mental health problems for those experiencing IPV. Further, much of the longitudinal research has been restricted to IPV and depression (117, 123-129); there is a paucity of evidence about the other mental health outcomes of IPV including anxiety (122, 130). Moreover, previous longitudinal studies have some limitations in controlling for key potential confounders (116). It is possible that any association between IPV and mental health may reflect other factors related to both exposure and outcome. This includes childhood exposure to family violence, experience of childhood sexual abuse and living with parents who experienced mental health problems (13, 64).

The short-term association between IPV and mental health problems has previously been addressed (125, 128, 129). However, IPV is unlikely to be a one-time exposure. It is likely to be a recurrent and ongoing occurrence (15) and its effect on mental health may occur over an extended period of exposure (321). In any event, the temporal order of IPV and mental health problems remains to be determined. In one longitudinal study of a nationally representative cohort, Ouellet-Morin, et al (117) tested the directionality of associations between IPV and depression. Excluding women with a history of depression, they found that IPV independently predicted new-onset depression. Beside research suggesting that IPV may lead to a subsequent poor mental health, an extensive body of literature has identified a higher risk of IPV victimization in women with severe mental illness (118-121). There is also some evidence of a bidirectional association between IPV and poor mental health (116, 122). These findings highlight the need to adjust for pre-existing mental health in testing the association between IPV and subsequent mental health.

There is conflicting evidence about sex differences in the experience of IPV. There are many studies that affirm the high rate of violence males perpetrate against their female partners (28, 46, 47). By contrast, population surveys consistently suggest that IPV is experienced at similar rates by males and females in their intimate relationships (16, 49-54). Those studies which emphasize the high rates of female victimization are generally derived from samples seeking support services including the criminal justice system or women's shelters (59). It is

likely that these conflicting findings primarily reflect differences in the samples being studied. Population surveys may not include females who have experienced severe forms of IPV and live in safe houses or temporary accommodation. Population-based studies may also fail to capture sex differences in the severity of IPV victimization and its consequences (100). A few longitudinal population studies assessing sex-differences in the mental health of those who have experienced IPV have shown that even with similar rates of IPV, females may be more vulnerable to the negative consequences of IPV such as depression and PTSD (122, 331).

The current study examines whether different types of IPV experiences in early adulthood (21 years) are associated with subsequent depression and anxiety disorders in young adulthood (30 years). We report data from a population-based prospective cohort study, which includes females and males. We control for potential confounders and pre-existing mental health disorders and investigate whether experiences of IPV independently predict new cases of depression and anxiety disorders.

## **Method**

### **Participants**

Participants are from the Mater-University of Queensland Study of Pregnancy (MUSP), which is a longitudinal birth cohort study in Brisbane, Australia. Some 7223 mothers attending their first clinic visit at Brisbane's Mater Hospital and their children were followed up at child's birth, 6 months after birth, 5, 14, 21 and 30 years later. The initial inclusion criteria and flow of the study have been extensively described elsewhere (184). For the current study, we included only offspring for whom there were data involving lifetime mental health disorders at 21 and 30 years using the Composite International Diagnostic Interview (CIDI; 207). The present study involves a cohort of 1528 offspring including 891 (58.3%) female and 638 male respondents. The mean age at the 21-year follow-up was 20.8 (SD±0.9). Participants' racial background was Caucasian (92.8%), Asian (3.4%) and Aboriginal/Torres Strait Islander (3.7%). At 21 years of age, about 23.3% of respondents were below the then Australian poverty line and Less than 25.7% of offspring had a post high school educational qualification. 2.8% of respondents were married, 55.0% were living together and 7.7% had children.

## **Measurement**

### **Intimate partner violence**

IPV was measured using a modified version of the Composite Abuse Scale (CAS) at 21 years. This scale is a validated and comprehensive self-report measure, which assesses frequency of ever having experienced violence in intimate relationships (in either current or prior relationships) (197, 198). In the current study the CAS consists of four independent subscales of *severe combined victimization* (2 items included being raped, and assaulted with a weapon), *physical abuse* (7 items included being hit, thrown, pushed, shaken; Cronbach's alpha=0.89), *emotional abuse* (11 items included being kept apart from friends and family, insulted, blamed; Cronbach's alpha=0.9) and *harassment* (4 items included being followed, harassed over the telephone or at work; Cronbach's alpha=0.71). Each item was rated on a 6-point response scale: never (=0), only once (=1), several times (=2), once a month (=3), once a week (=4) and daily (=5). Subscales' scores were summed and dichotomized into two categories of *abused* and *not abused* (reference group), according to the recommended cut-offs (severe combined abuse ( $\geq 1$ ), physical abuse ( $\geq 1$ ), emotional abuse ( $\geq 3$ ), and harassment ( $\geq 2$ )).

### **Mental health disorders**

Major depressive disorder and anxiety disorders (including PTSD (post-traumatic stress disorder), social and specific phobia, generalized anxiety and panic disorder) were measured using the Composite International Diagnostic Interview (CIDI). The CIDI-Auto is a structured and standardized diagnostic interview in general population for the assessment of lifetime and recent mental disorders including depressive and anxiety disorders (207). It also provides diagnosis using criteria in Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; 209). In the current study we used the CIDI-Auto to assess lifetime diagnoses of DSM-IV major depressive and anxiety disorders at both 21-year and 30-year follow-ups.

### **Potential confounders**

In the multivariable analyses, the association between IPV and depressive and anxiety disorders was adjusted for a range of socio-demographic variables. At the baseline, parents' ethnicity was categorized into *Caucasian, Asian and Aboriginal/Torres Strait Islander*. At 14 years, mothers completed a 7-item questionnaire about their last year experiences of victimization by a male partner (being yelled at, insulted, sulked, threw something at, pushed grabbed or shoved and hit). Maternal history of mental health treatment was also measured by a self-report question (yes, no). All participants were about 21 and 30 years of age at each

follow-up, so we did not adjust for the age differences in the cohort. In the 21-year follow-up, marital status was measured by the question *what is your present marital status*. Categories included *single/never married, living together, married or separated*. Offspring education level at 21 years comprised 3 levels of *high school or less, diploma and college and university*. With regards to the Australian National Poverty Line, offspring personal income at 21 years was classified into *low and higher (257)*. We also measured *History of sexual child abuse* using the question *did you experience being pressured or forced to have sexual contact before 16 years?*

## **Statistical analysis**

In table 9.1, we compared males and females for the study variables using odds ratios. We then combined two lifetime CIDI diagnosis statuses of respondents at 21 and 30 and created 4 categories of those with no diagnosis, those who had no history of disorder at 21 but met the criteria for disorder at 30 (new cases since 21 years), those who met the criteria of disorder at 21 years but not at 30 years (recovered) and respondents who were diagnosed with disorder at 21- and 30-year follow ups (persistently diagnosed). A sex-based comparison for each group using a univariable logistic regression was conducted and presented in the Supplementary Table S9.1. In tables 9.2 and 9.3, we performed a series of hierarchical and stratified univariable and multivariable logistic regressions between each form of IPV at 21 follow-up and depression and anxiety disorders at 30-year follow-up, separately for females and males. We performed the analysis for the whole sample, those with a history of mental health disorders and new cases since 21-year follow-up. The hierarchical regressions were chosen to examine whether the primary associations between specific forms of IPV and subsequent mental health disorders (Model 1) were robust after adjustment for pre-existing condition (Model 2) and potential confounders (Model 3). To supplement the sex-stratified analysis, we conducted the logistic regression analysis to test for an interaction effect of sex (female=0, male=1) and each form of IPV at 21 (not abused=0; abused=1) on subsequent mental health disorders (no=0, yes=1). Univariable and multivariable logistic regression are reported by odds ratios (OR) and with 95% confidence intervals (95%CI).

## **Missing data**

Of the cohort of 7223 participants in FCV, about 1528 offspring completed the IPV questionnaire at 21 years and CIDI at 21- and 30-year follow-ups. To assess the possibility of attrition bias affecting the results, we conducted a propensity analysis and repeated the

regression analyses using a variable representing the characteristics of the sample at baseline including sex, maternal education, family income, quality of marital relationships, parental racial background and maternal depression (214). To do this analysis, in SPSS we used logistic regression to calculate a propensity score of the association between the baseline confounding variables and the predictor variables of interest (forms of IPV). This propensity weighting was then used in subsequent regression outcome models instead of the individual confounders (Supplementary Table S9.2).

## Results

Table 9.1 compares male and female offspring on potential covariates, forms of IPV victimization and DSM-IV lifetime major depression and anxiety disorders at 21 and 30 years. At 21 years, males experienced physical abuse and females experienced severe combined abuse more often. Overall, males reported higher rates of experiencing at least one type of intimate victimization than did females. In the 21- and 30-year follow ups females exhibited higher rates of major depression and anxiety disorders. We also found that females were more likely to develop new cases of both depression and anxiety disorders than did males (Supplementary Table S9.1).

Table 9.2 presents the associations between IPV at 21 years and major depression disorder at 30 years in males and females. In the unadjusted model, almost all forms of IPV predict new cases of major depression disorder in females, but not in males. In model 3, after adjusting for the pre-existing depression disorder at 21 years, the primary effects of physical and emotional abuse and harassment on 30-year major depression disorder were no longer statistically significant for females. Only severe combined IPV remained significant in predicting major depression disorder at 30 years. However, excluding females with a history of major depression disorder, severe combined abuse (AOR= 2.7 (1.0, 7.4)), physical abuse (AOR= 1.8 (1.1, 3.0)) and emotional abuse (AOR= 1.5 (1.0, 2.6)) had robust associations with new cases of depression disorder at 30 years. We could not find significant relationships between IPV and subsequent major depression disorder in females who had a pre-existing depression.

Table 9.3 shows univariable and multivariable associations between IPV at 21 years and anxiety disorders at 30 years in both males and females. We found that emotional abuse predicts new cases of anxiety disorders in males, but not in females. However, we found

significant associations between physical and emotional abuse and harassment and later anxiety in females who had a history of anxiety disorders.

We also assessed whether interaction terms between sex and forms of IPV, adjusted for potential covariates, predict mental health disorders at 30 years. Consistent with the findings in table 9.2, we found that the association between physical abuse and new cases of depression disorder differs for males and females, adjusting for potential confounders (OR= 0.3, CI95= 0.1-0.8, p=0.02). This finding suggests a sex difference in the association between physical abuse and new cases of major depression disorder.

Attrition was greater in males compared to females (71.0% vs. 58.2%) and Aboriginal/Islanders compared to Caucasian participants (80.6% vs. 63.1%). There was also higher attrition among offspring of teenage (73.7% vs. 63.1%) or uneducated (72.2% vs. 63.1%) mothers, and among those who were living in low-income families (70.0% vs. 61.0%). Findings from repeated analyses with propensity scores based on baseline confounders showed that attrition did not affect the direction and magnitude of the associations (Supplementary Table S9.2).

## **Discussion**

In this study, we have followed a cohort of 1529 males and females over 9 years to assess sex differences in mental health consequences of IPV victimization. We found that the associations between IPV and subsequent mental health disorders are different in those who had/did not have a pre-existing condition. We found a temporal relationship between almost all forms of IPV victimization at 21 years and major depression disorder at 30 years in females who had not previously had a major depression disorder. This finding was not observed in females who had previously been diagnosed with major depression disorder. We had a different finding when prediction females' anxiety disorder. IPV did not predict new onset of anxiety disorders, but it had a robust association with anxiety disorders in females with a previous diagnosis. We observed no significant link between IPV and males' subsequent major depression disorder, neither in those with or without a pre-existing depression. Interestingly, males' experience of emotional abuse was a robust predictor of new cases of anxiety disorders.

Our finding of an association between IPV and females' major depression disorder suggests two pathways: first, depression disorder may arise independently from the IPV experience across life-stages (332), and second, IPV may lead to the onset of major depression diagnoses in females who have previously been free of depression. By contrast, we observed

that female IPV survivors with a history of anxiety disorders are more likely to experience subsequent anxiety disorder. This may be explained by the differences between depression and anxiety in sensitivity and reactivity to stressors (here IPV victimization). Compared to females with no previous anxiety disorder, females diagnosed with anxiety disorders may show stronger response to interpersonal stressors, engage in negative self-evaluation and experience intensified and prolonged negative emotions. Furthermore, females with anxiety may have a greater sensitivity to being abused by a romantic partner than do females with depression (333, 334).

Our data suggests a clear sex difference in the association of IPV and new cases of major depression disorder. This finding is consistent with one longitudinal study in which females' but not males' depressive symptoms was associated with the experience of IPV victimization (122). A possible explanation for this might be that males and females react differently to the stress/trauma of interpersonal violence, with females being more likely to internalize stress symptoms and become depressed (335). Another possibility is that females might experience depression because the abuse has been more frequent or severe (336). Females in the current study reported higher rates of severe combined abuse than did males (OR: 3.2; CI: 1.7, 6.2). It is also possible that even for the same form of IPV, males and females experience the actual abuse differently. Although, our data showed that males report physical abuse more often, the experience of physical abuse might be more frequent and physically severe for females than for males (327). Anderson (100) argues that the sex-symmetry research has failed to determine sex differences/similarities in severity and consequences of IPV. Most studies suggesting similar rates of IPV in males and females simply reduce *sex* to *what females and males do* and neglect the gendered nature of IPV rooted in social structures. Female violence is not equal to male's violence, in terms of characteristics, correlates and consequences (337). One longitudinal study found that even in female-dominated or mutually violent relationships females experience more adverse health outcomes (331). Another study, having followed male and female adolescents through adulthood found that although both males and females reported similar rates of IPV, females were more likely to develop depression and PTSD than males (122)".

The higher rates of physical abuse reported by males in the current study should be interpreted in the context of general population sample that is unlikely to include battered women or very violent men. Furthermore, the physical abuse subscale in the CAS includes items which measure non-severe and gender-neutral violent acts which may be perpetrated equally by males and females (338). It is also possible that the IPV measure used in the current

study cannot determine whether victimized males have been involved in a bidirectional violence or are the primary perpetrator of IPV.

We found that only males with no history of anxiety disorders developed new cases of anxiety disorders following emotional abuse victimization. The longitudinal literature on consequences of emotional IPV in men is limited. Some cross-sectional studies have indicated that higher psychological abuse, including emotional and verbal abuse, has a stronger association with mental health outcomes than do physical abuse, in both males and females (339, 340). A body of research on battered women has suggested that psychological abuse is more strongly associated with PTSD (as a type of anxiety) than physical abuse (341-343). A possible explanation is that psychological victimization directly attacks one's self-concept and may cause PTSD and anxiety through mechanisms like guilt, self-hatred and regret (342). Anxiety, itself, may be associated with shame and embarrassment especially in males, as it is interpreted as a vulnerability and weakness for males who have been socialized to a more dominant self-perception (344).

Our findings should be interpreted with caution. There is a possibility the study sample may not be representative of the population. The baseline sample of MUSP included pregnant women from the lower to middle socio-economic status who had attended a public hospital. Arguably, their offspring have become more representative of the Australian population (184, 186). Since our findings are based on only one partner's self-report of victimization, there may be a risk of self-serving bias (239). Hence, we cannot exclude the possibility that survivors in this study may be involved in a bidirectional violence or be the primary perpetrator of IPV rather than the victim. It has been well documented that emotional and physical abuse often co-occur, and it is essential to control for their concurrent effects (242, 329, 342). However, in the current study we modelled each form of IPV separately and did not adjust forms of IPV for each other. Small numbers in some cells made a separate analysis impractical. Another limitation of this study was lack of information on the reverse relationship between major depression and anxiety disorders predicting IPV victimization. In the 21-year follow up, we measured lifetime ever mental health disorders as well as life-time exposure to IPV, which made a causal inference impossible at that time. However, while we had some data on depression/anxiety at 14 years and could examine if adolescence mental health problems predict IPV, the use of a different measure of depression and anxiety, the length of time between the 14- and 21-year follow-ups, and the small numbers in some cells reduce the value of such comparison. Despite including several key confounders, unmeasured confounding factors still may bias our results. Finally, loss to follow up may have biased some results.



Multiple studies on MUSP, however, have found that the attrition minimally affects estimates of association (184, 186, 211). In the current study the propensity analyses, however, suggested that the results are unlikely to be affected by selection bias.

**Conclusion and implications:**

The findings of this study point to a temporal relationship from IPV victimization and subsequent mental health disorders. We also found different results for females with and without pre-existing depression disorder. Although the temporal order is useful in determining which risk factor should be targeted for interventions, our mixed results suggest a more integrated intervention addressing both IPV and mental illness simultaneously. A key policy priority should therefore be to plan early prevention before adolescents become involved in intimate relationships and develop mental health problems. IPV interventions should be informed by the extent to which pre-existing anxiety and depression may lead to different psychological responses to the IPV experience. We found a sex difference in the association of IPV and depression disorder, which support developing sex-specific interventions. Increased risk of anxiety disorders predicted by emotional abuse experienced by males challenges beliefs about invulnerability of men in the abusive relationships and demands further attention.

