

# JOINING FORCES



## Joining Families

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REAL WORLD RESEARCH FOR FAMILY ADVOCACY PROGRAMS

### FEATURED INTERVIEW

## Children's Exposure to Intimate Partner Violence and Canada's VEGA Project

*An interview with Harriet MacMillan, with Contributions by Nadine Wathen and Jill McTavish*

### Biography — Harriet MacMillan

Harriet MacMillan, CM, MD, MSc, FRCPC is Professor in the Departments of Psychiatry and Behavioural Neurosciences, and Pediatrics at McMaster University, London, Ontario, Canada, holds the Chedoke Health Chair in Child Psychiatry, and is a member of the Offord Centre for Child Studies. She was the



founding Director of the Child Advocacy and Assessment Program (CAAP) at McMaster Children's Hospital, a multidisciplinary program committed to reducing the burden of suffering associated with family violence. She conducts research on the epidemiology of violence against children and women and she has led randomized controlled trials evaluating the effectiveness of approaches to preventing child maltreatment and intimate partner violence. Dr. MacMillan is the co-principal investigator of the Canadian Institute of Health Research-funded Centre for Research Development in Gender, Mental Health and Violence across the Lifespan (PreVAiL) and co-leads VEGA: A Public Health Response to Family Violence.



**Dr. McCarroll: Let's talk about children's exposure to intimate partner violence. How do you talk to practitioners about children who are being exposed to intimate partner violence?**

*Dr. MacMillan:* I try to emphasize the importance of being alert to the signs and symptoms of any type of exposure to violence and integrating those questions in a sensitive, careful, and safe way into the actual assessment and history-taking rather than attempting universal screening in which the same questions are asked of everybody in the same way regardless of presentation. In my opinion, there has been so much emphasis on screening and less emphasis on how to ask questions in a sensitive way that is relevant to the clinical assessment. Some people interpret this as "We should not

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### In This Issue

In this issue, we discuss children's exposure to intimate partner violence (IPV). We present an interview with Harriet MacMillan with contributions by her colleagues, Nadine Wathen and Jill McTavish, although neither could be available at the time of the interview. Such exposure has many effects on children and adults and can be considered a distinct type of child maltreatment. We summarize a recent article by McTavish et al., an overview of children's exposure to IPV, and an article on subtypes of exposure. We also review an article on adult outcomes of children's exposure and two articles on the effects of exposure on children's brains. We have two Building Bridges to Research articles: one gives an example of a child's exposure to IPV and an explanation of risks, rates, and odds. The second describes terms encountered in descriptions of research using *big data*. Finally, Websites describes the VEGA Project and the PreVAiL Network, projects in which Drs. MacMillan and Wathen have key roles.

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We see the same types of problems in children who are being exposed IPV that we see for children who have experienced other types of maltreatment.

## Interview Contributors



**Jill McTavish, PhD**, is a postdoctoral fellow, supervised by Dr. Harriet MacMillan, working at the Offord Centre for Child Studies, McMaster University, London, Ontario. Jill is supporting pan-Canadian guidance development

regarding strategies to best identify and respond to family violence. Previously, she was an information professional at a hospital in London, Ontario, where she supported nurses and allied health professionals through mediated literature searches (including systematic reviews) and instruction related to critical appraisal and research methods. She also teaches in the Faculty of Information and Media Studies at Western University about consumer health information sources and services and evidence-based health care for information professionals.



**Nadine Wathen, PhD**, is Professor at The University of Western Ontario, a Research Scholar at Western's Centre for Research and Education on Violence Against Women and Children, and a Member of the College

of the Royal Society of Canada. Her research examines the health and social service sector response to violence against women and children, interventions to reduce health inequities, and the science of knowledge translation, with a focus on enhancing the use of research in policy and practice. She co-leads a number of research initiatives, including: the PreVAiL Research Network ([www.prevailresearch.ca](http://www.prevailresearch.ca)), VEGA: A Public Health Response to Family Violence ([project-VEGA.ca](http://project-vega.ca)), EQUIP: Research to Equip Primary Health Care for Equity (<http://equiphealthcare.ca>) and the international Domestic Violence @ Work Network ([www.dvatworknet.org](http://www.dvatworknet.org)).

### JOINING FORCES

#### Joining Families

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raise it." Not at all. It is an essential part of understanding the lives of our patients and their families, but asking in a way that is sensitive and appropriate.

