The Role of Psychopathic Features and Developmental Risk Factors in Trajectories of

Physical Intimate Partner Violence

Catherine S. Shaffer   Dylan T. Gatner   Evan McCuish   Kevin S. Douglas

Jodi L. Viljoen

Simon Fraser University

Psychology of Violence

Author Notes

Catherine S. Shaffer, Dylan T. Gatner, Evan McCuish, Kevin S. Douglas, and Jodi L. Viljoen, Department of Psychology, Simon Fraser University.

Correspondence concerning this article should be address to Catherine S. Shaffer, Department of Psychology, Simon Fraser University, Burnaby, BC V5A 1S6. Contact: cshaffer@sfu.ca

Abstract

Objective: Limited research has examined the association between different dimensions of psychopathy and membership in trajectories of physical intimate partner violence (IPV) while also considering developmental precursors. Thus, the current study examined the role of adolescent unidimensional, interpersonal-affective, and lifestyle-antisocial psychopathic features and developmental risk factors in trajectories of physical IPV in young adulthood.

Method: Data were derived from 885 male offenders who participated in the Pathways to Desistance Study and were assessed using the Psychopathy Checklist: Youth Version (PCL:YV).

Results: Semi-parametric group-based modeling identified three trajectories of physical IPV from ages 18 through 25: (a) a no physical IPV trajectory (70.5%, $n = 624$), (b) a low-level physical IPV trajectory (21.9%, $n = 194$), and (c) a high-level decreasing physical IPV trajectory (7.6%, $n = 67$). In multinomial logistic regression models controlling for exposure to violence, substance abuse, and peer delinquency, PCL:YV Total scores were associated with an increased likelihood of membership in the low-level and high-level physical IPV trajectories compared to the no physical IPV trajectory. In addition, Factor 2 scores (lifestyle-antisocial features) were associated with an increased likelihood of membership in the high-level decreasing physical IPV trajectory compared to the no physical IPV trajectory. Factor 1 scores (interpersonal-affective features) were unrelated to trajectory group assignment. *Conclusions*: Psychopathic features in adolescents should be considered in prevention and intervention strategies targeting physical IPV.

Keywords: adolescents, physical intimate partner violence, psychopathy, trajectories

The Role of Psychopathic Features and Developmental Risk Factors in Trajectories of

Physical Intimate Partner Violence

Physical intimate partner violence (IPV), which may be defined as "any actual, attempted, or threatened physical harm of a current or former intimate partner" (Kropp & Hart, 2016, p.1), is a significant concern among adolescents and adults (Desmarais et al., 2012). Although violence perpetration generally peaks in adolescence and then declines in adulthood (e.g., Lacourse et al., 2003; Moffitt, 1993), especially with maturation (Rocque, 2015) or the transition into adult roles (Laub et al., 1998), experiences in early intimate relationships can impact future patterns of violence. The perpetration of violence in adolescent intimate relationships increases the risk of being a perpetrator of physical IPV in adult spousal or marital relationships (Wolfe, 2006). In addition, individuals who perpetrate physical IPV in adolescence may engage in frequent and more severe physical IPV in adulthood (Johnson et al., 2015). This continuity of physical IPV is especially concerning because entry into emerging adulthood is supposed to afford individuals new opportunities, including opportunities for relationships (Arnett, 2000), thought to be helpful for desistance (Laub et al., 1998). However, especially for individuals with a history of physical IPV in adolescence, emerging adulthood may provide individuals with an even greater opportunity to offend.

Given the potential for adolescents to continue physical IPV perpetration in adulthood, it is important to identify risk factors that predict membership in persistent trajectories of physical IPV. For instance, the early identification of individuals who are at risk for continued or chronic physical IPV would aid in risk management and treatment planning and present cost-savings in the allocation of resources towards the highest-risk youth (Cohen et al., 2010). Therefore, to

assist in prevention and intervention efforts, the purpose of this study was to identify risk factors associated with persistent physical IPV.

One risk factor that could increase the likelihood of persistent perpetration of physical IPV is psychopathy. Psychopathy is a personality disorder comprised of interpersonal, affective, and behavioral features, such as a lack of empathy, manipulativeness, impulsivity, and persistent violation of social and moral norms (Cooke et al., 2012; Hare, 2003). Given that psychopathy is defined by the presence of features that can exacerbate violence and antisocial behavior (e.g., lack of empathy), psychopathy is prominent in conceptual models and risk assessment protocols for general violence (e.g., Douglas et al., 2013; Hart, 1998) and IPV among adults (e.g., Holzworth-Munroe & Stuart, 1994; Kropp & Hart, 2016). For example, it has been proposed that there is a subtype of IPV perpetrators who exhibit high levels of antisocial and psychopathic traits, such as callousness, lack of remorse, and manipulation (Holzworth-Munroe & Stuart, 1994; Huss & Langhinrichsen-Rohling, 2000; Tweed & Dutton, 1998), and engage in more frequent and severe IPV than other subtypes (Holtzworth-Munroe et al., 2003). Furthermore, in prospective research, psychopathic features have demonstrated a modest and robust prospective association with general violence and recidivism (Douglas et al., 2015) and predict a higher likelihood of IPV (Robertson et al., in press) and poorer response to IPV treatment (Stanford et al., 2008).

There is concern about stigma and misuse of the psychopathy construct among adolescents (Edens & Vincent, 2008), and diagnosing someone with psychopathy before the age of 18 is inappropriate (American Psychiatric Association, 2013; Forth et al., 2003) and contraindicated for those in emerging adulthood (World Health Organization, 1992). That said, the manifestation of features of psychopathy in adolescence is similar to the manifestation of

such features in adulthood (Salekin, 2008). For instance, some symptoms of psychopathy, such

as a lack of empathy, are arguably age-appropriate for youth and have been useful in identifying

adolescents at increased risk for violence (Edens et al., 2007), including physical IPV (Shaffer et

al., 2016). There is also evidence that psychopathic features are moderately stable from

adolescence to adulthood (e.g., Hawes et al., 2014) and could be associated with continued

violence toward intimate partners across the life course.