**Table 9.1. Sex differences in study variables**

|  | Male (ref) | Female  | OR (CI 95%)           |
|--|------------|---------|-----------------------|
|  | %          |         |                       |
| <b>Parental racial background</b>              | (n=631)    | (n=888) |                       |
| Caucasian                                      | 93.1       | 92.6    | 1.0                   |
| Asian  | 4.0        | 3.0     | 0.8 (0.4,1.3)         |
| Abor-Islander                                  | 2.9        | 4.4     | 1.5 (0.9,2.7)         |
| <b>Maternal age at pregnancy</b>               | (n=638)    | (n=891) |                       |
| 20 +   | 89.2       | 86.9    | 1.0                   |
| 19 ≥   | 10.8       | 13.1    | 1.2 (0.9,1.7)         |
| <b>Maternal marital relationship at FCV</b>    | (n=622)    | (n=862) |                       |
| Good adjustment                                | 98.4       | 97.9    | 1.0                   |
| Conflict                                       | 1.6        | 2.1     | 1.3 (0.6,2.8)         |
| <b>Maternal education at FCV</b>               | (n=635)    | (n=886) |                       |
| Diploma and higher                             | 83.3       | 85.8    | 1.0                   |
| Incomplete high school                         | 16.7       | 14.2    | 0.8 (0.6,1.2)         |
| <b>Family income at FCV</b>                    | (n=614)    | (n=847) |                       |
| higher   | 72.1       | 71.1    | 1.0                   |
| Low  | 27.9       | 28.9    | 1.1 (0.8,1.3)         |
| <b>Maternal depression at FCV</b>              | (n=631)    | (n=883) |                       |
| Normal   | 96.9       | 96.4    | 1.0                   |
| Depressed                                      | 3.1        | 3.6     | 0.8 (0.5,1.5)         |
| <b>Youth marital status at 21 yr/fu</b>        | (n=633)    | (n=888) |                       |
| Married  | 1.1        | 3.9     | 1.0                   |
| Living together/bf-gf                          | 46.1       | 61.3    | <b>2.7 (1.2,6.1)</b>  |
| Single, never married                          | 52.0       | 34.2    | <b>5.4 (2.4,12.4)</b> |
| <b>Youth having children at 21 yr/fu</b>       | (n=631)    | (n=888) |                       |
| No   | 97.3       | 88.7    | 1.0                   |
| Yes  | 2.7        | 11.3    | <b>4.6 (2.7,7.7)</b>  |
| <b>Youth education at 21 yr/fu</b>             | (n=630)    | (n=886) |                       |
| Diploma and higher                             | 23.0       | 27.5    | 1.0                   |
| Incomplete high school                         | 77.0       | 72.5    | <b>0.8 (0.6,0.9)</b>  |
| <b>Youth income at 21 yr/fu</b>                | (n=629)    | (n=887) |                       |
| Higher   | 78.9       | 75.2    | 1.0                   |
| Low  | 21.1       | 24.8    | 1.2 (0.9,1.5)         |
| <b>History of sexual child abuse</b>           | (n=625)    | (n=873) |                       |
| No   | 96.3       | 86.6    | 1                     |
| Yes  | 3.7        | 13.4    | <b>4.1 (2.6,6.4)</b>  |
| <b>Forms of IPV victimization (at 21yr/fu)</b> | (n=531)    | (n=821) |                       |
| Severe combined                                | 2.1        | 6.3     | <b>3.2 (1.7,6.2)</b>  |
| Physical Abuse                                 | 40.6       | 31.0    | <b>0.7 (0.5,0.8)</b>  |
| Emotional Abuse                                | 30.1       | 29.5    | 0.1 (0.8,1.2)         |
| Harassment                                     | 21.9       | 24.6    | 1.2 (0.9,1.5)         |
| At least one type                              | 51.6       | 44.1    | <b>0.7 (0.6,0.9)</b>  |
| <b>DSM-IV lifetime ever disorders (Yes)</b>    | (n=638)    | (n=891) |                       |
| Major depression disorder at 30 yr/fu          | 16.0       | 26.0    | <b>1.9 (1.4,2.4)</b>  |
| Any anxiety disorder at 30 yr/fu               | 21.9       | 38.4    | <b>2.2 (1.8,2.8)</b>  |
| Major depression disorder at 21 yr/fu          | 14.3       | 24.9    | <b>2.0 (1.5, 2.6)</b> |
| Any anxiety disorder at 21 yr/fu               | 12.9       | 30.4    | <b>3.0 (2.3,3.9)</b>  |

ORs in bold are significantly different to those of the reference category (P < 0.05).

**Abbreviations:** OR: Odds ratios; CI: confidence interval; yr/fu: year old follow up; IPV intimate partner violence; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders,4th Edition; FCV: first clinic visit

**Table 9.2. Association between IPV at 21 yr/fu and major depression disorder at 30 yr/fu in total sample, those with and without a history of depression disorder at 21 yr/fu (OR (CI 95%))**

|                 | Whole sample            |                         |                         | Without a history of depression disorder (New cases) |                         | With a history of depression disorder |                  |
|-----------------|-------------------------|-------------------------|-------------------------|--|-------------------------|---------------------------------------|------------------|
|                 | Model 1                 | Model 2                 | Model 3                 | Model 1  | Model 2                 | Model 1                               | Model 2          |
| <b>Females</b>  |                         |                         |                         |  |                         |                                       |                  |
| Severe combined | <b>2.7</b><br>(1.7,4.3) | <b>2.7</b><br>(1.6,4.5) | <b>1.9</b><br>(1.0,3.7) | <b>3.4</b><br>(1.4,7.9)                              | <b>2.7</b><br>(1.0,7.4) | 1.6<br>(0.7,3.5)                      | 1.6<br>(0.7,4.1) |
| Physical abuse  | <b>1.6</b><br>(1.2,2.1) | <b>1.5</b><br>(1.1,2.0) | 1.3<br>(0.9,1.9)        | <b>2.0</b><br>(1.3,3.0)                              | <b>1.8</b><br>(1.1,3.0) | 0.7<br>(0.4,1.3)                      | 0.8<br>(0.4,1.5) |
| Emotional abuse | <b>1.9</b><br>(1.4,2.4) | <b>1.7</b><br>(1.3,2.4) | 1.3<br>(0.9,2.0)        | <b>1.8</b><br>(1.1,2.7)                              | <b>1.5</b><br>(1.0,2.6) | 0.9<br>(0.5,1.5)                      | 1.0<br>(0.5,1.9) |
| Harassment      | <b>1.6</b><br>(1.2,2.1) | <b>1.5</b><br>(1.1,2.0) | 1.2<br>(0.8,1.8)        | <b>1.6</b><br>(1.0,2.6)                              | 1.3<br>(0.8,2.3)        | 1.0<br>(0.6,1.8)                      | 1.1<br>(0.6,2.1) |
| <b>Males</b>    |                         |                         |                         |  |                         |                                       |                  |
| Severe combined | *                       | *                       | *                       | *  |                         | *                                     | *                |
| Physical abuse  | 1.3<br>(0.8,1.9)        | 1.2<br>(0.8,1.9)        | 1.0<br>(0.6,1.8)        | 0.8<br>(0.4,1.5)                                     | 0.8<br>(0.4,1.6)        | 1.4<br>(0.6,3.3)                      | 1.6<br>(0.4,6.1) |
| Emotional abuse | <b>1.6</b><br>(1.0,2.4) | <b>1.5</b><br>(1.0,2.4) | 1.1<br>(0.6,2.1)        | 1.0<br>(0.5,1.9)                                     | 1.0<br>(0.4,2.1)        | 1.4<br>(0.6,3.4)                      | 1.5<br>(0.4,5.5) |
| Harassment      | 1.2<br>(0.7,1.8)        | 1.2<br>(0.7,2.0)        | 1.2<br>(0.6,2.4)        | 1.3<br>(0.6,2.6)                                     | 1.1<br>(0.5,2.5)        | 0.9<br>(0.4,2.2)                      | 1.4<br>(0.3,6.8) |

IPV forms, are not mutually exclusive; each form of IPV is modelled separately; reference group=no abuse; Odds ratios in bold are significantly different to those of the reference category (P < 0.05).

\* Due to insufficient sample size, the analysis was not performed for males.

Model 1: Unadjusted ORs

Model 2: Adjusted for parents' variables at FCV: parental racial background, maternal age at pregnancy, maternal marital relationship, maternal education, family income and maternal depression + youth variables at 21 years: income, education, marital status, having children and sexual child abuse

Model 3: Adjusted for model 2+ DSM-IV lifetime major depression disorder at 21 years of age

**Abbreviations:** OR: Odds ratio; CI: confidence interval; yr/fu: year old follow up; IPV intimate partner violence; FCV: first clinic visit

**Table 9.3. Association of IPV and anxiety disorders at 30 yr/fu in total sample, those with and without a history of anxiety disorders at 21 yr/fu (OR (CI 95%))**

|                 | Whole sample                   |                                |                                | Without a history of anxiety disorders (New cases) |                                | With a history of anxiety disorders |                                |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--|--------------------------------|-------------------------------------|--------------------------------|
|                 | Model 1                        | Model 2                        | Model 3                        | Model 1  | Model 2                        | Model 1                             | Model 2                        |
| <b>Females</b>  |                                |                                |                                |  |                                |                                     |                                |
| Severe combined | <b>2.3</b><br><b>(1.5,3.6)</b> | <b>1.6</b><br><b>(1.0,2.7)</b> | 1.1<br>(0.5,2.1)               | 1.9<br>(0.8,4.6)                                   | 1.2<br>(0.4,3.4)               | 1.4<br>(0.6,3.2)                    | 0.9<br>(0.4,2.2)               |
| Physical abuse  | <b>1.9</b><br><b>(1.5,2.4)</b> | <b>1.8</b><br><b>(1.4,2.4)</b> | <b>1.5</b><br><b>(1.1,2.2)</b> | <b>1.4</b><br><b>(1.0,2.2)</b>                     | 1.3<br>(0.8,2.1)               | <b>1.8</b><br><b>(1.1,3.0)</b>      | <b>2.0</b><br><b>(1.1,3.7)</b> |
| Emotional abuse | <b>1.8</b><br><b>(1.4,2.3)</b> | <b>1.8</b><br><b>(1.3,2.3)</b> | <b>1.6</b><br><b>(2.1,2.2)</b> | <b>1.5</b><br><b>(1.0,2.3)</b>                     | 1.4<br>(0.9,2.2)               | <b>1.9</b><br><b>(1.2,3.2)</b>      | <b>2.0</b><br><b>(1.1,3.7)</b> |
| Harassment      | <b>1.5</b><br><b>(1.1,1.9)</b> | <b>1.5</b><br><b>(1.1,2.0)</b> | <b>1.5</b><br><b>(1.0,2.3)</b> | 1.2<br>(0.8,2.0)                                   | 1.2<br>(0.7,1.9)               | <b>1.6</b><br><b>(1.0,2.7)</b>      | <b>2.1</b><br><b>(1.1,4.0)</b> |
| <b>Males</b>    |                                |                                |                                |  |                                |                                     |                                |
| Severe combined | *                              | *                              | *                              | *  | *                              | *                                   | *                              |
| Physical abuse  | 1.1<br>(0.8,1.6)               | 1.2<br>(0.8,1.8)               | 1.0<br>(0.6,1.6)               | 0.8<br>(0.5,1.4)                                   | 0.8<br>(0.5,1.5)               | 1.5<br>(0.5,4.0)                    | 1.5<br>(0.4,5.2)               |
| Emotional abuse | <b>2.2</b><br><b>(1.5,3.1)</b> | <b>2.1</b><br><b>(1.4,3.1)</b> | <b>1.9</b><br><b>(1.1,3.1)</b> | <b>2.2</b><br><b>(1.3,3.6)</b>                     | <b>2.0</b><br><b>(1.1,3.5)</b> | 1.1<br>(0.4,2.9)                    | 1.2<br>(0.3,4.3)               |
| Harassment      | 1.2<br>(0.8,1.8)               | 1.3<br>(0.8,2.0)               | 0.9<br>(0.5,1.7)               | 1.0<br>(0.5,1.9)                                   | 1.0<br>(0.5,2.0)               | 0.6<br>(0.2,1.5)                    | 0.5<br>(0.1,1.8)               |

IPV forms, are not mutually exclusive; each form of IPV is modelled separately; reference group=no abuse; Odds ratios in bold are significantly different to those of the reference category (P < 0.05).

\* Due to insufficient sample size, the analysis was not performed for males;

Model 1: Unadjusted ORs

Model 2: Adjusted for parents' variables at FCV: parental racial background, maternal age at pregnancy, maternal marital relationship, maternal education, family income and maternal depression + youth variables at 21 years: income, education, marital status, having children and sexual child abuse

Model 3: Adjusted for model 2+ DSM-IV lifetime anxiety disorders at 21 years of age

**Abbreviations:** OR: Odds ratio; CI: confidence interval; yr/fu: year old follow up; IPV intimate partner violence; FCV: first clinic visit

## Supplementary Information

**Table S 9.1. Sex differences in changes of depression and anxiety disorders between 21 and 30 year follow ups**

|                                  | <b>Males</b> | <b>Females</b> | <b>OR (95%CI)</b>    |
|----------------------------------|--------------|----------------|----------------------|
| <b>Depressive disorder</b>       | (n=637)      | (n=889)        |                      |
| No diagnosis (21- 30-)           | 76.0         | 61.2           | <b>1</b>             |
| New cases (21- 30+)              | 9.7          | 13.9           | <b>1.8 (1.3,2.5)</b> |
| Recovered (21+ 30-)              | 8.2          | 12.7           | <b>1.9 (1.4,2.7)</b> |
| Persistently diagnosed (21+ 30+) | 6.1          | 12.1           | <b>2.5 (1.7,3.6)</b> |
| <b>Anxiety disorder</b>          | (n=638)      | (n=891)        |                      |
| No diagnosis (21- 30-)           | 70.8         | 49.4           | <b>1</b>             |
| New cases (21- 30+)              | 16.3         | 20.2           | <b>1.8 (1.4,2.3)</b> |
| Recovered (21+ 30-)              | 7.2          | 12.2           | <b>2.4 (1.7,3.5)</b> |
| Persistently diagnosed (21+ 30+) | 5.6          | 18.2           | <b>4.6 (3.1,6.8)</b> |

Odds ratios in bold are significantly different to those of the reference category ( $p < 0.05$ ).

**Abbreviations:** OR: Odds ratio; CI: confidence interval

**Table S 9.2. Final logistic regression model for forms of IPV at 21 yr/fu predicting DSM-IV mental health disorders at 30 yr/fu, in females and males <sup>a</sup>**

|                 | <b>Major depression disorder</b> | <b>Anxiety disorders</b> |
|-----------------|----------------------------------|--------------------------|
| <b>Females</b>  |                                  |                          |
| Severe combined | <b>1.8 (1.0,3.5)</b>             | 1.1 (0.5,2.1)            |
| Physical abuse  | 1.3 (0.8,1.8)                    | <b>1.5 (1.0,2.1)</b>     |
| Emotional abuse | 1.3 (0.9,1.9)                    | <b>1.6 (1.1,2.2)</b>     |
| Harassment      | 1.2 (0.8,1.9)                    | <b>1.5 (1.0,2.1)</b>     |
| <b>Males</b>    |                                  |                          |
| Severe combined | *                                | *                        |
| Physical abuse  | 1.1 (0.7,2.0)                    | 0.9 (0.6,1.7)            |
| Emotional abuse | 1.2 (0.7,2.2)                    | <b>1.8 (1.1,3.1)</b>     |
| Harassment      | 1.3 (0.7,2.5)                    | 0.9 (0.5,6.2)            |

IPV forms, are not mutually exclusive; each form of IPV is modelled separately; reference group=no abuse; Odds ratios in bold are significantly different to those of the reference category ( $P < 0.05$ );

<sup>a</sup> Taking into account the propensity scores calculated from the characteristics of sample at baseline.

\* Due to insufficient sample size, the analysis was not performed for males;

**Abbreviations:** OR: Odds ratio; CI: confidence interval; yr/fu: year old follow up; IPV intimate partner violence

## **Chapter Ten: Discussion and Conclusion**

This thesis has investigated gender difference in the experience of different forms of IPV and those who leave the abusive relationship. It also examines the association between economic factors and IPV victimization and explores the long-term impacts of IPV on victims and their children. The study used data from a relatively large population sample of males and females and a validated and comprehensive measure of intimate partner violence.

This chapter describes the main findings, interpretations of these findings and their implications for practice. It also presents strengths and limitations of the study, as well as a discussion of future research directions.

## **Main Findings**

The current study suggests that IPV is prevalent in early adulthood and involves both males and females as perpetrator and victim (338). Low family income was associated with an increased risk of IPV victimization. Husband's low income, but not wife's income, was related to the experience of IPV either for females or for males. Income imbalance between partners was not associated with IPV (276). Females leave an abusive relationship more often but changing a partner does not interrupt the continuity of victimization (345). Although relationships involving higher proportions of IPV more often tend to end, they place male and female survivors at increased risk of substance use and mental health disorders (346). In the context of family violence negative outcomes of IPV impact on children regardless of their gender (347). A summary of publications' findings is presented in Table 10.1.

**Table 10.1. Summary of publications' main findings**

| Paper   | Main findings  |
|---|--|
| <p><b>1) Gender differences in intimate partner violence in current and prior relationships.</b><br/>Ahmadabadi, Z., et al. (2017). <i>Journal of Interpersonal Violence</i>.</p>                                 | <p>Males and females experienced similar rates of IPV in their intimate relationships, but there was a gender difference when considering current and previous relationships. We found significant gender differences in the experience of IPV in current relationships, but not in terminated relationships. Men tended to remain more often in an abusive relationship compared to females and report higher rates of IPV victimization in the current relationships.</p>  |
| <p><b>2) Income, gender and forms of intimate partner violence.</b><br/>Ahmadabadi, Z., et al. (2017). <i>Journal of Interpersonal Violence</i>.</p>  | <p>Within low-income families, both partners experience higher levels of intimate partner violence. Husband's low income, but not wife's income, was related to the experience of IPV for either gender. Families in which both partners earned a low income experienced higher levels of almost all forms of IPV. Income imbalance in which females earn more income, were not often associated with the experience of IPV.</p>   |
| <p><b>3) Does leaving an abusive partner lead to a decline in victimization?</b><br/>Ahmadabadi, Z., et al. (2018). <i>BMC Public Health</i> 18(404), 1-9.</p>  | <p>Females who reported they had an abusive partner at the 21-year follow-up were more likely to subsequently change their partner than did males. Harassment and then emotional abuse appeared to have a stronger association for females leaving a partner. For males, a reported history of IPV was not significantly associated with leaving the partner. There was no significant association between leaving (or not) a previous abusive relationship and later victimization, either for male or female respondents.</p>            |
| <p><b>4) Maternal intimate partner violence and child maltreatment.</b><br/>Ahmadabadi, Z., et al. (2018). <i>Child Abuse and Neglect</i>, 82, 23-3.</p>  | <p>Maternal IPV and child maltreatment co-occur. There was a robust association between maternal IPV and child maltreatment. Except for sexual maltreatment, which was consistently higher in female offspring, there was no gender differences in experiencing different types of maltreatment in families manifesting maternal IPV.</p>  |
| <p><b>5) Intimate partner violence in emerging adulthood and subsequent substance use disorders; Findings from a longitudinal study.</b><br/>Ahmadabadi, Z., et al. (2019) <i>Addiction</i>, 114: 1264- 1273.</p> | <p>In females, all forms of IPV at 21 years remained robust risk factors for subsequent alcohol, drug and nicotine disorders at 30 years, even after controlling for antecedent substance disorders. However, in males only physical and emotional abuse remained significant predicting alcohol and drug disorder in the fully adjusted model, but not harassment. Although both males and females were negatively affected by IPV, females are at higher risk of substance use disorder following IPV victimization.</p>                 |
| <p><b>6) Intimate partner violence and subsequent depression and anxiety disorders</b><br/>Ahmadabadi, Z., et al. <i>Social Psychiatry and Psychiatric Epidemiology</i></p>                                       | <p>We found a temporal relationship between almost all forms of IPV at 21 years and new cases of depressive disorder at 30 years in females but not in males. This association was not found for females who had previously been diagnosed with depressive disorder. By contrast, IPV did not predict the onset of new anxiety disorders, but it had a robust association with anxiety disorders in females with a previous anxiety diagnosis. Emotional abuse was a robust predictor of new cases of anxiety disorder only for males.</p> |