#### **Dr. McCarroll: Rather than attempting screening, what might a provider encounter in children exposed to intimate partner violence (IPV)?**

**Dr. MacMillan:** The important message is that the same types of problems that we see for children who have experienced other types of maltreatment are what we see in children who are being exposed to IPV. It can be one or more of a number of internalizing or externalizing symptoms. Conceptualizing children's exposure to IPV as a type of child maltreatment is controversial, because some people feel that doing so implies that one is somehow blaming, typically a mother, who has been victimized. I come from a public health model in which we need to understand all the factors that influence the occurrence of violence, in this case, children's exposure to IPV.

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*Children's emotional responses to IPV can arise through the awareness that a caregiver is at risk of violence. This is in addition to being a direct witness.*

***Dr. McCarroll: Are practitioners in schools and clinics in Canada taking children's exposure seriously?***

*Dr. MacMillan:* Within the child protection system, there is much greater awareness of the range of problems associated with exposure to IPV than among health care providers. In the past, there has been emphasis on physical problems arising because of a child being directly affected by the partner violence. That is only one issue. Another is understanding the potential mental health problems that may occur. People typically use the word witnessing, but witnessing can be interpreted as only seeing or hearing. You have to consider a child's awareness that one or more of their caregivers is at risk. That knowledge in and of itself, even if they never see or hear actual violence, puts them at risk.

***Dr. McCarroll: How do you evaluate children who might have been exposed?***

*Dr. MacMillan:* One needs to have appropriate training and take care to conduct a thorough assessment in which each person is interviewed separately in order to understand the extent of the problems in the family. When children are referred for emotional or behavioral problems some providers might only see the family together without providing an opportunity where the child and the parents are assessed individually. Doing so is potentially harmful, because it does not provide an opportunity to ask about violence in the family safely. In assessments of children and families, we have to make sure we are not doing anything that does "more harm than good".

***Dr. McCarroll: In the paper by McTavish and you and your other colleagues, you gave some examples of how to talk to children about violence.***

*Dr. MacMillan:* This is one of the areas where clinicians want and need the most guidance. It is very hard to communicate such approaches through a written article. For example, some reviewers of one of our publications on emotional maltreatment (Hibbard et al., 2012) asked "Could we have some set questions to ask children?" But, it depends so much on age and developmental stage. We were not able to provide such examples in that article, but this is a fundamental part of a comprehensive assessment of children and families.

***Dr. McCarroll: Current brain research has provided many new insights about how the types of maltreatment actually affect people. [Editor's note: For example, see Teicher & Sampson, 2016]. Do you find that talking about maltreatment affecting children's brains is something that parents are paying attention to?***

*Dr. MacMillan:* I think that emphasizing the brain science findings is important, but at the same time, it is also important for people to have hope. Sometimes, when people hear that the brain is affected, they ask the question, given this has occurred, "Is there any reason to believe that intervention or various programs can help?" So, one has to be careful in how it is discussed with a patient.

***Dr. McCarroll: You and Dr. Nadine Wathen are the co-leads of an important long-term project in Canada, the Violence, Evidence, Guidance and Action (VEGA) Project (<https://projectvega.ca/>).***

[Editor's note: See Webpages of Interest for more information about VEGA and links to its various programs and activities.]

*Dr. MacMillan:* This three-year project, supported by 4.47 million dollars from the Public Health Agency of Canada, is part of a 10-year, 100 million dollar investment to support research and development of programs for victims who have experienced family violence. The objectives of VEGA include the development of public health guidance, protocols, curricula and tools for health and social service providers. The VEGA Project was developed with support of colleagues involved in our research network called Preventing Violence across the Lifespan (PreVAiL). PreVAiL is a Centre for Research Development in Gender, Mental Health and Violence across the Lifespan, which has three main themes: networking, resilience and knowledge translation — all focused on developing ways of reducing child maltreatment and IPV. The network brings together researchers, stakeholders, and policy makers. We have many organizations that are partners with researchers.

For VEGA, we are currently conducting systematic reviews of the global literature to identify the scientific evidence on responding to family violence. We will develop evidence-based guidance that serves as the basis for a foundational curriculum feasible for use by health and social service providers across Canadian provinces and territories.

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# **BUILDING BRIDGES TO RESEARCH**

## **Risks, Rates, and Odds in Children's Exposure to Intimate Partner Violence**

Danielle R. Bartolanzo, MPH, and Charlotte A. Riggs, MS

*The risk of child maltreatment is higher in children exposed to IPV than the risk of child maltreatment in children not exposed to IPV.*

### **Introduction**

As Mrs. Evergreen walked to her car after a long day of teaching, she was startled by a scream coming from the opposite side of the parking lot. She rushed toward the sound and found Mr. and Mrs. Lovett bickering again, but this time their usual sarcastic quips had escalated to shoving and shrieking insults at one another. And there was little Timmy Lovett, tears in his eyes, backpack in hand, quietly standing by the family car waiting for his parents to finish their battle and take him home.