Using data on 617 boys from the Pathways to Desistance Study, Sweeten and colleagues

(2016) explored the association between psychopathic features measured via the Psychopathy

Checklist: Youth Version (PCL:YV; Forth et al., 2003) and trajectories of physical dating

violence from ages 18 to 25. Three trajectories of physical dating violence were identified in

semi-parametric group-based modeling (SPGM) analyses: (a) individuals who did not perpetrate

physical dating violence (72.9%, $n = 450$), (b) low-level physical dating violence perpetrators

(24.0%, $n = 148$), and (c) high-level physical dating violence perpetrators (3.1%, $n = 19$). In

bivariate multinomial logistic regression models, the PCL:YV Total score was significantly

positively associated with membership in the high-level physical dating violence trajectory

compared to the no physical dating violence trajectory.

There are several ways that the current study advances prior research on the relationship

between features of psychopathy and persistent physical IPV. First, Sweeten and colleagues

(2016) examined features of psychopathy as a unitary construct. More recently, given the

representation of psychopathy as a multidimensional construct (e.g., interpersonal-affective

features, marked by manipulation, callousness, lack of remorse, and lack of empathy, and

lifestyle-antisocial features, marked by impulsivity, irresponsibility, and reckless disregard for

the safety of others; Hare, 2003), researchers have called for the integration of different

dimensions of psychopathy in the same model to elucidate the specific mechanisms that link

psychopathy to offending (Lilienfeld, 2018) and establish the relative importance of these

dimensions to different outcomes (Ridder & Kosson, 2018). For example, although having an

intimate partner is typically considered to help promote desistance from offending (Laub et al.,

1998), individuals with strong affective deficits tend to show little affiliation or commitment to

intimate partners. Interpersonal deficits of psychopathy imply that an individual may manipulate

and use dominance and control against their partner. That is, an intimate partner may be seen as

another person to take advantage of and hold power over. Individuals with lifestyle deficits are

prone to substance use and impulsivity that may result in conflict in such relationships. Finally,

with respect to antisocial features of psychopathy, such individuals tend to engage in a versatile

pattern of offending that may include physical violence against intimate partners. Research can

build upon Sweeten and colleagues' (2016) findings by shedding light on whether different

dimensions of psychopathy distinguish between offenders who vary in their pathways of physical

IPV.

Interpersonal-affective and lifestyle-antisocial features are differentially related to

offending among adults (e.g., Kennealy et al., 2010) and adolescents (e.g., Ojanen & Findley-

Van Nostrand, 2019). For instance, lifestyle-antisocial features have been found to have stronger

associations than interpersonal-affective features with reactive violence (e.g., violence that

occurs in response to a threat or perceived provocation), whereas interpersonal-affective features

have been found to have stronger associations than lifestyle-antisocial features with instrumental

violence (e.g., violence that occurs to obtain an outcome or coerce others). Furthermore,

research with adults suggested that interpersonal-affective features may have a stronger

association with physical IPV than lifestyle-antisocial features (e.g., Cunha et al., 2018), and thus

may be more important for identifying individuals who engage in physical IPV. To perpetrate

IPV implies committing violence against an individual with whom the perpetrator is meant to be

bonded to and committed. In effect, perpetrating IPV is also a betrayal of a spoken or unspoken

commitment. Accordingly, IPV perpetrators may possess greater interpersonal-affective features,

such as callousness and lower levels of empathy (Swogger et al., 2007) than other types of

perpetrators of violence (e.g., individuals who perpetrate violence in non-intimate relationships

or against strangers, e.g., Mager et al., 2014). In addition, individuals with psychopathic features

may be more likely to engage in instrumental IPV (e.g., violent control of an intimate partner)

(Swogger et al., 2007) and lifestyle-antisocial features, such as impulsivity, may not be as

important. However, this research focused on adults rather than adolescents. Moreover, from a

developmental criminology perspective, antisocial and lifestyle features would be particularly

important as offending versatility is an important indicator of risk for perpetrating specific crime

types (e.g., Lussier et al., 2005). That is, involvement in a greater variety of offenses increases

the risk of perpetrating specific crime types like sexual offenses and IPV. In sum, while there is

general agreement that features of psychopathy influence physical IPV, the specific features

responsible for this relationship remain equivocal.

Second, questions remain regarding whether psychopathic features are related to

trajectories of physical IPV after controlling for other important developmental risk factors

correlated with IPV. Among adolescents, exposure to violence, substance abuse, and peer

delinquency have emerged as key and stable predictors of physical IPV (Leen et al., 2013).

These factors also have been conceptually and empirically associated with psychopathic features

among adolescents (e.g., Baskin-Sommers et al., 2015; Farina et al., 2018; Wymbs et al., 2012)

and adults (Dargis & Koenigs, 2017; Piquero et al., 2012), and thus these developmental risk

factors may account for variance in trajectory membership initially explained by psychopathic

personality traits.

Current Study

To help address the need for further research on the association between psychopathy and

persistent physical IPV, we analyzed publicly available data from the Pathways to Desistance

Study, a multi-site, longitudinal study of adolescents in the United States involved in criminal

behavior. These data were used to examine the role of unidimensional, interpersonal-affective,

and lifestyle-antisocial psychopathic features in trajectories of physical IPV perpetration while

controlling for developmental risk factors. This is one of the first studies to explore how

interpersonal-affective and lifestyle-antisocial domains of psychopathy may relate to trajectories

of physical IPV, as opposed to a unitary conceptualization of psychopathy. In addition, to our

knowledge this is the first study to explore the role of psychopathic features in trajectories of

physical IPV controlling for potential confounding variables. Given that physical IPV can occur

in different types of intimate relationships, in contrast to the research conducted by Sweeten and

colleagues (2016), which focused only on IPV in dating relationships, we examined physical IPV

in any dating, marital, or cohabiting relationship.