## Discussion of findings

- **IPV is prevalent in early adulthood and involves both males and females as perpetrator and victim.**

In the 21-year follow-up, almost a half of the sample reported at least one type of lifetime ever IPV including physical abuse (37.9%), emotional abuse (33.3%), harassment (24.8%) and severe combined victimization (5.9%). Previous studies on the epidemiology of IPV in Australia have reported rates of IPV in a wide range of age groups (e.g. 18-69 years; 24) which precludes comparing our findings with them. Only a few studies have focused on a more specific age group; for example, the Australian Longitudinal Study of Women's Health (ALSWH), found that 11.2% of women aged 18-24 reported ever having had a violent relationship with a partner". However, in the ALSWH the *partner violence* was measured by a single question and two response categories of *physical or sexual violence* (25). Nevertheless, our finding suggests that IPV peaks in the early 20s and is consistent with a *life course perspective* and features of emerging adulthood (ages 18-25). This life course stage is characterised by less stable emotions, relationships, living residence and career. Risk-taking, low commitment and high relationship constraints (barriers to leaving unhappy relationships like financial problems or few alternative partners) may be associated with the higher rates of interpersonal conflict and violence in this stage (89-91).

Beside the lifetime reports of IPV, the current study has provided details of IPV during the past year at 30 years which suggests that IPV is relatively common in young people. 20.9% of our sample reported at least one type of IPV, 16.7% emotional abuse, 10.6% physical abuse, 7.5% harassment and 1.2% experienced severe combined at 30 years of age. It would be useful to compare our results to those of other population studies, however, most of research conducted using CAS has been on pregnant women or new mothers (348-351).

The reason for the high prevalence of IPV in young people is not very clear. However, it may be explained regarding the changes in the Australian family values and structure. The high rate of IPV might be the result of movement towards postmodern family values and individualism in developed countries, including Australia (352). In collectivist or traditional societies, conformity, obedience and interdependence are encouraged. Male dominance and violence may be prevalent and interpreted as *normal*, *functional* and *accepted*. It is also considered as a *private business* and largely remains under-reported (353). By contrast,

*individualism* with an emphasis on “individual family member” rather than “family as a group” promotes self-direction, autonomy, and independence. A high rate of reported IPV in Australian families may not necessarily mean that violence has been increasing; instead, it may reflect social changes in family relationships and individuals’ tendency to express personal feelings, disagreements and different opinions. From an individualist perspective, in the absence of male authority and a norm of female obedience and within a horizontal power relationship, competition and conflict between partners may be a common outcome. This finding is consistent *the family violence perspective* and gender symmetry model of IPV in which both men and women might engage in domestic violence (16, 40, 44, 49-54, 226, 227) and in line with *common couple violence* in Johnson’s typology (31) which is relatively dyadic, consistent over time and the most prevalent form of IPV in survey data.

Similar to other western countries, patterns of family formation have become increasingly diverse in Australia. Official and academic reports (e.g., Australian Bureau of Statistics (354) and the Australian Institute of family studies (355, 356)) are consistent in showing that formal marriage is no longer the norm for family formation and the proportion of couples that live together without marriage have risen. Cohabitation without formal marriage may be casual, informal and liberal. Separateness, impermanence and individualism are at the core of cohabiting relationships. Not only is non-marital cohabitation associated with relationship breakdown, marriages with a prior cohabitation are also more prone to breakup (356, 357). These less stable relationships are more common in early or emerging adulthood in which economic hardships might be a factor, which characterizes cohabiting relationships (89-91).

Since partners in cohabiting relationships confront fewer constraints encouraging them to stay together if IPV occurs, one may expect a lower level of IPV in these relationships than in married ones (358). However, it has been well documented that conflict and IPV are higher in cohabiting relationships (247, 359-361). Social isolation, socio-economic disadvantages, lack of social support and lack of social control and relational skills have been suggested to explain higher rates of IPV in non-marital relationships (362)

Our findings support previous studies that cohabiting is a robust risk factor for IPV victimization. We found that 21-year-old females who cohabit, have changed their partners 4.5 times (CI: 2.25-8.67) compared to those who were married. Further, 30-year-old females who cohabit were 2.5 times (CI: 1.01-6.35) more likely to experience severe combined victimization. Males in cohabitating relationship were about 3 times (CI: 1.51-6.38) more likely than married males at risk of harassment. Apart from partners, children are vulnerable to the

consequences of experiencing domestic violence in the new/non-traditional family arrangements. We found that maternal IPV victimization and offspring's child maltreatment are more likely to co-occur when the mother is cohabiting, has had two or more marital changes and her partner is a step-parent. It is worth mentioning that this study presumably contains a large proportion of cases that might be considered *situational or common couple violence*, as measured by three subscales of the CAS including physical abuse, emotional abuse and harassment. The findings of the current study may not be true for the most severe forms of IPV and controlling behaviors which appear to be male-perpetrated and have harsher consequences (e.g., fear and injuries) (100)

We found that while males [in their current relationship] frequently reported being slapped, hit and kicked, females [in their former relationship] frequently reported being pushed, thrown and shaken. Arguably, the later entails more physical power and leads to more injuries. In addition, females were at greater risk of verbal insults and being called crazy, unwanted and blamed for husband's violent behavior. In feminist theory, non-symmetrical and gendered forms of IPV (violence against women) are attributed to a patriarchal system, which is more acceptable in traditional or developing societies (23, 39). Australia is one of the most economically developed countries in the world, with a very high rank in the human development index and is characterized by a progressive egalitarian gender belief about work and family roles (111). A possible explanation for our findings might be that despite significant advances in addressing gender inequality, traditional gender role beliefs still exist in Australian society. According to the World Economic Forum in 2018, Australia has ranked 39th on the *Global Gender Gap Index* (363). Investigating gender role trends in recent decades in Australia shows that there is a relatively stable trend in gender attitudes with a tendency toward more conservative views (364, 365). While females' participation in labour is embraced, in practice, females constitute only 37% of all full-time employees in Australia (366). In families, women with children spend more time than fathers involved in child care and domestic work (112). It seems that different attitudes of males and females towards division of household tasks may lead to marital conflict and possibly IPV (112, 367-373). Our findings showed that males struggle with the modern social expectations of taking more part in domestic work. In answer to an item in the emotional abuse, males more than females have reported that their partners "became upset if housework was not done" (18.3% vs. 12.5%,  $p < 0.05$ ). It seems that while families are increasingly becoming dual earners, some males who are expected to undertake what were previously feminine roles, are unwilling to do so and this unwillingness may be a source of family conflict and IPV (234, 235).

- **Low family income was associated with an increased risk of IPV victimization. Husband's low income, but not wife's income, was related to the experience of IPV either for females or for males. Income imbalance between partners was not associated with IPV.**

We found that only husband's income is associated with IPV experience. Although wife's income can increase family well-being (251). In the current study female income made a smaller contribution to the family income than male's (34.1% vs. 65.9%  $p < 0.0001$ ). Arguably females' contribution to the household income is too small to provide bargaining or protective power against IPV (374). Despite the improvement of women's roles and rights, their income does not appear to enhance the quality of marital relationships. This finding raises the possibility that the broader gender pay gap may influence the quality of intimate relationships.

The current study further extended what is known about how the gender income imbalance may be related to IPV. Our findings revealed that gender imbalance in income is not a source of conflict and abuse in middle- and high-income families. We found that in low-income families, where both partners earn equally low income- females are at higher risk of physical abuse and severe combined abuse and males experience higher levels of harassment.

