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Kerry L. Gagnon MA & Anne P. DePrince PhD

To cite this article: Kerry L. Gagnon MA & Anne P. DePrince PhD (2016): Head injury screening and intimate partner violence: A brief report, Journal of Trauma & Dissociation, DOI: [10.1080/15299732.2016.1252001](https://doi.org/10.1080/15299732.2016.1252001)

To link to this article: <http://dx.doi.org/10.1080/15299732.2016.1252001>



Accepted author version posted online: 24 Oct 2016.  
Published online: 24 Oct 2016.



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ARTICLE

## Head injury screening and intimate partner violence: A brief report

Kerry L. Gagnon, MA and Anne P. DePrince, PhD

Department of Psychology, University of Denver, Denver, Colorado, USA

### ABSTRACT

*Objective:* Although the importance of traumatic brain injury has gained public attention in recent years, relatively little attention has been paid to head injuries among women who have experienced intimate partner violence (IPV). The present study screened for lifetime exposure to mild traumatic brain injuries (mTBIs) among a sample of women who had experienced recent IPV (median days since target incident = 26). *Method:* Participants included ethnically diverse women whose IPV experiences were reported to law enforcement. Women ( $n = 225$ ) were asked about injuries to the head sustained during the target IPV incident as well as over the lifetime, and related symptoms. *Results:* The vast majority of women (80%) reported a lifetime head injury. More than half (56%) screened positive for mTBI, defined as at least one instance in which they experienced a change in consciousness or a period of being dazed and confused as a result of a head injury. A minority of women (13%) reported injuries to the head during the target IPV incident. Most women who had experienced a lifetime head injury reported frequent and current cognitive difficulties. *Conclusion:* These findings highlight the importance of assessing head injuries and related symptoms among women who have experienced IPV, pointing to important implications for policy and practice.

### ARTICLE HISTORY

Received 14 February 2016

Accepted 11 October 2016

### KEYWORDS

Health impact of trauma;  
intimate partner violence

The importance of traumatic brain injuries (TBIs) has captured public attention in recent years, particularly in terms of the impact of TBIs on combat veterans (e.g., MacGregor, Dougherty, Tang, & Galarneau, 2013; Terrio et al., 2009) and athletes (e.g., Cusimano et al., 2013). TBIs are linked to a host of disruptive postconcussive symptoms, including pain (e.g., headaches) and cognitive problems (e.g., difficulty concentrating, memory loss; Faul, Xu, Wald, & Coronado, 2010; Ryan & Warden, 2003) as well as risk for later depression and suicidality (e.g., Perna, 2005; Wasserman et al., 2008). Though TBIs can range from mild (e.g., alteration in mental status and consciousness) to severe (e.g., an extended period of unconsciousness or amnesia), mild TBIs (mTBIs) are most common (Faul et al., 2010) and are strongly linked with postconcussive symptoms.

**CONTACT** Kerry L. Gagnon, MA  [Kerry.Gagnon@du.edu](mailto:Kerry.Gagnon@du.edu)  Department of Psychology, University of Denver, 2155 South Race Street, Denver, CO 80208.

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Given the serious consequences of mTBIs, public discourse about head injuries among veterans and athletes has been of great importance in influencing policy and practice nationwide. Relatively little attention, however, has been paid to the prevalence of head injuries among women who have experienced intimate partner violence (IPV), despite the prevalence of common TBI postconcussive symptoms in this group (e.g., depression, cognitive difficulties; Kwako et al., 2011). Postconcussive symptoms (e.g., attention problems, memory problems, difficulty in distracting environments) may make it difficult for victims to access and/or make effective use of services following violence, including social and mental health services (DePrince & Shirk, 2013; Lee & DePrince, 2016). Unfortunately, postconcussive symptoms may go undetected and/or unconsidered in service and treatment planning because 30% to 75% of women do not seek medical care following TBIs in IPV (Kwako et al., 2011). Therefore, screening for head injuries and mTBIs when women interact with other nonmedical systems of care (e.g., victim service systems) may be valuable in IPV service and treatment planning. Whether such screening is necessary, though, depends on how common mTBIs are among women engaged in services following IPV.

Data from emergency and acute crisis settings point to alarming prevalence rates. Jackson and colleagues (2002) found that 92% of women in IPV shelters described abuse that involved blows to the head, with 40% of women reporting loss of consciousness. Since 2002, a handful of additional research studies have documented high prevalence rates (range = 38%–68%) of TBIs among women in shelter and emergency room settings following severe IPV (Corrigan, Wolfe, Mysiw, Jackson, & Bogner, 2003; Wilbur et al., 2001). These prevalence rates stand in stark contrast to rates in the general population. A recent meta-analysis estimated that approximately 9% of women in the general population have had TBIs with loss of consciousness (Frost, Farrer, Primosch, & Hedges, 2013).

Although women experiencing severe IPV appear to be at very high risk for TBIs relative to women in the general population, little is known about the prevalence of head injuries among women experiencing a broader range of IPV severity (e.g., violations of protection orders and stalking to severe physical assaults) who interact with systems outside shelters and hospitals. Furthermore, little is known about lifetime exposure to head injuries among women who experience IPV, including head injuries from causes other than IPV. TBIs caused by something other than violence (e.g., a motor vehicle accident [MVA]) may result in postconcussive symptoms that interact with women's risk for IPV and/or ability to engage in services following IPV. Women with postconcussive cognitive problems from MVAs, for example, could be targeted by offenders who seek out victims who seem vulnerable. Regardless of the origin of the injury (e.g., MVA or IPV) postconcussive

symptoms such as memory problems or difficulties finding words may influence women's ability to access and make use of IPV services.

To evaluate whether mTBI screening is warranted in settings outside hospitals and shelters, the current study aimed to document prevalence rates of mTBIs and reports of postconcussive symptoms among women identified through police reports that included nonphysical incidents (e.g., violations of protection orders) as well as assaults by an intimate partner that varied in severity. Recognizing that the effects of mTBIs can be experienced over long periods of time (Kushner, 1998), the current study also screened for lifetime exposure to head injuries and postconcussive symptoms as well as head injuries related to the IPV incident that had prompted contact with law enforcement.<sup>1</sup> A positive screen for mTBI occurred when women reported a head injury that led to loss of consciousness or a period of being dazed and confused (please refer to "Materials" for more detail regarding mTBI measurement).

## Method

### Participants

Adult women ( $N = 236$ ) ages 18–63 ( $M = 33.4$ ,  $SD = 11.0$ ) were recruited as part of a larger study on coordinated community responses to IPV. Participants were invited to the study based on publicly accessible police reports of non-sexual assault IPV that involved a heterosexual adult couple and did not involve a cross-arrest in a jurisdiction in a western metropolitan area. Nearly one quarter (23%) of IPV incidents were reported by someone other than the participant (e.g., a neighbor, a friend); thus, nearly one quarter of the sample was not seeking law enforcement involvement for the IPV. IPV incidents varied in severity, ranging from violations of protection orders and destruction of property to physical assaults that ranged from mild to severe (for more information, see DePrince, Belknap, Labus, Buckingham, & Gover, 2012a; DePrince, Labus, Belknap, Buckingham, & Gover 2012b). Participants were excluded if they could not read or write in English. Women were interviewed a median of 26 days ( $M = 45$  days, range = 7–459 days) following the IPV incident.

Demographic information provided by the 236 women reflected a diverse sample. Women described their racial/ethnic backgrounds as follows: 47% White/Caucasian, 30% Black/African American, 40% Hispanic/Latina, 11% American Indian/Alaska Native, 3% Asian/Pacific Islander, 6% other. Women reported their highest level of education completed as 3% first through eighth grade, 53% high school (some or completed), 39% college (some or completed), 3% postgraduate, 1% other (e.g., trade school). Women's income ranged from \$0 to \$108,000 ( $Mdn = \$7,644$ , including

salary and nonsalary sources such as Social Security Income). Spatial data were used to explore the sample representativeness of the population of IPV cases reported to law enforcement during the study period. The spatial distribution of participant addresses reflected the spatial distribution of IPV incidents reported to law enforcement during the study period (DePrince et al., 2012a).

## **Materials**

### ***Lifetime head injury and symptoms***

Lifetime head injuries and related symptoms were screened using the HELPS Brain Injury Screening Tool (HELPS Screener; Picard, Scarisbrick, & Paluck, 1999). The HELPS Screener is a brief, preliminary screening tool designed to be used to identify patients with possible TBI in need of further neurological assessment. In the current study, the screening tool was used to identify women who had experienced one or more head injuries in their lifetime (within and outside of the context of IPV) and the use of medical services. Specifically, women were asked “Have you ever been hit in the head?” “Were you seen in the emergency room, hospital, or by a doctor because of an injury to your head?” “Did you ever lose consciousness or experience a period of being dazed and confused because of an injury to your head?” Following criteria used by Jackson and colleagues (2002), we estimated the presence of mTBI from the HELPS Screener; note that these were estimates and not diagnoses. mTBI was coded as likely to be present if the participant reported hitting her head or being hit in the head as well as a loss of consciousness or a period of being dazed and confused.

Using the HELPS Screener, participants also reported on their frequencies of current and lifetime postconcussive symptoms. Specifically, women were asked “Have you experienced any of these problems in your daily life since you hit your head?” and then read a list of postconcussive symptoms (e.g., dizziness, headaches, difficulty remembering). Participants were asked to respond “yes” or “no” to each symptom. For those symptoms that were positively endorsed, participants were further asked if they experienced the symptom currently and/or within their lifetime.