In sum, our goals were to examine: (a) the trajectories of physical IPV among offenders

in dating, marital, or cohabiting relationships, (b) whether there was an association between

psychopathic features and trajectories of physical IPV, (c) whether this association can be further

distinguished based on the subset of psychopathic features under focus (i.e., interpersonal-

affective versus lifestyle-antisocial), and (d) whether these associations remain after controlling

for exposure to violence, substance abuse, and peer delinquency. Drawing from theory and

previous research, we hypothesized that (a) our analyses would reveal similar trajectories of

physical IPV to those obtained by Sweeten and colleagues (2016) (e.g., individuals who did not

engage in physical IPV, low-level physical IPV perpetrators, and high-level physical IPV

perpetrators) (Hypothesis 1), (b) psychopathic features would be associated with membership in

more serious physical IPV trajectories (Hypothesis 2), and (c) interpersonal-affective features of

psychopathy would have stronger associations with physical IPV trajectories than lifestyle-

antisocial features given earlier statements by Swogger et al. (2007) (Hypothesis 3). Given that

research has not yet examined the association between psychopathic features and trajectories of

physical IPV controlling for developmental covariates, we did not have a priori hypotheses

regarding the association of these variables.

Method

Participants

In the Pathways to Desistance Study, 1,354 adolescents involved in serious offenses were

followed from ages 14 to 25. Female participants were excluded because they comprised a small

proportion of the sample (13.6%, $n = 184$), which would limit the ability to obtain distinct

developmental trajectories for this subgroup and because of the possibility of differences in the

development of physical IPV for male versus female participants (Mager et al., 2014). Male

participants were excluded if they did not report being in a dating, marital, or cohabitating

relationship or had not reported on physical IPV during at least two waves of data collection

(3.5%, $n = 285$). This resulted in a final sample of 885 males, an increase of 268 males from the

617 in dating relationships examined in Sweeten and colleagues (2016). At the time of the

baseline assessment, participants' mean age was 16.04 years ($SD = 1.17$). Most of the sample

belonged to an ethnic minority group, with 41.9% ($n = 371$) self-identifying as Black, 34.7% (n

= 307) as Latinx, 3.3% (*n* = 38) as another ethnic minority, and the remaining 19.1% (*n* = 169) as White.

Procedures

To be eligible to participate, youth had to be between the ages of 14 and 17, reside in Philadelphia, Pennsylvania, or Phoenix, Arizona, and be adjudicated for a felony or serious misdemeanor offense. Each participant completed a four-hour baseline (Wave 0) interview with a trained research assistant (RA) that queried the youth's functioning and contextual risk factors (e.g., family/home environment, interpersonal relationships, community). In addition, RAs reviewed case files and obtained collateral information from the youth's parents or caregivers, which was used to complete the PCL:YV. RAs completed extensive training on the administration of the PCL:YV prior to working on the study. Following the baseline assessment, one-hour follow-up interviews were conducted with each participant every six months for the first three years of the study (Waves 1 to 6) and annually for the next four years (Waves 7 to 11). However, physical IPV was measured only at Waves 6 through 11. The rate of missing data ranged between 3.2% (*n* = 28) and 9.3% (*n* = 82) at Waves 1 through 11.

Measures

Physical IPV. Physical IPV was measured using 15 self-report questions that queried any actual (e.g., choking), attempted (e.g., throwing an object), or threatened physical IPV (e.g., threatening with a knife or gun) since the last assessment. Responses were used to calculate the number of incidents of physical IPV at each age. Information on individual responses to each item was not available (http://www.pathwaysstudy.pitt.edu/codebook/domestic-violence-sf.html). As such, it was not possible to calculate the internal consistency of these items at Waves 6 through 11.

Psychopathic personality features. Psychopathic personality features were measured at the baseline assessment using the PCL:YV, which contains 20 items measuring interpersonal problems (i.e., impression management, grandiose sense of self-worth, pathological lying, manipulation for personal gain), affective deficits (i.e., lack of remorse, shallow affect, callous/lacking empathy, failure to accept responsibility), lifestyle deficits (i.e., stimulation seeking, parasitic orientation, impulsivity, irresponsibility), and antisocial behavior (i.e., poor anger control, early behavior problems, juvenile delinquency, revocation of conditional release and criminal versatility). Based on a semi-structured interview and a review of file information, each item is scored as 0 (the item does not apply to the youth), 1 (the item applies to some extent), or 2 (the item applies to the youth). Total scores are generated by summing all the items, with possible total scores ranging between 0 and 40. Factor scores were also calculated according to a 2-factor model that includes Factor 1 (i.e., the sum of the interpersonal and affective items) and Factor 2 (i.e., the sum of the lifestyle and antisocial behavior items) (Forth et al., 2003; Hare, 2003).[1] In the full Pathways to Desistance Study sample, internal consistency was good for the PCL:YV Total score (α = .87) and factor scores (α = .76 and .78 for Factor 1 and 2, respectively). In addition, interrater reliability ranged from acceptable to excellent for PCL:YV Total (ICC = .92), Factor 1 (ICC = .79), and Factor 2 scores (ICC = .93).[2]

Development risk factors. Substance abuse, exposure to violence, and antisocial peer affiliation at the baseline assessment were included as covariates in the analytic models given

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[1] Although 3- (Cooke & Michie, 2001) and 4-factor models (Hare, 2003) have been found to provide better model fit for the PCL:YV in the Pathways to Desistance Study (Jones, Cauffman, Miller, & Mulvey, 2006) a 2-factor model was adopted in the current research due to the authors being unable to access all PCL:YV item scores (see www.pathwaysstudy.pitt.edu/codebook/pcl-sb.html).

[2] Information on the number of cases and the model used to calculate inter-rater reliability in the Pathways to Desistance Study was not available.

their robust associations with psychopathy (e.g., Baskin-Sommers et al., 2015; Farina et al., 2018; Wymbs et al., 2012) and physical IPV (Leen et al., 2013).

Exposure to violence was assessed using the Exposure to Violence Inventory (Selner-O'Hagan et al., 1998), which contained 17 items evaluating the frequency of violence a youth has experienced (e.g., "Have you ever been chased where you thought you might be seriously hurt?") or witnessed (e.g., "Have you ever seen someone else being raped, an attempt made to rape someone, or any other type of sexual attack?"). In the full Pathways to Desistance Study sample, the internal consistency of the Exposure to Violence Inventory was adequate ($\alpha = .67$).