Timmy was a witness to intimate partner violence (IPV). As MacMillen and Wathen (2014) express, children's exposure to IPV is becoming recognized more and more as a type of child maltreatment and can be strongly associated with other forms of maltreatment. Here, we review some common statistical terms in the context of MacMillen and Wathen's research including risk, rate, odds, and their ratios.

### **Understanding Risk**

MacMillen and Wathen (2014) cite Hamby et al. (2010) on the overlap of IPV with other forms of child maltreatment. They noted that of children sampled for the 2008 National Survey of Children's Exposure to Violence, 56.8% of those exposed to IPV have also been maltreated in another way. Whereas, only 11.2% of unexposed children experienced maltreatment. These values are called *risks*.

But what exactly is a risk? A risk is the chance that an individual within a specified population will experience the outcome of interest. To calculate it, simply divide the proportion of *individuals* with the outcome by the *total study population*.

From the example above, the two risks values reported can be utilized to examine the relationship between exposure and the risk of the outcome by taking the ratio of the two. This ratio of risks between exposed children and unexposed children is equal to 5.01. Meaning, children exposed to IPV are at a 5.01 greater risk of becoming victims of other forms of maltreatment compared to unexposed chil-

dren. This result is known as a *relative risk*, or RR for short.

### **Risk and Rates**

At times, the terms risk and rate are used interchangeably. Mathematically however, unlike risk, rate is not a simple probability. In order for a rate to be calculated, the additional component of time has to be considered. Ergo, a *rate* is equal to the total number of *events* that occurred during the study divided by the *sum of time* all persons at risk during that period (or the total at risk person-time).

Therefore, if we assume that the population total is equal to the sum of the at-risk person-time for that study, then it would be true that rate is equal to risk. Thus, we could revise the initial statement in the previous section to say that IPV exposed children are experiencing other forms of maltreatment at a rate of 56.8% in the year 2008, whereas unexposed children are being maltreated at a rate of 11.2%.

To compare the rates of these two separate groups, we simply take their ratio. This is referred to as the *rate ratio*. The rate ratio indicates how fast or slow the outcome is occurring in the exposed group compared to the unexposed group. The rate ratio can be equal to the relative risk given the assumption above like it is in this example, but the two are commonly not identical.

### **Understanding Odds**

Another term related to the risk of an outcome is known as *odds*. Like relative risk, odds can be thought of as a ratio of risks. However, instead of taking the ratio of two similar risks from two different subpopulations, the odds is equal to the probability of the outcome (e.g., disease) in a given population relative to the probability of not having the outcome (non-disease) in that same population.

If we take the risk of non-IPV maltreatment for IPV-exposed children and subtract it from 100%, we obtain the risk of not being maltreated in other ways for IPV-exposed children, which is 43.2%. Therefore, the odds of other maltreatment for exposed children is

# Children Exposed to IPV and Adult Outcomes

By James E. McCarroll, PhD, and Joshua C. Morganstein, MD

*The authors concluded that children exposed to IPV usually live in dysfunctional families where their feelings of physical and psychological well-being are threatened.*

A retrospective longitudinal survey of 3,023 adults in France in 2005 investigated the association between exposure to IPV during childhood prior to age 18 and adult psychosocial outcomes (Roustit, Renahy, Guernec, Lesieur, Parizot & Chauvin, 2009). The outcomes were depression, lifetime suicide attempts, IPV, maltreatment of their own children, and alcohol dependence. Other data collected were family-level stressors (parent-child relationships and childhood adversities) and social-level stressors during childhood (poor parental health, housing problems, parental unemployment, and family financial problems).

Sixteen percent reported having witnessed IPV during childhood. Exposure was associated with numerous adult stressors: parental alcoholism, poor parent-child relationships, adverse parental life events (e.g., separation or divorce, incarceration, suicide attempts, or alcoholism), and physical or sexual abuse. The risk of depression was higher

for women than for men (*results not shown*). Men had a 15-times higher risk of committing violence against their own children, while women double the increase (*results not shown*). The risk of IPV was the same for both men and women (*results not shown*). The risk of alcohol dependence was higher in the men from high-conflict families and/or with a parental history of alcoholism (*results not shown*). The authors concluded that children exposed to IPV usually live in dysfunctional families where their feelings of physical and psychological well-being are threatened.

## Reference

Roustit C, Renahy E, Guernec G, Lesieur S, Parizot I, & Chauvin P. (2009). Exposure to interparental violence and psychosocial maladjustment in the adult life course: advocacy for early prevention. *Journal of Epidemiology and Community Health*; 63: 563–568.