### ***IPV-related head injury***

Head injuries related to IPV were assessed using items from the Revised Conflict Tactics Scale (CTS-2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996), a widely used valid and reliable instrument that measures conflict in intimate partner relationships. Using items from the Injury Scale, we assessed for injuries to the head related to IPV during the target incident and in the previous 6 months as well as for utilization and/or need for medical attention. In reference to the target incident, women were first asked “Did he

cause a head injury or concussion?” The women who responded “yes” were additionally asked “Did you receive medical care at a hospital sometime after the incident because of the incident?” “Did you see a doctor sometime after the incident because of the incident?” and “Did you need to see a doctor because of the incident but did not see one?” Women were also asked whether an intimate partner had “caused a head injury or concussion” in the past 6 months since the interview date and how many times they had experienced a head injury or concussion.

### **Procedure**

The study was approved by a university institutional review board. For a full description of the study procedures of the larger study, see DePrince et al. (2012a) and DePrince et al. (2012b). Women were recruited using publicly accessible IPV incidents reported to law enforcement. The research team initiated contact with potential participants and invited them to take part in the “Women’s Health Study.” Participants were scheduled for a 3-hr in-person interview conducted at a research office by a female graduate-level interviewer. Of the women whom the research team attempted to recruit, 29% attended the interview. Consent information was provided in both written and verbal form. Following consent procedures, women completed both written and verbally administered questionnaires that were a part of the larger study. As relevant to the current research questions, interviewers administered a battery of measures that included demographics, the HELPS Screener, and the CTS-2. Women were debriefed on the purpose of the study at the end and then compensated \$50 for their time.

### **Results**

Of the full sample, 225 women were administered the HELPS Screener. Of the 225 women, a large majority (80%) reported being hit in the head or hitting their head at some point in their lives; 56% screened positive for mTBI, defined as a head injury with a change in consciousness or a period of being dazed and confused. Another 12% of women did not report changes in consciousness; however, they were concerned enough about the head injury to seek medical care. Of the 180 women who reported being hit in the head, 122 (68%) offered a description of the cause. Of the causes given, 29% involved an MVA, 39% a non-motor-vehicle accident (e.g., a fall, a bike accident), and 65% interpersonal aggression (e.g., child abuse, domestic violence, assault); the total adds up to more than 100% because women who reported more than one head injury could give multiple causes.

Women who reported experiencing a head injury in their lifetime (80% of the sample) also reported frequent and *current* postconcussive symptoms

**Table 1.** Prevalence of current and lifetime postconcussive symptoms ( $N = 180$ ).

Symptom	Current (%)	Lifetime (%)
Headaches	45	29
Trouble remembering things	34	11
Difficulty finding the right words	33	11
Trouble concentrating	29	15
Losing things	28	10
Trouble in distracting environments	27	9
Easily distracted	27	14
Forgetting appointments	27	8
Trouble paying attention to more than one thing	26	9
Dizziness	27	21
Work became harder	18	12
Trouble doing more than one thing at a time	14	5
Trouble following directions	13	6

(e.g., headaches, being easily distracted, and having trouble concentrating) in addition to experiencing postconcussive symptoms at some point in their lives (see Table 1 for current and past symptoms). Women reported experiencing an average of three ( $SD = 4$ ) *current* postconcussive symptoms.

A total of 13% of women reported that during the target IPV incident they were hit in the head or lost consciousness. In addition, 7% of women reported a head injury caused by an intimate partner in the past 6 months since their interview date. In total, approximately 20% of women reported head injuries due to IPV in a 6-month time period. Of these women, only 15% reported that they received medical care at a hospital, and 8% reported seeing a doctor; an additional 24% reported that they needed to see a doctor because of injuries related to an IPV incident but did not see one.

## Discussion

Eight in 10 women who had recently experienced IPV screened positive for a lifetime head injury. More than half of women (56%) met screening criteria for an mTBI. This mTBI prevalence rate is notably higher than among women in the general population (9%; Frost et al., 2013) and in other service settings that are not IPV specific: 29% of women in a psychiatric inpatient sample and 19% of women in a psychiatric outpatient sample had mTBIs (McGuire, Burright, Williams, & Donovick, 1998). Thus, women experiencing IPV appear to be at marked risk for having histories of mTBI. In addition to lifetime mTBIs, 1 in 5 women screened positive for an IPV-related head injury within the previous 6 months. Only 17% of the women who screened positive for an IPV-related head injury within the previous 6 months sought medical treatment for the injury, consistent with other findings documenting low engagement with medical services (Kwako et al., 2011). Reports of *current* postconcussive symptoms, including memory and attention problems, were common in the sample.