Substance use was assessed using the Substance Use/Abuse Inventory, a modified version of a substance use measured developed by Chassin and colleagues (1991) for use with the children of individuals with substance use problems. This measure examines a youth's use of illegal drugs and alcohol and social consequences of substance use in the past six months. The Substance Use/Abuse Inventory consists of 51 items in two subscales: substance use frequency (e.g., "How often have you had alcohol to drink?") and social consequences of substance use (e.g., "Have you had problems or arguments with family or friends because of your alcohol or drug use?"). Response options range from 1 (not at all) to 9 (every day). In the full Pathways to Desistance Study sample, the internal consistency of the Substance Use/Abuse Inventory was excellent ($\alpha = .84$).

Peer delinquency was assessed using the Peer Antisocial Behavior Measure (Thornberry et al., 1994), which contained 12 items evaluating peer antisocial behavior (e.g., "During the last six months how many of your friends have sold drugs?") and antisocial influence (e.g., "During the last six months how many of your friends have suggested that you should sell drugs?"). Responses were on a 5-point Likert-type scale ranging from 1 (none of them) to 5 (all of them).

In the full Pathways to Desistance Study sample, the internal consistency of the Peer Antisocial

Behavior Measure was excellent (α =.88).

Data Analytic Plan

Analyses were conducted in two stages. First, SPGM (Nagin & Land, 1993) was

conducted using the Proc TRAJ add-on (Jones, Nagin, & Roeder, 2001) in SAS Version 12.1

(SAS Institute Inc., 2012) to examine the number and shape of physical IPV trajectories that best

fit the data. Although growth-curve modeling can be used to examine changes in IPV over time

(e.g., Johnson et al., 2015), we used SPGM for two reasons. First, growth curve modeling

assumes a homogenous population of trajectories (i.e., all individuals are either increasing or

decreasing in IPV perpetration frequency). Patterns of offending, especially during adolescence

and through emerging adulthood, tend to undergo changes that more closely resemble quadratic

functional form (i.e., an increase in rate of offending in adolescence followed by a decrease

during emerging adulthood that is consistent with the aggregate age-crime curve; Nagin, 2005).

Thus, SPGM can identify variations in the distribution of physical IPV over time (e.g., time-

limited versus chronic perpetrators) rather than assume that all individuals are following the

same trajectory of physical IPV that consistently increases or decreases. Second, Sweeten and

colleagues (2016) originally used SPGM rather than growth curve modeling to analyze the data.

Thus, we adopted the same analytic approach to be consistent with their work.

Given that physical IPV was a positively skewed count variable with a high proportion

of zeros, a zero-inflated Poisson (ZIP) model was used (see Nagin, 2005). To account for the

fact that participants had decreased opportunities to engage in physical IPV while detained,

exposure time (i.e., the proportion of time spent in the community rather than in custody) was

built into the models.

Three criteria were used to determine the number of trajectories that best represented physical IPV perpetration in the sample (also see Baskin-Sommers & Baskin, 2016): (a) the Bayesian information criterion (BIC; Jones et al., 2001) value across models where BIC values closer to zero indicate better model fit), (b) a model in which each trajectory group included at least 5.0% of the sample, and (c) an average posterior probability of group assignment that was at least 0.70 (Nagin, 2005). To determine the shape of each trajectory, the form of the polynomial (e.g., linear, quadratic, cubic) that best fit the data was identified using BIC values. As a further test of trajectory membership, odds of correct classification (OCC), which is a more conservative test than relying solely on posterior probabilities (Skardhamar, 2010), were calculated using the following formula, where Π_k is the estimated size of group k and PP is the predicted probability of membership in group $k:$ [$OCC_k = (AvePP_k/(1-AvePP_k))/(\Pi_k/(1- \Pi_k))$]. OCC values of 5 or higher indicate high classification accuracy (Nagin, 2005; Skardhamar, 2010).

Second, multinomial logistic regression, a form of nonlinear regression analysis that is appropriate when the dependent variable is a nominal variable with more than two levels (e.g., trajectory group), was conducted to examine whether the PCL:YV Total score distinguished membership in physical IPV trajectory subgroups. In these analyses, the trajectory characterized by the lowest frequency or prevalence of the behavior being modeled is used as the reference group (Nagin, 2005). In the first set of models, we entered the PCL:YV Total score while controlling for relevant covariates. The second set of models was constructed using PCL:YV Factor 1 (interpersonal-affective features) and Factor 2 scores (lifestyle-antisocial features) and controlled for relevant covariates. The regression models met required assumptions (e.g., the Hausman-McFadden test of independence was non-significant; there was an absence of

multicollinearity among the predictor variables in the model). In these models, odds ratios (ORs) of 1.20 are interpreted as small, 1.72 as moderate, and 2.40 as large (Chinn, 2000).

Stimulation studies have suggested that a minimum of 250 cases are needed to provide reliable results in SPGM (D'Unger et al., 1998). With respect to multinomial logistic regression, sample size guidelines indicate that a minimum of 10 cases is required per independent variable (Schwab, 2002). Thus, the current sample size of 885 was adequate for the planned analyses.

Results

Descriptive Statistics

From ages 18 to 25, 44.3% ($n = 392$) of the sample reported engaging in physical IPV. Table 1 provides summary statistics (i.e., mean and standard deviation) of PCL:YV Total and factor scores and developmental risk factors.

--Insert Table 1 about here--

Trajectories of Physical IPV

Using SPGM, 1- to 4-group models of physical IPV were tested. The BIC values were -1762.42, -1649.15, -1678.54, and -1693.86 for the 1-, 2-, 3-, and 4-group models, respectively. BIC values were closer to zero for a 2-group model; however, one of these trajectories included less than 5.0% of the sample. As such, a 3-group solution was selected as this model had the next highest BIC value and all trajectories included at least 5.0% of participants. A 3-group quadratic model was selected over a 3-group cubic model because the BIC values of the quadratic model were closer to zero. The average probabilities for the assigned groups ranged between 82.0% and 87.0%, indicating low classification error (Nagin, 2005). Additionally, the

OCC value for the three trajectories ranged from 5.52 to 6.50, which also indicated acceptable to

high classification accuracy (Nagin, 2005).