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*At times, the terms risk and rate are used interchangeably. However, a rate is not synonymous with risk.*

(56.8% ÷ 43.2%), or 1.31. Meaning, among IPV exposed children there are 131 children who experienced other maltreatment for every 100 children who had not. In a similar manner, among unexposed children there are only 13 children who experienced maltreatment for every 100 children who had not (odds: 11.2% ÷ 88.8% = 0.13).

Comparing exposed children to unexposed children, we calculate the ratio of the two odds (1.31/0.13) and get an *odds ratio* of 10.08. So the odds of non-IPV maltreatment in IPV exposed children is about 10 times greater than that of unexposed children.

## Conclusion

Perhaps, you have found yourself in a similar situation as that of Mrs. Evergreen's encounter with the Lovett family. You may have asked yourself, what does this mean for the future safety and health of this child? Using MacMillen and Wathen's reference to calculate risks, rates, and odds, we have demonstrated that children exposed to IPV are more likely

to be a victim of other types of maltreatment. Now both you and Mrs. Evergreen have a few tangible and evidence-based tools that can be used in the fight for the protection and care of all children.

For more details on these measures of effect that are frequently found in scientific and medical literature see Oleckno (2008).

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# BUILDING BRIDGES TO RESEARCH

## New Terminology: Big Data

By Charlotte A. Riggs, MS

*In this article, we present definitions of several terms commonly encountered when discussing big data...data mining, algorithms, predictive analytics, machine learning, and data visualization.*

With the rapid progression of computer technology, *big data* has become a frequently encountered term. In general, it refers to large, often enormous, structured and unstructured volumes of data that cannot be efficiently analyzed using traditional data processing methods, if at all. Therefore, new data analytic techniques are constantly being developed to handle huge quantities of data. With such massive amounts of available information, analytic possibilities are arguably limitless. For example, companies can use information obtained from personal devices like a consumer's location or usage habits to achieve targeted advertising. Today, the use of big data occurs within many fields, from computer science, to mathematics, to business, to biological sciences, and others.

In this article, we will present definitions of several terms commonly encountered when discussing big data. Among these are: data mining, predictive analytics, algorithms, machine learning, and data visualization. These terms represent concepts that are all related to the analysis of big data.

The term that describes the largest scale application of data analysis is *data mining*, the process of picking apart large data sets in the hope of finding something new. It is usually accomplished by means of programmer-defined *algorithms*. An algorithm is the step-by-step process (set of rules) that the computer must follow to complete the analysis.

One of the most common methods of data mining is *predictive analytics*. Predictive analytics refers to employing statistical techniques with the intention of predicting future probabilities and trends like that of contracting a disease. To accomplish this, predictor variables are selected to determine what best forecasts a person's risk of experiencing the outcome.

But, with all these new advances, there is still a need to handle big data more efficiently. *Machine learning* is a rapidly growing means of analysis that addresses this concern. The process uses algorithms to automatically learn from data without being programmed where to look. As computer models are exposed to more data, they adapt independently to produce new results.

*Data visualization* is also not new. It is the presentation of data in graphical or similar format that depicts the results of a given data analysis. This is particularly useful when working with big data as it allows the user to see relationships that might not otherwise be easily recognized.

In conclusion, the ability to obtain, store, and analyze big data provides more advanced and efficient analytical techniques to give researchers and policy makers additional tools for learning and decision-making.

### References

#### BIG DATA

<http://harvardmagazine.com/2014/03/why-big-data-is-a-big-deal>

<https://hbr.org/2012/10/big-data-the-management-revolution>

#### PREDICTIVE ANALYTICS

[http://www.sas.com/en\\_us/insights/analytics/predictive-analytics.html](http://www.sas.com/en_us/insights/analytics/predictive-analytics.html)

#### MACHINE LEARNING

[http://www.sas.com/en\\_us/insights/analytics/machine-learning.html](http://www.sas.com/en_us/insights/analytics/machine-learning.html)

#### ALGORITHMS

<http://whatis.techtarget.com/definition/algorithm>

#### VISUALIZATION

[http://www.sas.com/en\\_us/insights/big-data/data-visualization.html](http://www.sas.com/en_us/insights/big-data/data-visualization.html)

# An Overview of Children's Exposure to Intimate Partner Violence

By James E. McCarroll, PhD, and Joshua C. Morganstein, MD

*The term witnessing IPV is thought to be too limiting as children can also be affected by the awareness of IPV including the potential for its occurrence. The term exposure is more accurate. Children's exposure to IPV carries increased risk of emotional and behavioral problems such as internalizing and externalizing conditions, substance abuse, posttraumatic stress disorder, difficulties in relationships with peers, school-related problems, acute physical injury, and death.*

McTavish and colleagues (McTavish, MacGregor, Wathen, & MacMillan, 2016) summarize research evidence on the harmful effects of children who have been exposed to intimate partner violence (IPV). The authors' aim is to highlight the relevant questions for mental health providers, but most of the points apply to other service providers and to policy makers.