Arguably, financial concerns are the most critical and pervasive sources of conflicts. Economic hardships and resource scarcity are linked with stress, recurrent and unsolvable disagreements over household decision making and priorities associated with the allocation of limited resources (253, 254). Moreover, with the contemporary family more frequently being dual-income, work-life balance is a major challenge for working women. It has been previously shown that males from low SES background hold more inflexible and traditional gender beliefs about women's employment and housework (375). Within a low income family the division of housework and childcare might intensify tension and violence (237). Economic problems might be perceived as a threat to the males' role as breadwinner, especially when it is accompanied by wife's employment and equal earning. In these circumstances, women may express disapproval and dissatisfaction to their partners. This was reflected in our findings as males experienced higher rates of harassment in low-income families. In higher income families, female's employment and earning is likely to be associated with discretionary expenditure. Arguably, females from lower income families cannot stop working or benefit from the money they earn. In these families, there may be circumstances where incomes are pooled, but males may control the household resources and use violence to maintain their control and power (250). Our findings suggest an interplay between economic disadvantage,

gender role and IPV, and posit that poverty influences the quality of intimate relationships, possibly through enhancing gender role beliefs and inequality, and family-work imbalance.

➤ **Males stay, and females leave an abusive relationship more often.**

In the current study females reported higher rates of leaving their abusive partner than males. Consistent with our findings, it has been well-established that women predominantly initiate divorce in developed countries including Australia (61, 376, 377). This might be in contrast to the common belief that breakup is a couple's decision and reflects the asymmetric and gendered nature of heterosexual relationships in terms of power, expectations and roles.

In families with traditional role patterns (men in paid work and women in domestic work) both partners may benefit from the relationship which discourages either partner from leaving (378). However, the institution of the family has increasingly changed, and the traditional gender roles may provide lesser benefits for females in a dual income family. When the perceived benefit of being in a relationship is less than its costs and when the alternatives outside the current relationship are better, an exit may be more likely to occur. Our finding may be explained by the fact that the perceived costs and benefits of an abusive relationship are different for males and females. Females' personal resources like employment and income have decreased the perceived costs of leaving that relationship and increased the perceived ability to establish a life independently. Males, by contrast, appear to benefit more from marriage than do women, possibly because they are dominant in marital relationships, receive greater support and care from their spouses and tend to be healthier (379-381)

Due to men's higher socio-economic status and relative power in relationships, it is possible that men have enough resources to create more attractive alternatives outside the current relationship and, hence, may face fewer constraints when leaving an abusive relationship. However, the power theory of relationships suggests that what determines breakups is females' lack of bargaining power rooted in social and cultural norms. Because women are unable to modify or improve the undesirable or abusive behaviors of their partners (e.g. persuade their partners to share the household work) they may be more willing to leave the relationship (382). Arguably, working women have more alternatives than not employed women.

On the other hand, due to male socialization, actual and perceived costs of leaving the marital relationship for males might be higher. Social barriers including societal bias, shame and denial may preclude men from disclosure of their victim status. Men may avoid divorce as it is socially considered a *failure* (101). There may also be social expectations that males are

responsible for the family unit which may constrain males from leaving an intimate relationship (93). Marital dissolution has negative effects on males' mental and physical health more often, partly because they deal less well with subsequent social isolation or loss of contact with their children.

Considering different forms of IPV, the experience of harassment and then emotional abuse has a strong association with leaving an abusive partner. This may be explained by females' being more sensitive to relationship difficulties and their emotion-focused preferences and expectations from an intimate relationship (238). Because women invest more heavily in their romantic relationships, experience of harassment, controlling behaviors and hurt feelings are more likely to threaten their well-being (102, 265). Consequently, females may decide not to remain in such a relationship.

The extent to which men and women are affected by the partner violence seems different. Some evidence shows that although females may perpetrate IPV as frequently as do males, since males are physical stronger, they do more damage when they are violent. Further, due to males' higher social and economic status in the society, they may experience fewer negative psychological consequences like fear, stress, and guilt (28, 58, 60).

➤ **Relationship change did not prevent males and females from the continued experience of victimization.**

We found experiencing IPV at 21 remains a robust and statistically significant predictor of revictimization at 30 years, regardless of whether there is a change of partner. Risk of revictimization at 30 years was not statistically different for abused females who remained with or left their partners (22.4% vs. 17.8%,  $p = 0.35$ ).

From a sociological perspective, leaving a partner does not make a difference, possibly because gender role norms remain stable across relationships. A heterosexual intimate relationship is a gendered and unequal structure, including partners with different and sometimes conflicting expectations and attitudes, which makes a fertile ground for conflict and abuse. It may be the case that leaving a violent partner may not necessarily mean leaving the structural context of intimate partner violence (47).

Our finding may also be explained by the patterns of mate selection: a) *assortative mating* which posits that pairing of mates is based on similarities in psychological and demographic characteristics, lifestyle and anti/pro-social attitudes and behaviors (383), and b) *negative assortative mating* (complementarity theory) which is based on the attraction to the dissimilar characteristics (384, 385). For example, young people tend to select partners who

are similar to themselves on IPV risk factors, including antisocial behaviour or depression, which may have additive effects on physical and psychological aggression toward a partner over time (386). It is also possible that the pattern of choosing a partner remains consistent across relationships and IPV survivors end up selecting a person with the same characteristics as those of a previous partner. It has been suggested that individuals with a history of victimization might unconsciously show a stronger preference for a romantic partner, whose characteristics (abusive personality) and behaviors match their negative expectations and lead to repeating the pattern of abuse (387).

From the individual and psychological perspective, earlier victimization may convince the victim that violence is a normal aspect of intimate relationships, impair self-worth and increase one's tolerance for being treated with rejection and violence. Earlier victimization may lead to long-lasting consequences for survivors like fear, anxiety and disempowerment (266). Prior experiences of family violence may lead to cumulative disadvantages, which negatively affect the nature of future relationships. Survivors may carry negative outcomes of earlier victimization to the future relationships. For example, victimization may disrupt effective interpersonal functioning like conflict resolution or coping skills (81, 91, 261-264).

*The trauma theory* suggests that victimization is damaging and negatively affects victims' cognitive process and emotional response to interpersonal stressors. It offers a psychobiological explanation of why IPV victims may be vulnerable to further victimization. Exposure to such traumatic events decreases an individual's sense of control over their life and leads to negative feelings like helplessness and maybe self-defeating. This cognitive impairment prevents successful recovery from subsequent traumatic events (70-72).

➤ **Maternal IPV victimization and child maltreatment co-occur.**

This study found that both male and female children were at increased risk of child maltreatment in families where mothers were victimized, however, male children were more likely to be emotionally maltreated.

A number of possibilities need to be considered when interpreting the findings:

It is possible that the male-parent/partner perpetrated both partner violence and child maltreatment. Although our measures did not show which parent perpetrated the maltreatment, a body of research has suggested that physical and sexual child maltreatments are mostly frequently perpetrated by fathers (299, 300). We found that mental health problem of mother's male partner is associated with both maternal IPV and offspring' child abuse. Higher rates of

sexual abuse of female offspring in families with maternal IPV might support the suggestion of father perpetration.

IPV victimization undermines mother-child relationships and negatively affects mothers' parenting, emotional functioning or discipline strategies (301, 302). Mothers may be less patient, view their children's behaviors more problematic, become more easily angered and have coercive parenting styles. IPV victimization may make women emotionally unavailable and distract them from caring for their children (305-307). It is possible that victimized mothers react to the stress and anger of experiencing IPV by maltreating their children (303, 304). This may reflect the fact that mothers spend more time with their children than do fathers. We found that in families where mothers were victimized by their male partners, male children were more likely to be emotionally maltreated. It might be that victimized mothers may have difficulties in bonding with their male children as they may be an *IPV perpetrator* in adulthood (388). Furthermore, male children who live in violent families may display externalizing behaviour problems which itself put them at increased risk of maltreatment (389).

Our findings suggest in families where violence is more acceptable both partner violence and violence towards children may co-occur. It seems that family violence is a process, in which the consequences of IPV go beyond the incident and influence all family members, especially children (274). Either family violence is male-perpetrated or bi-directional, children are those who have no power to protect themselves from being abused and maltreated, witnessing and being caught up in the parental IPV.

➤ **Females experience negative consequences of IPV more than males.**

Although we found that both males and females were negatively affected by IPV and experienced substance use disorder following IPV victimization, the strength of the associations was relatively greater for females. In addition, our data showed that IPV only predicted new cases of depressive disorder in females but not in males.

This finding may suggest gender differences in vulnerability to physical and mental consequences of IPV. Due to females' *situational vulnerability*, they may experience IPV more intensely and severely (336). Our data confirms that females have experienced higher rates of severe combined abuse than do males (OR= 3.2; 95% CI= 1.7, 6.2).