With respect to Hypothesis 1, the observed trajectories of the three groups are provided in

Figure 1. Based on the intercept or overall level of physical IPV and the slope of physical IPV

with age, the three trajectory groups were labeled: (a) a no physical IPV trajectory (70.5%, $n =$

624), (b) a low-level physical IPV trajectory (21.9%, $n = 194$), and (c) a high-level decreasing

physical IPV trajectory (7.6%, $n = 67$). The no physical IPV trajectory represented offenders

who did not perpetrate physical IPV. The low-level physical IPV trajectory represented

offenders who committed physical IPV at a low rate between ages 18 and 25. The high-level

decreasing physical IPV trajectory represented offenders with the highest rate of physical IPV

between ages 18 and 25, but whose rate of physical IPV declined over time and was below the

low-level physical IPV trajectory by the end of the study period. Thus, consistent with the

hypothesis, we obtained similar trajectories of physical IPV as those reported in Sweeten and

colleagues (2006).

--Insert Figure 1 about here--

Descriptive Analyses of Trajectory Groups

Before examining associations between the PCL:YV and physical IPV trajectories, we

conducted Pearson's chi-square test, a one-way Analysis of Variance, or the Kruskal-Wallis test

to analyze differences in demographic characteristics, total physical IPV incidents, PCL:YV

scores, and developmental risk factor scores across the three trajectory groups (see Table 2).

Effect sizes, Cramer's V and partial eta-squared (η_P^2), were also reported in Table 2. Post-hoc

comparisons between pairs of trajectory groups were conducted using chi-square, Tukey's Honestly Significant Different (HSD), or Mann-Whitney U tests. To correct for family-wise error in these bivariate associations, a Bonferroni correction was applied (α = .05/3 comparisons = .017).

Results indicate that the low-level physical IPV trajectory had a greater proportion of Black youth than the no physical IPV trajectory; however, the magnitude of the difference was small (Cohen, 1988). No other differences in demographic characteristics between the three trajectory groups were significant. With respect to physical IPV, youth in the high-level decreasing physical IPV trajectory had a significantly higher mean number of physical IPV incidents than youth in the no physical IPV and low-level physical IPV trajectories; youth in the latter trajectory also averaged a significantly higher mean number of physical IPV incidents compared to youth in the former trajectory. The magnitude of these differences was large. In addition, PCL:YV Total and factor scores, exposure to violence, and peer delinquency significantly varied across the three trajectory groups with small effect sizes. In general, youth in the high-level physical IPV trajectory had significantly higher PCL:YV Total and factor scores and scores on exposure to violence and peer delinquency than youth in the no physical IPV and low-level physical IPV trajectories.

--Insert Table 2 about here--

Association between Psychopathy and Trajectories of IPV

Table 3 presents the results of multinomial logistic regression analyses testing the association between PCL:YV scores and trajectories of physical IPV. With respect to

Hypothesis 2, without accounting for developmental covariates, PCL:YV Total and Factor 1 scores (interpersonal-affective features) were significantly associated with membership in the low-level physical IPV trajectory relative to the no physical IPV trajectory with small effect sizes (Chinn, 2000), whereas PCL:YV Total and Factor 2 scores (lifestyle-antisocial features) were significantly associated with membership in the high-level decreasing physical IPV trajectory relative to the no physical IPV trajectory with small effect sizes. Thus, consistent with the hypothesis, there was evidence that psychopathic features were associated with membership in more serious trajectories of physical IPV.

With respect to Hypothesis 3, except for the association between Factor 1 scores (interpersonal-affective features) and membership in the low-level physical IPV trajectory, all psychopathy–trajectory associations remained significant when exposure to violence, substance abuse, and peer delinquency were included in the model. Thus, contrary to the hypothesis, interpersonal-affective features of psychopathy did not have stronger associations with physical IPV trajectories than lifestyle-antisocial features controlling for developmental covariates.

As reflected by the ORs, for every one-unit increase in the PCL:YV Total score there was an 8.0% increase in the likelihood of membership in the low-level physical IPV trajectory relative to the no physical IPV trajectory and a 4.0% increase in the likelihood of membership in the high-level decreasing physical IPV trajectory relative to the no physical IPV trajectory, controlling for the other variables. For every one-unit increase in the PCL:YV Factor 2 score (lifestyle-antisocial features), there was a 12.0% increase in the likelihood of membership in the high-level decreasing physical IPV trajectory relative to the no physical IPV trajectory, controlling for the other variables. With respect to the developmental covariates, significant associations were found between exposure to violence and membership in the low-level physical

IPV trajectory relative to the no physical IPV trajectory and peer delinquency and membership in the high-level physical decreasing trajectory relative to the no physical IPV trajectory.

--Insert Table 3 about here--

Discussion

In this study of justice-involved youth, we investigated the role of adolescent psychopathic features in trajectories of physical IPV in early adulthood (i.e., 18 to 25 years of age). Consistent with Hypothesis 1 and Sweeten et al.'s (2016) findings, three trajectories emerged from the data. Youth either (a) did not engage in physical IPV (no physical IPV trajectory), (b) engaged in consistent but low-frequency physical IPV (low-level physical IPV trajectory), or (c) engaged in higher rates of physical IPV that declined over time (high-level decreasing physical IPV trajectory). Consistent with Hypothesis 2, Total, Factor 1 (interpersonal-affective features), and Factor 2 (lifestyle-antisocial features) scores on the PCL:YV predicted physical IPV trajectories. However, contrary to Hypothesis 3, when accounting for other developmental risk factors (i.e., exposure to violence, substance use, peer delinquency), only PCL:YV Total and Factor 2 (lifestyle-antisocial features) scores remained significant predictors of future physical IPV. These findings were in line with a growing literature suggesting that psychopathic features contribute to physical IPV (Robertson et al., in press), including physical IPV in adolescence (e.g., Shaffer et al., 2016).

