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Intimate Partner Violence Perpetration from Adolescence to Young Adulthood: Trajectories and the Role of Familial Factors

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Abstract

Prior empirical research on intimate partner violence (IPV) in adolescence and young adulthood often focuses on exposure to violence in the family-of-origin using retrospective and cross-sectional data. Yet individuals' families matter beyond simply the presence or absence of abuse, and these effects may vary across time. To address these issues, the present study employed five waves of longitudinal data from the Toledo Adolescent Relationships Study (TARS) to investigate the trajectory of IPV from adolescence to young adulthood (N = 950 respondents, 4,750 person-periods) with a specific focus on how familial factors continue to matter across the life course. Results indicated that family-of-origin violence and parent-child relationship quality were independent predictors of IPV. The effect of parent-child relationship quality on IPV also became greater as individuals aged. These results have implications for policies targeted at reducing IPV.

Keywords

Intimate partner violence; Parent-child physical aggression; Parent-child relationship quality; Longitudinal; Adolescence; Emerging adulthood

Introduction

National statistics show that approximately ten percent of high school students report experiencing physical abuse in their romantic relationships (Vagi et al. 2015). Researchers have emphasized that, if left unchecked, violent experiences in the context of romantic relationships during adolescence may carry over into adulthood (e.g., O'Leary et al. 1994). As such, an increasing number of studies have focused on intimate partner violence (IPV) occurring in earlier stages of the life course (e.g., Bonomi et al. 2012; Chiodo et al. 2012; Cui et al. 2013; Giordano et al. 2010; Halpern et al. 2009). One consistent predictor of IPV for both adolescents and adults is exposure to violence in the family-of-origin, where family-of-origin violence may include both direct exposure to violence via child maltreatment and indirect exposure via the witnessing of family violence (e.g., Renner and Whitney 2012;

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Smith et al. 2011; Swinford et al. 2000). Yet, despite this growing body of research, relatively little is known about the continued importance of familial characteristics over time in predicting occurrences of IPV perpetration across adolescence and young adulthood.

Of the longitudinal studies that have examined IPV in earlier life, the influence of the family has often been defined by family-of-origin violence experiences, specifically those experiences which occur in childhood and earlier adolescence (e.g., Fang and Corso 2008; Gover et al. 2008). Yet the family may contribute to IPV experiences in ways other than exposure to violence. Likewise, where qualities of the family have expanded beyond violence exposure, such measures are often taken at only one point in time (e.g., Chiodo et al. 2012; East and Hokoda 2015; Foshee et al. 2015). This is despite the fact that families, specifically parents, continue to be a main socializing agent for individuals across the life course (Johnson et al. 2011; Schroeder et al. 2010); and that the parent-child relationship may exhibit both stability and change across time (e.g., Whiteman et al. 2012). It is thus imperative to account for a wider array of family characteristics, measured at multiple points in time from childhood to adolescence and even young adulthood, to illustrate the true effect of familial factors on violence experienced in intimate relationships. Drawing on a life course perspective on social learning theory, this paper employs growth-curve analyses (GCA) using five waves of longitudinal data to investigate both time-stable and time-varying effects on the trajectory in IPV perpetration from adolescence to young adulthood.

Background

Familial Effects on IPV Perpetration

Research based in the social learning tradition consistently has supported the link between family-of-origin violence and IPV experiences in later life (e.g., Renner and Whitney 2012; Smith et al. 2011; Swinford et al. 2000). According to the theory, relationships between parents and between parents and their children provide models for how individuals should behave in their relationships with others (Bandura 1977,1986; Kalmuss 1984). When applied to the intergenerational transmission of violence, children exposed to violence may recognize that, in a global sense, violence is not a preferred or desirable behavior, but that under certain circumstances this is an understandable way of interacting with others and dealing with conflict. In turn, this heightens the child’s own risk of drawing on these behavioral repertoires in their own relationships. More specifically, past research indicates that children exposed to family violence often develop an expectation for violence in their romantic relationships, or feel violence is necessary to maintain control and power in their lives (Wolfe et al. 2001). Accordingly, given their limited prior experience in dealing with others in healthy, non-violent ways, we expected that individuals exposed to family violence (as measured by parent-child physical aggression) would experience an increased risk of IPV perpetration at any point in time, compared to those with no such violence exposure.

However, while children exposed to violence via their families do exhibit higher risk for engaging in IPV during adolescence and young adulthood, researchers have found that this relationship is not deterministic. In other words, even when exposed to violence, most children do not go on to perpetrate IPV in later life (e.g., Fang and Corso 2008; Schafer et al. 2004; Smith et al. 2011; Widom 1989). Accordingly, while we expected parent-child

physical aggression (PCPA) would lead to an increased risk of IPV perpetration, additional measures need to be accounted for to more fully explain such potential variation. One measure, which may be especially beneficial in examining the relationship between familial characteristics and violence in intimate relationships, is the overall relationship quality between parents and their children. As illustrated by prior research, parent-child relationship quality (PCRQ) may include the manner in which parents help and support their child (Hair et al. 2008), how caring, controlling or rejecting they are toward their child (Palazzolo et al. 2010), how much time parents spend with their child (Miller et al. 2009), and how much the child feels respected, trusted and accepted by parents (Tajima et al. 2010).

The inclusion of PCRQ in predicting IPV perpetration is consistent with a social learning perspective in that individuals may learn how to view and interact with others based on the quality of their relationships with parents, just as they learn how to view violence based on the violence they experience via their parents. Such a notion is also supported by attachment theory (Bowlby 1982), which rests on the premise that individuals begin to form early cognitive models of relationships with others based on the interactions they have with their parents and other adult caregivers. These cognitive models often entail such notions of others as being predictable and trustworthy, of the self as being lovable and competent, and of relationships in general as being rewarding and worthwhile (Bowlby 1982). Thus, when children feel their families are unloving, unrewarding or unsafe, they often come to evidence negative views about themselves and their relationships with others in later life (Bartholomew and Horowitz 1991). Consequently, these negative beliefs frequently lead to relationships that are characterized by increased conflict and other problematic outcomes (Busby et al. 2008; Wekerle et al. 2009).

Accordingly, we expected that positive parent-child relationship quality would lead to a lower likelihood of IPV perpetration at any point in time, compared to those with poorer parent-child relationship quality. Importantly, when modeled together, we hypothesized that parent-child relationship quality might also mediate or reduce the effects of parent-child physical aggression on IPV. For example, research finds that exposure to violence in the family-of-origin often leads to poor attachment styles with others, demonstrated by fears of abandonment and beliefs about partner unavailability. These fears and beliefs, in turn, may increase the likelihood of IPV perpetration (Caldwell et al. 2009).

Stability and Change in Familial Relationships

Both continuity and change have been noted in relationship to IPV trajectories over time (e.g., Bonomi et al. 2012; Chiodo et al. 2012; Franklin and Kercher 2012). Examining violent crime in general, rates have tended to peak between the ages of 16-19 and have declined sharply thereafter (Mosher et al. 2002), illustrating a nonlinear trajectory over time. Considering that IPV is but one form of violence, the course of violence in intimate relationships may exhibit a trend which mimics that of violent crime overall. Previous research using the TARS data analyzed here (Johnson et al. 2015), demonstrated a nonlinear trajectory in IPV perpetration with a peak in the early twenties.

The course of intimate partner violence is not only a function of age, but also may result from changes in familial characteristics over time. More specifically, experiences of violence

and the quality of the parent-child relationship may exhibit both stability and change as adolescents transition to adulthood (e.g., Aquilino 1997, 2006;Lefkowitz 2005; