



Violent firearm-related conflicts among high-risk youth: An event-level and daily calendar analysis☆



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ABSTRACT

Firearm homicide is the leading cause of violence-related youth mortality. To inform prevention efforts, we analyzed event-level data to identify unique precursors to firearm conflicts. Youth (ages: 14–24) seeking Emergency Department (ED) treatment for assault or for other reasons and reporting past 6-month drug use were enrolled in a 2-year longitudinal study. Time-line follow-back substance use/aggression modules were administered at baseline and each 6-month follow-up. Violent non-partner conflicts were combined across time-points. Regression analyzed: a) antecedents of firearm-related conflicts (i.e., threats/use) as compared to non-firearm conflicts; and b) substance use on conflict (vs. non-conflict) days for those engaged in firearm conflict. During the 24-months, we found that 421-youth reported involvement in violent non-partner conflict ($n = 829$ -conflicts; 197-firearm/632-non-firearm). Among firearm conflicts, 24.9% involved aggression and 92.9% involved victimization. Retaliation was the most common motivation for firearm-aggression (51.0%), while “shot for no reason” (29.5%) and conflicts motivated by arguments over “personal belongings” (24.0%) were most common for firearm-victimization. Male sex (AOR = 5.14), Black race (AOR = 2.75), a ED visit for assault (AOR = 3.46), marijuana use before the conflict (AOR = 2.02), and conflicts motivated by retaliation (AOR = 4.57) or personal belongings (AOR = 2.28) increased the odds that a conflict involved firearms. Alcohol (AOR = 2.80), marijuana (AOR = 1.63), and prescription drugs (AOR = 4.06) had a higher association with conflict (vs. non-conflict) days among youth reporting firearm conflict. Overall, we found that firearm conflicts are differentially associated with substance use and violence motivations. Addressing substance use, interrupting the cycle of retaliatory violence, and developing conflict resolution strategies that address escalation over infringement on personal belongings may aid in decreasing and preventing adolescent firearm violence.

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Abbreviations: ED, Emergency Department; US, United States; HMC, Hurley Medical Center; UM, University of Michigan; IRB, Institutional Review Board; CDC, Centers for Disease Control; CTS, Conflicts tactics scale.

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1. Introduction

Firearm homicide is the leading cause of violence-related mortality for U.S. youth aged 14–24 (Centers for Disease Control and Prevention (WISQARS), 2004). In fact, youth firearm homicide rates are twice those of U.S. adults (Centers for Disease Control and Prevention (WISQARS), 2004) and forty-nine times those of youth in other high-income countries (Grinshteyn and Hemenway, 2015). Health disparities persist, with 68% of firearm-related homicides among youth occurring among Black youth (Centers for Disease Control and Prevention (WISQARS), 2004). Non-fatal firearm injuries resulting from assault

have accounted for an average of >58,000 visits to U.S. Emergency Departments (EDs) annually in the past five years, almost half involving youth aged 14–24 (Centers for Disease Control and Prevention (WISQARS), 2004). The Institute of Medicine (Leshner et al., 2013) has responded to this public health issue by emphasizing the need for additional firearm research, especially research informing prevention initiatives.

Research has identified aggregated risk factors associated with an increased risk for firearm violence among high-risk youth, including prior violence involvement, firearm possession, attitudes favoring retaliation, higher severity substance use, and several specific mental health diagnoses (Carter et al., 2015). Among youth seeking ED treatment for assault, 25% report owning or carrying a firearm in the prior 6 months, with those youth who endorse firearm possession also reporting higher rates of firearm victimization and aggression (Carter et al., 2013). Substance use has also been identified as a key risk factor for a series of high-risk firearm behaviors, including illicit firearm possession (Carter et al., 2013), unsafe weapon storage (Wintemute, 2011), weapon carriage (Wintemute, 2011; Steinman and Zimmerman, 2003), and firearm threats against others (Casiano et al., 2008). In addition, it is estimated that 50% of high-risk youth involved in firearm violence meet criteria for a recent mental health diagnosis (e.g., depression), with PTSD predictive of future firearm violence risk (Carter et al., 2015).

While studies using aggregated measures (e.g., past 6-month substance use) have identified important risk factors for firearm violence (Carter et al., 2015; Cunningham et al., 2015), such research is limited – it does not characterize the unique set of factors that directly precedes firearm-related conflicts or the specific motivations underlying a conflict (Chermack et al., 2010; Epstein-Ngo et al., 2014). Research employing timeline follow-back (TLFB) methodology collects data on daily behaviors using an event calendar, allowing for a detailed examination of factors influencing behaviors at the incident level (Chermack et al., 2010; Epstein-Ngo et al., 2014). To date, TLFB studies have focused on factors influencing daily substance use (Chermack et al., 2010), or have explored the relationship between substance use and intimate partner violence (Epstein-Ngo et al., 2014) or adolescent peer violence (Stoddard et al., 2015). No TLFB studies have focused on understanding the distinctive contextual factors differentiating non-partner conflicts involving a firearm from other forms of non-partner conflict. Such data has the potential to influence the design of evidence-based firearm violence interventions addressing upstream factors related to this more lethal form of violence.