From a broader lens, these findings align with the psychopathy and violence literature, which has revealed an association between psychopathic features and general violence (Douglas et al., 2015; Edens et al., 2007). In the present study, psychopathy as a broad and unitary

construct predicted membership in persistent physical IPV trajectories. This result was consistent with that of Sweeten and colleagues (2016), although our operationalization of physical IPV extended beyond dating relationships to include physical violence within all forms of intimate relationships (i.e., cohabitating and marital relationships). Furthermore, this association remained when accounting for other relevant adolescent developmental risk factors.

Because different dimensions or presentations of psychopathy have resulted in differing patterns of correlates in adults (e.g., Kennealy et al., 2010) and adolescents (e.g., Ojanen & Findley-Van Nostrand, 2019), we extended the work of Sweeten and colleagues (2016) by examining the PCL:YV factor-level associations with physical IPV. Although PCL:YV Factor 1 (interpersonal-affective features) and Factor 2 (lifestyle-antisocial features) scores were independently predictive of physical IPV trajectories in the present study, Factor 1 scores (interpersonal-affective features) did not remain predictive when controlling for other developmental risk factors. Such findings aligned with meta-analytic evidence suggesting stronger effects between Psychopathy Checklist - Revised (Hare, 2003) Factor 2 (lifestyle-antisocial features) scores and general violence (Kennealy et al., 2010), but were inconsistent with findings specific to the psychopathy and IPV literature where other examinations have revealed that, at the facet level, only affective traits, measured using the PCL-R were uniquely associated with IPV (e.g., Cunha et al., 2018). One possibility for the distinct findings relates to the current study's focus on features of psychopathy measured in adolescence and perpetration of physical IPV in early adulthood, which contrasts with prior research focusing on adulthood. For instance, given that emerging adulthood is an age of opportunity and new experiences (Arnett, 2000), the overall level of attachment and commitment in intimate relationships during this

developmental period may be lower than in later developmental stages and thus interpersonal-affective features of psychopathy may not be as important for IPV.

Another possibility for the distinct findings relates to the current study's focus on trajectories of physical IPV as opposed to single-item indicators like lifetime prevalence of physical IPV or recidivism. Especially for those in the high-level decreasing physical IPV trajectory, it is possible that their perpetration of physical IPV is related to impulsive, poorly considered decisions in response to stress and arguments with intimate partners. Individuals scoring high on Factor 1 are not just impulsive, they have a tendency to use drugs, engage in risky behavior, have poor anger control, and engage in serious and versatile offending more generally and therefore physical IPV perhaps is just another outcome of a general tendency to bring harm to others.

Importantly, this group showed improvements in their ability to avoid physical IPV behaviors as they entered their twenties, which perhaps not coincidentally is an age-period in which psychosocial maturation begins to peak (Monahan, Steinberg, Cauffman, & Mulvey, 2013). It is possible that when committing physical IPV, emerging adults with prominent psychopathic features do so out of rash and emotionally disinhibited decisions rather than out of the motivation to dominate and control intimate partners. As such, it is possible that, in comparison with adults, treatment and management strategies may differ for youth who present with psychopathic features, particularly those at-risk for committing future physical IPV.

Although not characterized by the most frequent perpetration of physical IPV, those in the low-level trajectory are concerning because of the stability of their behavior. Physical IPV began at age 18 (possibly earlier because physical IPV was first measured at age 18) and remained stable throughout the study period. In effect, physical IPV persisted despite changes in

maturation and offending being normative for this age-stage (Monahan et al., 2013). Individuals with greater levels of exposure to violence were significantly more likely to be associated with this trajectory. It is possible that social learning mechanisms are at play, in which high exposure to experiencing and witnessing violence resulted in a general pattern of using violence in various ways, including in intimate relationships. Indeed, adolescent victimization is associated with a host of negative adult outcomes (Turanovic & Pratt, 2015) that may establish a general lifestyle of problem behavior, including physical IPV.

Limitations

The current study was bolstered by several methodological strengths, including its prospective design, large sample size, and assessment of psychopathic features using the PCL:YV, a tool that incorporates multiple information sources (i.e., interview, file information). However, it is also important to note several limitations. First, IPV is an umbrella term that includes a continuum of acts that cause some degree of harm against an intimate partner, such as physical abuse, psychological or emotional abuse, verbal abuse, and sexual abuse (Centers for Disease Control and Prevention, 2016). The current study only examined the association between psychopathic features and trajectories of physical IPV. Given research indicating that the different forms of IPV are associated or can co-occur (e.g., Capaldi & Crosby, 1997; O'Leary & Maiuro, 2001; Coker, Smith, McKeown, & King, 2000), future research should be conducted to examine the association between psychopathic features and the trajectories of other forms of IPV, as well as whether these trajectories are associated (i.e., joint trajectory modeling).

Second, social desirability may have influenced the results, as participants may have felt reluctant to report IPV (Sugarman & Hotaling, 1997). This may be especially true for youth in the high-level decreasing trajectory, who might have felt less comfortable reporting physical IPV

as the study progressed. Thus, future research should be conducted using both perpetrator and victim self-reports of physical IPV.

Third, girls were excluded from the analyses as they comprised only a small portion of participants in the Pathways to Desistance Study. Given research indicating a different pattern of associations between psychopathic features and IPV among adult women and men (i.e., a stronger relationship between lifestyle-antisocial features for men than women; Mager et al., 2014), a different pattern of findings than those obtained in the current study may emerge in a female sample. In addition, the sample under focus was adolescents involved in the deep end of the criminal justice system, and a different pattern of findings may be obtained with community samples or samples of individuals involved in less serious offenses.

Fourth, it was not possible to examine the association between PCL:YV facet scores and trajectory membership as only PCL:YV Total, Factor 1 (interpersonal-affective features), and Factor 2 (lifestyle-antisocial features) scores were publicly available. A different pattern of findings may emerge at a 4-facet-level of analysis.

Finally, it was not possible to control for relationship status in the trajectory models or how changes in intimate partners may have altered physical IPV. Data on these variables would be useful to better understand the trajectories of physical IPV. For instance, for youth in the high-level decreasing trajectory, a near-zero rate of physical IPV at the end of the study period could reflect that intimate partners have exited the relationship due to experiences of abuse.