The term witnessing IPV is thought to be too limiting as children can also be affected by the *awareness* of IPV including the *potential* for its occurrence; McTavish et al. suggest that the term exposure is more accurate. The definition includes exposure to physical aggression, emotional abuse including intimidation, controlling, isolating, and financial control of a partner.

There has been awareness about the detrimental effects of children's exposure to IPV for decades. A review of the results of individual studies and meta-analyses found a broad range of adverse outcomes associated with such exposures (MacMillan & Wathen, 2014). Among these are an increased risk of emotional and behavioral problems such as internalizing conditions (e.g., withdrawal, depression, and somatic complaints) and externalizing conditions (e.g., aggressive behavior, conduct disorder, and delinquency), substance abuse, posttraumatic stress disorder, difficulties in relationships with peers, school-related problems, acute physical injury, and death.

Children's exposure to IPV is difficult to study. Research should include investigating ways to identify, assess, treat, and prevent it. Estimates of the incidence and prevalence of exposure vary depending on the definition and the study methods. Determination of exposure can be attempted through cases submitted to child protective services, community surveys, and retrospective reports by adults. The authors identify self-reports by children and adolescents as the most accurate method, but these can be fraught with numerous methodological, legal, and ethical issues involving research with these special populations. However, the National Survey of Children's Exposure to Violence, a cross-sectional national survey of children who are 17 years of age or younger conducted

in the U.S. in 2008 (Finkelhor, Turner, Ormrod, & Hamby, 2009) and 2011 (Finkelhor, Turner, Ormrod, & Hamby, 2013) collected data on children who had witnessed a parent assault another caregiver in their lifetime. In the 2008 study, 16.3% had witnessed an assault between their parents in their lifetime. The 2011 study found that 17.3% of children had witnessed a parent assault another caregiver in their lifetime, 6.1% in the past year.

Risk factors of children's exposure to IPV are primarily those that increase the likelihood of women experiencing IPV and perpetration by men (McTavish et al. (2016)). Most of these identified to date are at the individual level (e.g., young age and economic stress) and tend to be related to biological factors and individual histories, but there are also risk factors at the level of relationship (e.g., partner's drinking, drug use, and gender-based beliefs), the community (e.g., supportive relationships outside the family and resources), and the society (e.g., patriarchal norms and behaviors).

Protective factors that have been identified for women include higher levels of education, healthy parenting as a child, having a supportive family, belonging to an association, and having the ability to recognize the risk of sexual violence (World Health Organization, London School of Hygiene and Tropical Medicine, 2010).

According to McTavish et al. (2016) and in MacMillan and Wathen (2014), there is no evidence that attempting to screen for children's exposure for child maltreatment or to IPV has benefit. However, case finding can be an important way of uncovering IPV when assessing clinical conditions that are associated with such exposure. Case finding involves taking a detailed history in the context of an assessment in which issues involving safety and well-being can be inquired about in a sensitive manner whereas screening often involves asking the same questions of each person regardless of clinical presentation. (Editor's note: See *Joining Forces Joining Families*, Volume 14, Issue 2, Summer 2014, for a discussion of screening and case finding in IPV.) The primary consideration in conducting such assessments is the safety of the child and parent. Each should be

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*The primary consideration in conducting an assessment of the presence of IPV is the safety of the child or parent.*

interviewed separately and in an area where the conversation cannot be overheard by others such as by an abusive parent. Some general questions can be asked of children, tailored to the child's age and developmental status (MacMillan & Wathen, 2014). Briefly, these are (1) how do people in the family get along; (2) inquiry about family members' safety and specifically asking about each household member; (3) any worries the child might have about him/herself or other family members; and (4) a general inquiry about how much yelling, pushing, or shoving occurs in the home including discussion of what happens when someone gets in trouble. It is important not to assure patients of complete confidentiality, given that children's exposure to IPV is subject to mandatory reporting in certain jurisdictions.

The best strategy to prevent children's exposure to IPV is to prevent the IPV of adults. Summaries of research on other approaches in this area, such as couples' counseling and restraining orders, are reviewed, but evidence to support them is limited. The authors discuss safety issues such as dealing with mandatory reporting requirements balanced against the needs of the child, and supporting women exposed to IPV and their children.