The Flint Youth Injury (FYI) Study (Carter et al., 2015; Cunningham et al., 2015; Bohnert et al., 2015) is a two-year longitudinal study examining violence and substance use outcomes among drug-using youth seeking ED care for assault and a comparison cohort of youth with drug use seeking care for other (non-violence) reasons. In addition to aggregate measures, participants completed TLFB calendars at each time point. The primary objective of this analysis is to utilize TLFB data to characterize the circumstances surrounding non-partner firearm violence, both in terms of contrasting firearm with non-firearm conflicts, and contrasting firearm conflict days with non-conflict days among those engaging in non-partner firearm conflict.

2. Methods

2.1. Study design and setting

Data for this secondary analysis are from the FYI Study (Cunningham et al., 2015; Bohnert et al., 2015). The UM and Hurley Medical Center (HMC) IRBs approved all study procedures; A NIH Certificate of Confidentiality was obtained. The study was conducted in Flint, Michigan at HMC. Flint crime and poverty rates are comparable to other urban centers (Federal Bureau of Investigation, 2011). The study population reflects the ethnic/racial characteristics of Flint (U.S. Census Bureau,

2016), which is 50–60% African American (Walton et al., 2010; Cunningham et al., 2006).

2.2. Study procedures

Detailed study procedures have been published (Cunningham et al., 2015; Bohnert et al., 2015). Youth (ages 14–24) seeking ED care for assault with past 6-month drug use (AIG), as well as a proportionally sampled comparison group (CG) of youth presenting for other reasons who also reported past 6-month drug use were eligible for the longitudinal study. Following written assent/consent (parental consent if <18 years-old), participants self-administered the screening survey. Assault was defined as any intentional injury caused by another person. Past 6-month drug use was assessed using the National Institute on Drug Abuse Alcohol, Smoking, and Substance Involvement Screening Test (National Institute on Drug Abuse). If screening positive for assault and past 6-month drug use (i.e., any use within the past 6-months), youth were enrolled in the AIG cohort. The CG was recruited in parallel to limit seasonal/temporal variation and youth were systematically enrolled to balance the cohorts by sex and age (i.e., 14–17, 18–20, 21–24). Participants were enrolled 12/2009–9/2011. Eligible AIG and CG youth completed a baseline assessment that included a self-administered computerized survey and a structured interview conducted by the Research Assistant (RA). In-person follow-ups were at 6, 12-, 18-, and 24-months.

2.3. Measures

2.3.1. Daily- and event-level measures

2.3.1.1. Non-partner conflicts. For the event analysis, the *main outcome measure* was firearm conflicts, which included non-partner conflicts involving firearm aggression (firearm threats, used a firearm) or victimization (threatened with a firearm, shot at with a firearm). Non-firearm conflicts, or those involving all other non-partner violence behaviors (e.g., pushed, shoved, stabbed), served as the comparison. Non-partner was defined as anyone other than a dating (boyfriend/girlfriend) or intimate partner (fiancée, wife/husband), and included friends, co-workers, family, strangers, acquaintances, police, or gang-members. For the daily calendar analysis, firearm conflict days was the *main outcome measure*, defined as any day involving a non-partner firearm conflict. Non-conflict days, or days without any non-partner violence (firearm or non-firearm), served as the comparison.

The RA-administered TLFB-Aggression Module (TLFB-AM) (Chermack et al., 2010) was used to measure non-partner violence (firearm and non-firearm) conflicts at baseline enrollment (past 30-days) and each 6-month follow-up (past 90-days). Participants were shown a monthly calendar, and RAs worked backwards to identify dates of interpersonal conflict. For each conflict, participants identified their relationship with the person (e.g., friend), the outcome (e.g., went to doctor), and substance use within the 3-h preceding the conflict. Participants identified the type and severity of aggression (i.e., they did to someone) and victimization (i.e., someone did to them) behaviors; response scales mirrored those of the Conflict Tactics Scale (CTS-2) (Straus et al., 1996).

RAs asked participants to indicate conflict motivations, irrespective of whether they were the aggressor or victim. Response options (Epstein-Ngo et al., 2014) were derived from qualitative work (Resko et al., 2016): 1) power/respect (e.g., so others will show respect/leave me alone); 2) territory (e.g., motivated by someone who “doesn’t belong in my school/neighborhood”); 3) personal space (e.g., infringement over personal space/touching); 4) rumors (e.g., reaction to things said); 5) jealousy (e.g., boyfriend/girlfriend); 6) personal belongings (e.g., argument over cell phones, argument over buying/selling drugs); 7) retaliation (e.g., to “get even”); 8) arguments resulting from an angry/bad mood; 9) bullying; 10) drunk/high on alcohol/drugs

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