Although males in this study reported higher rates of physical abuse, the actual experience of a similar category of IPV (like physical abuse) can be more harmful and injurious



for females than for males (327). The CAS's composite scale is unable to differentiate between *frequency* and *intensity* of physical violence. It seems that although men experience physical violence more frequently, due to the lesser females' physical power, males' physical victimization lead to less adverse consequences like injuries, fear or trauma (60). Moreover, females' emotion-focused priorities in an intimate relationship and unmet expectations from an abusive partner may lead to greater adverse outcomes (depression, PTSD) for females, and affect their socio-economic status more negatively (134, 142, 147-149, 313, 314, 316, 326).

Some prior studies have suggested that males and females react differently to the stress/trauma of interpersonal violence, with females being more likely to internalize stress symptoms and become depressed (335), while males tend to externalize interpersonal stress by drinking alcohol and using illicit drugs (160, 161). Surprisingly, we found that although IPV predicted alcohol and drug disorders in males, victimized females were at greater risk of alcohol, drug and nicotine disorder. One explanation might be that females are more sensitive to intimate violence. They use alcohol or nicotine -more than men- as a *self-medication* to cope with tension in their intimate relationships (150, 151, 162, 238, 328, 390). One study showed that contrary to stereotypical expectations, females perceive more functional benefits from drinking when struggling with interpersonal problems and behave more recklessly in drinking situations. Males, however, reported they experience more social control and criticisms by family for their drinking (322).

➤ **The associations between IPV and females' subsequent depressive and anxiety disorders vary based on having a pre-existing condition.**

We found a temporal association between IPV and depressive disorder in females with no previous depression diagnosis and a temporal association between IPV and subsequent anxiety disorders in females with a previous anxiety diagnosis.

There are a number of explanations for this finding:

First: this finding might be explained by the differences between depression and anxiety: anxiety and depression are different in terms of sensitivity and reactivity to stressors (here IPV victimization). Compared to females with no previous anxiety disorder, females diagnosed with anxiety disorder may show "spillover of reactions to stressful events" engage in negative self-evaluation and experience intensified and prolonged negative emotions. In addition, females with anxiety may have lower tolerance of being abused by a romantic partner, desensitization and normalization of IPV than do those with depression (334, 391).

Second, we found no association for females who had previously been diagnosed with depressive disorder. This implies that the depression preceded the IPV. It is possible that the major depressive disorder has initiated in adolescence and remained stable and independent from further negative life events in adulthood (e.g., IPV) (332). As a result, the experience of IPV did not have a significant effect on the depression (at 30 years) of females who were previously (at 21 years) diagnosed by depression. However, IPV developed new cases of depression in females (who had no previous depression).

Our finding provides evidence for long-term, independent and robust impact of IPV on females' depressive disorder. However, it could be argued that the persistent effect of IPV on depressive disorder may be interrupted by leaving the abusive partner (392). To investigate this possibility, we tested an interaction effect between females' IPV victimization at 21 years and whether the victim has changed or stayed with the partner, predicting new cases of depressive disorder. Leaving/staying with a partner had no significant interaction effect, neither with physical abuse ( $p=0.20$ ) or emotional abuse ( $p=0.57$ ). Curiously, changing partners does not reduce the apparent consequences of IPV victimization in females (345).

## **Strengths**

The current study has several strengths: We have used a longitudinal data with a relatively large population-based sample including both men and women, which enabled us to examine different types of intimate partner violence at different life stages and adjusted for a range of confounding factors. The data involves longitudinal follow-up of the sample over a substantial part of the early life course. We have used a validated and comprehensive measurement of intimate partner violence, for which there is evidence of reliability and validity. Testing the reliability of the IPV subscales separately for females and males, we found that the Cronbach's Alpha of all subscales were higher than 0.80 (except harassment in men = 0.63). We asked about recent experience of IPV to reduce the probability of memory bias (228). This study has specifically explored the long-term impacts of IPV victimization and determined the temporal associations between IPV and mental health and substance use in both genders. The current study has addressed the independent effect of the form of IPV by adjusting for a wide range of potential confounders. The long-term follow-up of a population sample allowed us to examine whether changing an abusive relationship prevents further victimization. Using the data from mothers and children, we examined how maternal IPV and child maltreatment co-occur in a family.

## Limitations

The results of this thesis should be interpreted regarding some methodological limitations:

**Sampling:** There is a possibility the study sample may not be representative of the population. The baseline sample of MUSP included pregnant mothers from the lower to middle socio-economic status who were receiving services at a public hospital. However, their offspring have become more representative of the Australian population (184, 186). Another issue is that MUSP used a population sample which might not include those who have experienced/perpetrated very severe levels of intimate partner violence (31).

**Measure:** The findings of this study are based on only one partner's self-report of victimization (239) and may be associated with self-serving bias or over-reporting negative behaviors of partners (233). A retrospective self-report of IPV might be subject to recall bias or reporting errors. However, CAS asks about the most recent experiences in order to minimize errors of recall (37). This limitation is also true for maternal IPV victimization. Our data have been taken from women and their children, and the fathers' report of family violence is not available.

Another measure, Childhood Trauma Questionnaire (CTS) is also a retrospective self-report questionnaire, which refers to children experiences when they lived at home, without any details about who perpetrated the maltreatment. Retrospective self-reports of child maltreatment might be affected by desirability bias and inaccurate recall of childhood experiences which arguably measure subjective perception of maltreatment experiences rather than the actual experiences (309).

**Endogeneity:** Despite including a number of key confounders, unmeasured confounding factors still may bias our results. For example, partners' mental health and substance use disorders have not been measured. The sample size is also a limit to the variables included in the analysis.

**Sample size:** Males' lower sample size, especially in the severe combined victimization, decreased statistical power to detect differences and widened the confidence intervals. Forms of IPV are inter-correlated and it is important to control for their concurrent effects (242, 329, 342). However, due to the small numbers in some cells, we were unable to use a combined multivariate model and modeled each form of IPV separately.

**Attrition:** As a longitudinal study, loss to follow-up may have biased some results. Although this study had a high rate of attrition, we attempted to minimize its effects by the

multiple imputation analysis. We repeated the analyses using imputed data and found consistency with the observed findings. The multiple imputation analyses showed that the results are unlikely to be affected by selection bias. In addition, multiple studies on MUSP, however, have found that the attrition minimally affects estimates of association (184, 186, 211).

**Alternative directions:** Regarding the co-occurrence of drug use, mental health problems and IPV, we could not explicitly test the alternative explanation of a reverse relationship between these disorders and IPV victimization. Given the illegal and deviant nature of drug use, it is possible that young people with substance disorder at 21-year follow-up were involved in delinquent networks and violent relationships.

**Cross-sectionality:** The cross-sectional nature of study on economic predictors of IPV did not allow us to make a causal inference about the relationship between income and IPV (249).

**Dichotomization:** In the current study, we converted continuous variables into categorical or dichotomous variables (at-risk cases vs. normal group). There are debates about the efficiency of dichotomous variables in removing confounding effect when using a regression analysis (308). Although we used studied and valid cut-points to group cases, dichotomization of variables may increase the risk of misclassification and loss of information and reduce variance and explanatory power (308).

**Timing issues:** In the study of the association of maternal IPV (measured at 14-year follow-up) and child maltreatment (measured at 30-year follow-up), the exposure and outcome of interest had different time points. We were unable to collect offspring's data of child maltreatment at the time mothers' reports of IPV victimization were gathered, as asking a child questions about traumatic experiences like being maltreated by parents could be distressing, and impractical (310). We presumed that IPV essentially is recurrent and chronic (15) and a representative of mothers' general intimate relationships. Conclusions about the impact of maternal IPV on the risk of child maltreatment should be made with caution. In addition, at 21 years respondents reported their lifetime IPV in either their current or previous relationships, while at the 30-year follow-up, they described their most recent relationships during last 12 months.

## **Implications for practice**

The current study showed that IPV is varied and multifaceted and it demands a multi-level and comprehensive response and intervention. IPV may be bidirectional and involves the active perpetration of both partners in a relationship. Responses to IPV may include a) primary prevention strategies in childhood and adolescence, before IPV occurs, b) secondary prevention for those who are already involved in relationships characterized by conflict, and c) tertiary prevention strategies aiming to improve negative consequences of IPV in survivors and affected children. Our findings suggest that beside the gender issues, structural, familial and personal factors should be included in the IPV-related practice and policy. Directed by an understanding of IPV, the life course and the social ecological frameworks, we will discuss how prevention efforts should address different life stages and different levels of the social ecology including the individual, relationship/family, and society levels (393).

### ***Primary prevention***

The findings of this study have a number of practical implications for primary prevention:

We found that IPV is relatively prevalent in heterosexual relationships. At the societal level, structural and policy programs need to reform legislations to improve gender and social equality and address upstream risk factors including gender role beliefs. Education and raising public awareness (via mass media or schools) about the extent of IPV may be followed by an acknowledgement of the need for justice, care for survivors and discouragement of potential perpetrators. The challenge here is that some interventions may not be consistent with existing cultural values. Changing public attitudes and values would have impacts on the society, but that might take years to occur.

The current study suggests that early IPV victimization remains an important predictor of revictimization, which highlights the need for early IPV prevention. If it is possible to prevent first victimization experiences, then the subsequent victimization may be avoided (15).