The potential for impairment due to exposure to IPV is significant. McTavish et al. review a number of strategies to reduce impairment based on clinical trials including psychotherapeutic interventions, parenting skills education, and advocacy. Since the results of clinical trials may not be generalizable, based on inclusion criteria to recruit study participants, it remains to be seen if these interventions are effective in the everyday clinic or household.

Recognizing that IPV is complex, it is important in meeting the needs of children to involve healthcare providers, child and IPV advocates, and judicial personnel (Wathen & MacMillan, 2013). The authors advise that mental health providers should be aware of whether their child and adolescent patients are

experiencing current maltreatment, as well as their adult patients' trauma histories across the life span including child maltreatment. In addition, the clinician should have knowledge about the effects of IPV on health as well as skills in responding to patients who have experienced IPV, particularly for safety concerns. Finally, the clinician should know about appropriate services for persons experiencing IPV such as shelters, outreach services, and social and legal resources (Stewart, MacMillan, & Wathen, 2013).

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*Recent estimates found that 17.3% of children had witnessed a parent assault another caregiver in their lifetime and 6.1% in the past year.*

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# Changes in Brains of Children Exposed to IPV

By James E. McCarroll, PhD, and Joshua C. Morganstein, MD

*Recent advances in neurosciences have shown that child maltreatment alters the trajectory of brain development.*

Child maltreatment has long been known as having deleterious effects on development and adjustment as well as effects on health and well-being in adulthood. Recent advances in neurosciences have shown that child maltreatment alters the trajectory of brain development. A study of neuroimaging findings in children who witnessed caregiver violence reported specific changes in neural tracts in the brain from the left occipital cortex (the visual processing center of the brain) to the left temporal lobe (an area important for the processing of speech and vision) (Choi, Jeong, Polcari, Rohan, Teicher, 2012). Subjects of this research were 20 persons (average age 22 + 2.5 years) who had witnessed domestic violence (WDV) and 27 age-equivalent controls. Persons in the WDV group reported seeing and hearing years of intense verbal aggression between their parents, sometimes with acts of physical violence. Overall, they reported that between the ages of 3-16, they witnessed an average of 4.4 + 2.7 years of exposure to interparental (IP) physical violence plus verbal aggression along with 4.8 + 4.0 years of IP verbal aggression without physical violence. The total exposure duration was 9.2 years + 2.8 years. The father was the perpetrator in 55% of subjects, the mother's boyfriend in 10%, the mother in 15%, and both the mother and the father in 10%. Seventy-five percent said that the incidents were very or extremely upsetting and 80% said that the incidents had a moderate or great effect on their lives.

Subjects in the WDV group had increased ratings of anxiety, depression, somatization, anger-hostility, dissociation and other indicators of irritability in the brain's limbic system (an area of the brain largely dealing with emotion, memory, behavior and other functions). The strongest neuroimaging association finding (lower activity in the tract from the left occipital lobe cortex to the left temporal lobe) was between the duration of exposure to IP verbal aggression unaccompanied by physical violence. Subjects were most susceptible to exposure to IP aggression from ages 7-13. This study suggested that WDV has a strong auditory component and that the worst WDV episodes were multimodal involving both hearing and vision.

Some subjects were resilient in terms of their responses to WDV. The authors suggested that some possible reasons might be genetic as well as sensitive periods of development when the brain is maximally sensitive to stress when WDV did not occur. Study of brain functioning can shed light on the development of emotion regulation and other brain pathways mediating the perception of adverse events.

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## Resources to Build Family Resilience from the Defense Centers of Excellence

The Defense Centers of Excellence (DCoE) posted on their website ([http://www.dcoe.mil/blog/16-11-30/Military\\_Families\\_Matter\\_These\\_Resources\\_Help\\_Build\\_Family\\_Resilience.aspx](http://www.dcoe.mil/blog/16-11-30/Military_Families_Matter_These_Resources_Help_Build_Family_Resilience.aspx)) a wide variety of resources for military families. These include The Real Warriors Campaign, a public awareness campaign that encourages service and family members with mental health concerns to get help. But, in addition, these resources are intended to build resilience through the use of guidelines for individuals and families. These include creating

family plans and checklists, adjusting to phases of deployment, helping with combat stress, personal care and attentiveness, and building family resilience.

Additional resources are for helping a service member at home After Return from Deployment, Resources for Children, Help for Preteen and Teens, and Support for Service Members.