The high rate of positive screens for head injuries and mTBIs as well as common *current* postconcussive symptoms among women recruited from nonhospital, nonshelter settings suggests that women with histories of IPV should be screened for head injuries and postconcussive symptoms when they enter victim service systems at diverse points (e.g., mental health, community-based, criminal justices services) and not just at the point of contact with hospital and shelter services. In the current study, the 5-item screening tool allowed us to quickly screen for TBIs with questions that women were amenable to answering. In light of calls for universal screening for IPV (e.g., Moyer, 2013; Phelan, 2007), these findings suggest that service providers should consider following up questions about IPV experiences with brief TBI screening questions to identify women for whom further assessment of TBIs and related symptoms may be warranted. For example, women who report IPV histories and screen positive for mTBI as well as report current postconcussive symptoms can be referred for a neuropsychological evaluation and/or to appropriate treatments to address the short- and long-term consequences of postconcussive symptoms (e.g., cognitive, physical, and financial consequences).

Screening for head injuries and postconcussive symptoms may be particularly important to minimizing the difficulties women face engaging in both social service and criminal justice systems. For example, postconcussive symptoms related to inattention or memory problems may have an impact on women's engagement in mental health service use (e.g., because of the attention demands of trauma-focused treatments, such as cognitive behavior therapy; DePrince & Shirk, 2013) as well as with the criminal justice system (e.g., in which women must navigate multiple appointments, including expectations to repeatedly recall and describe the IPV). Awareness of the cognitive impact of head injuries should be part of best practices for serving women exposed to IPV. A treatment provider working with a victim of IPV who is experiencing current postconcussive symptoms, such as difficulty concentrating and memory loss, for example, may make it a point to minimize distractions and incorporate short breaks when working with the victim as well as write information down and send multiple reminders to the victim for future appointments (for more specific recommendations, refer to Murray, Lundgren, Olson, & Hunnicutt, 2016; New York State Office for the Prevention of Domestic Violence, 2006).

### **Limitations and future directions**

Several limitations should be considered. The psychometric properties of the HELPS Screener have not been documented; therefore, additional research is needed to establish the reliability and validity of this particular screener. Also, the HELPS Screener is a preliminary screening tool and therefore does not capture in-depth information about head injuries. Similarly, the CTS-2 only includes one

question about the quantity of head injuries and/or loss of consciousness during IPV and does not measure the extent and exact timing of the injuries. Although the study results highlight the importance of screening for head injuries, especially among women who have experienced IPV, these data do not offer details on the exact etiology, timing, and severity of head injuries, which is important to understanding the development and overall impact of head injuries. In addition, head injury and postconcussive symptoms were screened based on self-report in the absence of a neuropsychological exam; therefore, the current findings only provide a screening estimate of head injury and mTBI prevalence. Some women in the study, for example, may not have been aware of loss in consciousness, which would have led to artificially low estimates of mTBI. The current study is also limited in terms of its generalizability, as women in the sample were recruited from publicly accessible police reports of non-sexual assault IPV that involved a heterosexual couple. Although this study extends the limited existing literature, which focuses only on emergency medical departments and shelters, additional research is urgently needed to identify estimates of mTBI exposure among women who do not seek services and women who have experienced IPV perpetrated by a same-sex partner.

Despite these limitations, the current study demonstrates that a brief screening tool can be used with women experiencing IPV in the context of a longer interview. Thus, it may be quite feasible for service providers in diverse treatment settings to integrate screenings to identify women for whom head injuries and postconcussive symptoms should be further assessed. The findings point to the importance of screening for head injuries and postconcussive symptoms among women who have experienced IPV as well as several avenues for future research and directions for policy. Longitudinal studies are needed to examine the prevalence, duration, and course of head injuries and symptoms among women who have experienced IPV. Furthermore, research examining the neurological impact of head injuries on women who have experienced IPV is needed in order to better understand underlying cognitive changes and to advance interventions for survivors of IPV with head injuries (Wong, Fong, Lai, & Tiwari, 2013).

## Notes

1. We refer to the IPV incident that was reported to law enforcement as the *target incident* for the remainder of this article.

## Acknowledgments

We thank our study partners (Denver District Attorney's Office, City Attorney's Office, Denver Police Department Victim Assistance Unit, Denver Domestic Violence Coordinating Council, SafeHouse Denver, Project Safeguard, Triage Steering Committee) as well as Joanne Belknap and the Traumatic Stress Studies Group.

## Funding

This project was funded by Award No. 2007-WG-BX-0002 awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this report are our own and do not necessarily reflect those of the Department of Justice. The views expressed in this report do not necessarily represent those of the National Institute of Justice.

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