Poverty was found to be one of the structural risk factors for IPV. Multi-level interventions to reduce IPV need to improve welfare systems, strengthen household financial security, and support both partners to enter the labor market and facilitate access to socio-economic resources. Sources of partner conflict need to be addressed.

Our finding showed that adverse childhood events like males' child sexual abuse should be a key priority for practice. Prevention programs are needed to break the intergenerational

transmission of violence, reduce children's experience of and exposure to violence and raise emotionally and socially healthy children with zero tolerance for domestic violence. There is a need for programs like home visitation, parent training programmes (to improve conflict resolution and positive parenting skills), social development programmes (to promote prosocial behaviors in children) and school-based interventions (to protect children from child sexual abuse) (394, 395). Programs for child maltreatment prevention should be used in conjunction with parental IPV reduction as well as social welfare services.

We found that mental health problems of mother's male partner may predict both maternal IPV and offspring' child abuse. Men's mental health problems are complicated, related to social stigma and expectations of men, which affects their help seeking behaviors as well as their treatment engagement. This finding highlights the importance of gender-sensitive approaches in mental health system and a need to understand gender-specific risk factors for mental health problems expressed by both men and women (396-398).

In addition, the significant effect of pre-existing substance use in males highlights the importance of early prevention, perhaps in adolescence when health risk behaviors are established. More informed structural interventions programs are required to increase alcohol pricing and taxation and restrict alcohol and drug availability (399).

We also found that having a child at a young age (by 21 years of age) was a strong risk factor for further males' victimization. This finding can be used to guide interventions targeted at early fatherhood. According to the life course theory, fatherhood in emerging adulthood may challenge accepted social arrangements about the *right time* of having a child (400). Off-time fathers, similar to mothers, have to deal with a socioeconomic disadvantages, educational and financial problems and parenting skills (401). More research is needed to identify risk factors that place teenagers at risk of becoming a father. Further intervention programs are required to improve young fathers' parenting skills and living conditions, as well.

This study found that both males and females experience similar levels of IPV. Public health initiatives should be targeted not only at women's victimization but also at males as victims. Lack of knowledge about women's violence hinders identification of potential intervention targets. To our best knowledge, there has not been any gender-specific intervention for female IPV perpetrators.

### ***Secondary prevention***

Perhaps the most common approach to the secondary IPV prevention has been the feminist approach aiming to reduce recidivism in male offenders by gender-specific therapy

and addressing male power/control or anger management (e.g., Batterer Intervention Programs) (402). However, our findings suggest that IPV perpetrators/victims are not limited to those in criminal or clinical settings. This finding can be used to develop interventions aimed at *common couple violence* for those victims/perpetrators who wish to remain in a relationship. Programs like psychotherapy and couple therapy with a focus on conflict management or communication skills are needed to help them to improve the quality of their relationships (403).

### ***Tertiary prevention***

This study has significant implication for the tertiary prevention programs for male and female survivors of IPV.

Tertiary prevention normally includes provision of shelters, risk reduction or self-defense strategies, treatment programs, and legal or judicial responses for battered women who are at risk of death or disability (404, 405). However, appropriate services for women with non-severe or emotional IPV victimization have not been properly defined. Consequences of these kinds of IPV are not visible to health care providers. Different needs of women who experience situational violence and wish to remain in the relationship appear to be a priority for further research and practice.

We found no association between the experience of IPV and males' leaving their partner. This finding directs us to a recommendation that gender-specific prevention efforts should put emphasis on males' IPV victimization and their decision to stay in an abusive relationship.

Having a low income was a significant barrier against abused females leaving an abusive partner. IPV interventions should therefore pay more attention to the women's socioeconomic empowerment (96).

IPV interventions, which protect and assist those affected by IPV, should address complex needs of survivors. For example, in the current study, depression was a significant predictor and consequences of IPV victimization. Clinical intervention efforts are required to target pre-existing as well as subsequent mental health problems of victims to minimize the risk of further abuse. A key policy priority should be to reduce risk of revictimization, by facilitating mental health recovery, social support and economic empowerment of survivors.

Increased risk of anxiety disorder predicted by intimate emotional abuse in males contradicts beliefs about invulnerability of men in the abusive relationships and demands further attention.

Care of children exposed to IPV and their health and well-being should be acknowledged in IPV interventions.

Although the temporal order between IPV and mental health problems is useful to determine which risk factor should be targeted in interventions, our results suggest a more integrated intervention addressing both problems simultaneously. Similarly, the inter/intra correlations between forms of IPV and types of substances indicate that integrated intervention efforts should address them concurrently. Meanwhile, psychotherapeutic interventions should differentiate between different experiences of IPV in terms of severity and type.

The association between IPV and substance use disorder is complex and needs comprehensive and informed policy actions. Beside strategies to reduce substance use problems in IPV perpetrators/victims (330), coordinated actions are needed to identify and screen the needs of IPV victims. These efforts should include support strategies, improving victims' mental and physical health and active coping mechanisms. Alcohol and drug treatment interventions may be less successful if history of IPV victimization and self-medicating as a coping strategy are not addressed.

## **Directions for future research**

Available definitions of IPV do not differentiate between the intentional, impulsive, automatic or retaliatory violent behaviors. Current attitude towards an IPV perpetrator is driven from highly violent men in criminal settings, which are seen as “rational agents” who choose to use violence as a *tool* for a certain purpose. This attitude may not be transferable to bi-directional and common couple violence perpetrators, including females in the family. It is worth investigating the extent to which family violence is perpetrated consciously or unconsciously and explore their specific characteristics and risk factors. Such investigation may lead to more informed interventions.

Despite great efforts to develop valid and comprehensive measures for IPV, its multifaceted and complex nature is not well-acknowledged by existing tools. There remains considerable scope for further research before effective domestic violence prevention can be developed and implemented. The Composite Abuse Scale questions about the *most recent* experiences of IPV. Further studies are needed to address the experience of IPV in those who may have had a previous abusive partner, which was not their most recent relationships. Since social desirability has been considered a threat to the validity of IPV self-reports (406, 407),



administering IPV questionnaires with a social desirability scale can detect and minimise this bias and improve the validity of self-report measures.

We know little about how male and female survivors may carry negative outcomes of earlier victimization to the future relationships. More longitudinal research is required to explore mediators (to explore the mechanism) and moderators (to find the protective factors/buffers) between early and later IPV experiences. In addition, we found that IPV is a robust risk factors for subsequent mental health problems. Given, not all of victimized women developed depressive or anxiety disorders. Protective factors, which may have prevented those survivors from the negative consequences of IPV victimization, merit additional investigation.

The different effects of pre-existing mental health problems in the association between IPV and new cases of depression and anxiety warrant further investigation. Specifically, research is needed to identify the explanatory factors (including cognitive factors) as to see how people with depression or anxiety may respond to the stress and trauma of IPV, whether they would leave or stay with an abusive partner, how they form a further relationship and to what extent they are vulnerable to subsequent victimization.

We need to know more about the frequency and severity of IPV victimization and perpetration and violent exchange in intimate relationships. Our findings about the prevalence of IPV victimization in males can inform further research on predictors of males' victimization and female violence within the family. Although our findings offered preliminary support for different effects of types of IPV, lack of sample size made us to model each form of IPV separately. Further research with enough sample size is needed to adjust forms of IPV for each other and find their independent and identical effects. Such work may provide more information for developing specific primary and secondary prevention programs targeted at specific types of IPV.

## **Conclusion**

The current study makes a contribution to the body of knowledge on the characteristics, risk factors and consequences of different forms of IPV victimization in young males and females.

Previous studies have posited that IPV is either gendered or gender-symmetrical. Our findings suggest that IPV is a form of family violence, a broader context which contains: a) bi-directional (male ↔ female), b) solely male-perpetrating (father → mother & child), and c)

sequential (father → mother → child). No matter what configuration the family violence takes, children- regardless of their gender- are those who also suffer. In our community sample of Australian young males and females, we observed that males and females in a relationship experience relatively similar rates of partner violence. However, our findings revealed a gender difference beneath the surface of apparent bi-directional acts of violence.

IPV appeared to have stronger negative effects on females, which makes them leave the abusive male partner. We provided evidence on the temporal associations between IPV and mental health and substance use, especially in females. Males, however, are less affected by the experience of IPV, perhaps due to their physical strength, more power in marital relationships and higher socio-economic status, which all represent a broader male authority in society.

Findings of this study suggest that poverty, as a social problem, undermines the quality of intimate relationships. Economic hardships and resource scarcity are linked with stress and unsolvable disagreements over allocation of limited resources and creates a fertile ground for mutual violence. Working females in low-income families are at the intersection of traditional gender role beliefs, work-life imbalance and lack of personal resources, which place them at multiple risk of IPV victimization.

This study has raised important questions about the desired outcomes of leaving an abusive partner and repartnering. Re-victimization occurs when the unequal structure of marital relationships, personal resources and mate selection preferences remain unchanged and psychological recovery from the previous traumatic experience has not been established.

Overall, the current study provides empirical evidence for the content and direction of prevention and intervention programs in which beside the gender issues, different life stages as well as different levels of the social ecology model should be addressed.

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