Mobile apps are available from the National Center for Telehealth and Technology

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# Subtypes of Co-Occurring Exposure to Intimate Partner Violence

By James E. McCarroll, PhD, and Joshua C. Morganstein, MD

*Rather than being a unitary type of maltreatment, exposure of children to IPV has subtypes: direct exposure to physical violence, indirect exposure to physical violence, and exposure to emotional violence*

Rather than being a unitary type of maltreatment, exposure of children to intimate partner violence (IPV) has subtypes (Gonzalez, MacMillan, Tanaka, Jack, & Tomby, 2014). The Canadian Incidence Study of Child Abuse and Neglect (CIS-2008) reported three types as reported by child welfare workers: indirect exposure to physical violence, direct exposure to physical violence, and exposure to emotional violence (PHAC, 2010). The CIS-2008 sampled 112 child welfare sites including 11,807 investigations. Children who were subjects of investigation were those of age 15 and under. The number of boys and girls was equal, the average age was 6 years old, and the sample was 63.9% white. There were five different categories of maltreatment: sexual abuse, physical abuse, emotional maltreatment, neglect, and exposure to IPV. CIS used a three-tiered classification system for investigations: substantiated, suspected, or unfounded. Child functioning was coded as (1) internalizing problems (e.g., low self-esteem, depression, anxiety, social withdrawal), (2) externalizing problems (e.g., aggression, violence and delinquency), and (3) whether mental or emotional harm to the child was evident in the last six months. Primary caregiver and household risk factors were also recorded. The analyses reported here include only those cases where exposure to IPV was the sole reason for the investigation.

Exposure to IPV as the sole reason was reported in 18.5% (n=2,184) of investigations. Exposure to direct physical violence was reported most often (30%, n=656), followed by emotional violence only (25.5%, n=556), and indirect exposure only (18.5%, n=403). Total co-occurring exposure was 26% (n=569) of investigations. The most common co-occurring exposure was to physical violence and emotional violence (11.6%, n=254). The others were less than 10% each.

Internalizing and externalizing problems were noted as approximately equal, 9.8% and

9.7%, respectively. Emotional or physical harm was noted in 18.4% of the children. Children exposed to co-occurring IPV were at greater odds of internalizing, externalizing, and mental or physical harm compared to children indirectly exposed to physical IPV only. These major outcomes were that (1) there was an association between co-occurring IPV, caregiver mental health, and lack of social support with all three child outcomes; (2) exposure to emotional violence only was significantly associated with internalizing problems and the presence of harm, and (3) caregiver mental health and lack of social support were significantly associated with increased risk of all child functioning outcomes. The only association with gender and child outcomes was that males were at increased risk of externalizing problems.

Overcrowded houses increased the odds of direct exposure to physical violence only and to co-occurring IPV. Also, households that ran out of money for basic necessities was associated with an almost three-fold increase in the odds of exposure to co-occurring IPV.

This study's examination of exposure to IPV subtypes, risk factors, and child outcomes suggests that, in addition to well-established risks, the need for increased awareness among child welfare workers as well as health care and service providers, of the importance of differences in children's IPV exposure subtypes and child outcomes.

## References

- Gonzalez A, MacMillan H, Tanaka M, Jack SM, & Tomby L. (2014). Subtypes of exposure to intimate partner violence within a Canadian welfare sample: Associated risks and child maladjustment. *Child Abuse & Neglect*; 38: 1934-1944.
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*Children exposed to co-occurring IPV were at greater odds of internalizing, externalizing, and mental or physical harm compared to children indirectly exposed to physical IPV only.*

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# Intimate Partner Violence Can Cause Brain Injuries

By James E. McCarroll, PhD, and Joshua C. Morganstein, MD

Alterations in consciousness following IPV-related TBI can include dizziness, seeing stars and spots, being stunned or disoriented, losing consciousness, or post-traumatic memory loss.

The neurobiology of such intimate partner violence (IPV)-related traumatic brain injury (TBI) has not been well investigated. TBI was studied in 20 women recruited from women's shelters, domestic violence programs, and word of mouth. Seventy-five percent of the women reported multiple TBIs. Women were given questionnaires, a neuropsychological battery, and were interviewed for a history of alterations in consciousness (AIC) following a TBI. AICs included periods of dizziness, seeing stars and spots, being stunned or disoriented, losing consciousness, or post-traumatic memory loss. Brain imaging (magnetic resonance imaging, fMRI) was used to examine cognitive brain-network organization. Cognitive functioning was assessed through a questionnaire of

post-concussive symptoms at the time of the incident and currently.

The severity of injury was negatively associated with functional cognitive connections in the brain. An average of 5.3 post-concussive symptoms was reported. The most common symptom (about 58%) was feeling depressed or tearful, followed by headaches (about 53%), feeling irritable, easily angered, frustrated, or impatient (about 47% each), poor concentration (about 42%), sleep disturbance, forgetfulness, poor memory and taking longer to think (about 37%). When severe IPV occurs, the possibility of TBI should be considered and, if presented, should be referred for further examination and intervention such as neurorehabilitation.