Research Implications

The present study contributes to the literature on risk factors that distinguish membership in trajectories of physical IPV. Its findings suggest the need for continued research to examine the association between psychopathic features and trajectories of physical IPV and research that

addresses the limitations of the current study would be beneficial. In addition, future research

should explore the role of other risk factors in trajectories of physical IPV. For instance,

different emotional deficits may be more predictive of physical IPV than the emotional deficits

seen in psychopathy. Research has indicated that IPV is linked to other types of personality

disorders, such a borderline personality disorder (Jackson, Sippel. Mota, & Whalen, 2015), a

personality disorder characterized by pervasive instability in interpersonal relationships, self-

image, and emotional regulation (American Psychiatric Association, 2013), features which

theoretically heighten the risk for IPV perpetration. Borderline personality disorder also has

been linked to features of psychopathy, with stronger associations between borderline personality

disorder and Factor 2 (lifestyle-antisocial features) than Factor 1 (affective-interpersonal

features) traits (Miller et al., 2010). In future research, both psychopathic and borderline features

should be evaluated to determine the risk of persistent physical IPV.

Prevention, Clinical, and Policy Implications

This study has important implications for prevention, clinical practice, and policy. The

findings suggest that psychopathic features should be considered in comprehensive treatment and

management plans for diverting adolescents from adult offending, including physical IPV. In

addition, efforts to screen and treat features of psychopathic traits among youth may help

diminish the longevity of physical IPV into adulthood. To this end, treatment programs for

psychopathic features among children and adolescents have been developed (e.g., Caldwell,

Skeem, Salekin, & van Rybroek, 2006; McDonald, Dodson, Rosenfield, & Jouriles, 2011).

However, it is important to note that although youth with psychopathic features may be at greater

risk for physical IPV reoffending than youth without these features, the presence of these

features does not necessarily mean that youth will follow a persistent physical IPV pathway. As

such, care should be taken to avoid negative labeling effects with adolescents (Edens & Vincent,

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Tables and Figures

Table 1.

Descriptive Statistics of PCL:YV Scores and Developmental Risk Factors

Variable	*M*	*SD*	Range
PCL:YV			
Total	15.89	7.68	1 – 36
Factor 1 (Interpersonal-affective)	5.00	3.45	0 – 15
Factor 2 (Lifestyle-antisocial)	8.36	3.84	0 – 21
Developmental risk factors			
Exposure to violence	5.49	2.66	0 – 12
Substance use	22.15	14.70	0 – 15
Peer delinquency	2.35	0.91	1 – 5

Note. PCL:YV = Psychopathy Checklist: Youth Version. *M* = Mean. *SD* = Standard deviation.

Table 2.

Descriptive Characteristics of Physical IPV Trajectories

Variable	Physical IPV Trajectory			$\chi^2/F/KW$ (*df*), Cramer's V/η_P^2 for Group Main Effect
	No Physical IPV Trajectory (*n* = 624)	Low-Level Physical IPV Trajectory (*n* = 194)	High-Level Decreasing Physical IPV Trajectory (*n* = 67)	
Demographic characteristics				
% White	20.50 (128)	16.50 (32)	13.40 (9)	$\chi^2(2) = 3.05$, Cramer's $V = .06$, $p = .217$
% Black	37.70 (235) [a]	52.60 (102) [c]	50.70 (34)	$\chi^2(2) = 15.84$, Cramer's $V = .13$, $p < .001$
% Latinx	36.90 (230)	27.80 (54)	34.30 (23)	$\chi^2(2) = 5.32$, Cramer's $V = .08$, $p = .070$
% Other ethnic minority	5.00 (31)	3.10 (6)	1.50 (1)	$\chi^2(2) = 2.65$, Cramer's $V = .06$, $p = .267$
Age	16.00 (1.19)	16.15 (1.14)	16.00 (1.10)	$F(2, 882) = 1.19$, $\eta_P^2 = .00$, $p = .306$
Physical IPV				
Mean total incidents	0.01 (0.16) [a,b]	2.22 (1.45) [b,c]	7.36 (4.04) [a,c]	$KW(2) = 823.94$, $\eta_P^2 = .93$, $p < .001$
PCL:YV				
Total	15.21 (7.51) [a,b]	17.07 (7.84) [c]	18.65 (7.89) [c]	$F(2, 884) = 9.01$, $\eta_P^2 = .02$, $p < .001$
Factor 1(Interpersonal-affective)	4.74 (3.33) [a]	5.58 (3.66) [c]	5.70 (3.63)	$F(2, 844) = 5.80$, $\eta_P^2 = .01$, $p = .003$
Factor 2 (Antisocial-lifestyle)	8.06 (3.84) [b]	8.72 (3.63)	10.02 (4.04) [c]	$F(2, 844) = 8.96$, $\eta_P^2 = .02$, $p < .001$
Developmental risk factors				
Exposure to violence	5.20 (3.00) [a,b]	6.01 (2.85) [c]	6.41 (2.62) [c]	$F(2, 881) = 9.27$, $\eta_P^2 = .02$, $p < .001$
Substance use	22.31 (12.92)	22.13 (12.20)	24.03 (11.57)	$F(2, 881) = 0.61$, $\eta_P^2 = .00$, $p = .546$
Peer delinquency	2.28 (0.90) [b]	2.45 (0.85)	2.72 (1.03) [c]	$F(2, 862) = 8.54$, $\eta_P^2 = .02$, $p < .001$

Note. IPV = Intimate partner violence. *M*(*SD*)/%(*n*). KW = Kruskal-Wallis test. [a] Significantly different from the low-level physical IPV trajectory. [b] Significantly different from the high-level decreasing physical IPV trajectory. [c] Significantly different from the no physical IPV trajectory.

Table 3.