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**An interview with Harriet MacMillan, from page 3**

Children's emotional responses to IPV can arise through the awareness that a caregiver is at risk of violence. This is in addition to being a direct witness.

**Dr. McCarroll: What do you think the end product is going to look like?**

*Dr. MacMillan:* That is a good question. A lot of curricula focus on knowledge and do not have sufficient emphasis on the development of skills. For example, a curriculum might include information about how common family violence is, the risk and protective factors, and similar issues, but health and social service providers might say, "How do I learn to respond to the patient or client in front of me?" We want to make sure we are focusing on skills. There will be some online components, but we are also trying to identify those educational approaches that are more effective. We want to make sure that the core knowledge is incorporated into the curriculum, but that there is also the opportunity for the development of essential skills. One of the important elements of knowledge translation is that you involve the knowledge user from the beginning. It is not simply a matter of doing the work and disseminating the information at the end of the project. It is involving them from the start and working collaboratively.

**Dr. McCarroll: People who read our newsletter might ask, "How can I get my hands on this?"**

*Dr. MacMillan:* The website is the best source of information. Within the next two to three years our products will be available, not

just in Canada, but to others and, hopefully, they can be adapted to suit the needs of other countries.

**Dr. McCarroll: Will there be a link on VEGA to show current developments and future plans?**

*Dr. MacMillan:* Yes; that's the plan.

**Dr. McCarroll: Thank you for your insights about children exposed to IPV and for describing your current work with PreVAiL and VEGA.**

## References

- Hibbard R, Barlow J, MacMillan HL, and the Committee on Child Abuse and Neglect and the American Academy of Child and Adolescent Psychiatry, Child Maltreatment and Violence Committee (2012). Psychological maltreatment. *Pediatrics*; 130(2): 372-378, doi: 10.1542/peds.2012-1552.
- McTavish JR, MacGregor JCD, Wathen CN, & MacMillan HL. (2016). Children's exposure to intimate partner violence: an overview. *International Review of Psychiatry*, doi:10.1080/09540261.2016.1205001.
- Teicher MH, & Samson JA. (2016). Annual research review: Enduring neurobiological effects of childhood abuse and neglect. *Journal of Child Psychology and Psychiatry*; 57(3): 241-266, doi:10.1111/jcpp.12507.

## Websites of Interest

Dr. MacMillan gave a brief overview of the VEGA (Violence, Evidence, Guidance and Action) project in her interview. This website <https://projectvega.ca/> gives many details of the project. An extensive description of the VEGA project is given at [projectvega.ca/documents/2016/05/vega-brief-project-summary-may2016.pdf](https://projectvega.ca/documents/2016/05/vega-brief-project-summary-may2016.pdf). This includes project objectives and an overview of activities as a flow chart showing the sequence of development of products for knowledge mobilization strategy development and evaluation.

PreVAil (Preventing Violence Across the Lifespan) is an international research collaboration of over 60 researchers and partners from Canada, the US, the UK, Asia, Europe and Australia, funded by the Canadian Institutes of Health Research's Institute for Gender and Health (2009-2017). If you go to (<http://prevailresearch.ca/>) you will find several reports that describe updates of the PreVAil project and research briefs that are valuable resources on four topics that are of interest to all members of the family maltreatment community. These are Interventions to (1) Prevent Child Maltreatment, (2) Resilience and Mental Health Outcomes, (3) Identifying and Responding to Children's Exposure to Intimate Partner Violence, and (4) Identifying and Responding to Intimate Partner Violence.

As Dr. MacMillan explained in her interview, these projects will continue to produce resources for building knowledge and skills for effective public health practices in responding to family violence. We suggest that service providers and policy makers use the links provided in the VEGA and PreVAil and follow developments as they occur.

*IPV Can Cause Brain Injuries*, from page 11

### Reference

Valera E, & Kucyi A. (2016). Brain injury in women experiencing intimate partner violence: neural mechanistic evidence of an “invisible” trauma. *Brain Imaging and Behavior*; doi: 10.1007/s11682-016-9643-1.

*DCOE*, from p. 9

(<http://t2health.dcoe.mil/>) such as tips for parenting, mindfulness exercises, and stress management through breath work. For more resources on building resilience or anything specific to psychological health or traumatic brain injury, the DCoE Outreach Center is available 24/7 by phone at 866-966-1020, e-mail ([resources@dcoeoutreach.org](mailto:resources@dcoeoutreach.org)) or live chat (<http://www.realwarriors.net/livechat>).