Multinomial Logistic Regression of Physical IPV Trajectory as a Function of PCL:YV Total Score

Variable	Low-Level Physical IPV Trajectory				High-Level Decreasing Physical IPV Trajectory			
	b (SE)	OR [95% CI]	Wald	*p*	*b* (SE)	OR [95% CI]	Wald	*p*
PCL:YV Total score								
Model 1								
PCL:YV total score	0.03 (0.01)	1.03 [1.01, 1.06]	8.49	.004	.06 (.01)	1.06 [1.03, 1.10]	11.85	.001
				$\chi^2(2) = 17.58, p < .001$				
Model 2								
PCL:YV total score	0.03 (0.01)	1.03 [1.00, 1.05]	4.40	.036	0.04 (0.02)	1.04 [1.00, 1.08]	4.33	.037
Exposure to violence	0.07 (0.04)	1.08 [1.00, 1.16]	4.03	.045	0.04 (0.06)	1.04 [0.93, 1.16]	0.45	.505
Substance use	-0.01 (0.01)	0.99 [0.97, 1.00]	2.66	.103	-0.01 (0.01)	0.99 [0.97, 1.01]	0.70	.403
Peer delinquency	0.07 (0.12)	1.07 [0.84, 1.36]	0.32	.575	0.39 (0.18)	1.48 [1.04, 2.12]	4.67	.031
				$\chi^2(8) = 31.29, p < .001$				
PCL:YV factor scores								
Model 1								
Factor 1 (Interpersonal-affective)	0.06 (.03)	1.06 [1.00, 1.13]	4.33	.038	-0.01 (0.05)	0.99 [0.91, 1.08]	0.04	.850
Factor 2 (Lifestyle-antisocial)	0.01 (.03)	1.01 [0.96, 1.07]	0.19	.666	0.14 (0.04)	1.15 [1.06, 1.24]	10.74	.001
				$\chi^2(4) = 22.05, p < .001$				
Model 2								
Factor 1 (Interpersonal-affective)	0.06 (0.03)	1.06 [0.98, 1.12]	3.41	.065	-0.02 (0.05)	0.98 [0.98, 1.12]	0.20	.658
Factor 2 (Lifestyle-antisocial)	0.00 (0.03)	1.00 [0.94, 1.07]	0.01	.930	0.11 (0.05)	1.12 [0.94, 1.07]	6.19	.013
Exposure to violence	0.08 (0.04)	1.08 [1.00, 1.17]	4.77	.029	0.03 (0.06)	1.03 [1.01, 1.17]	0.34	.559
Substance use	-0.01 (0.01)	0.99 [0.97, 1.00]	2.15	.142	-0.01 (0.01)	0.99 [0.97, 1.00]	1.05	.306
Peer delinquency	0.08 (0.12)	1.08 [0.85, 1.37]	0.38	.536	0.37 (0.18)	1.45 [0.85, 1.37]	4.24	.040
				$\chi^2(10) = 35.76, p < .001$				

Note. No physical IPV trajectory is the reference group. IPV = Intimate Partner Violence. PCL:YV = Psychopathy Checklist: Youth Version.
b = Unstandardized coefficient. *SE* = Standard error. OR = Odds ratios. 95% CI = 95% confidence intervals of OR.
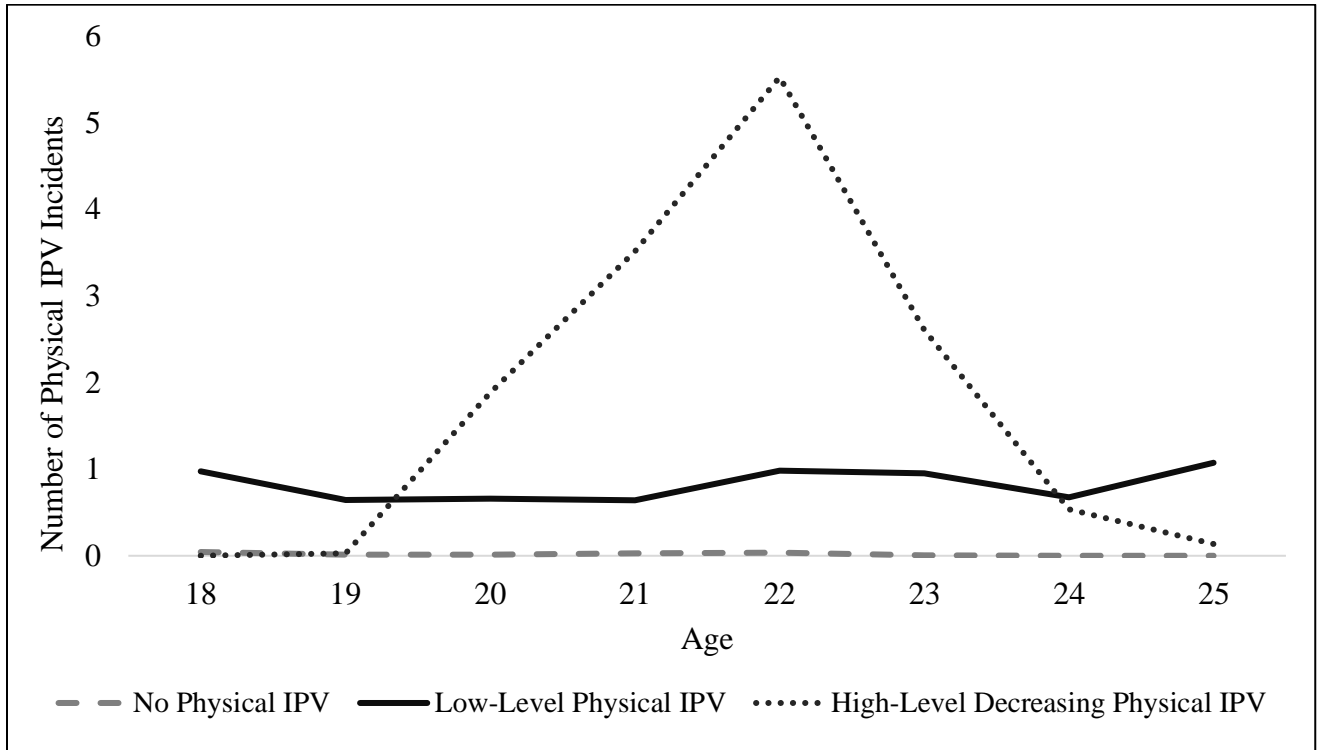
Figure 1. Physical IPV Trajectories from age 18 to 25 for 3-Group Model.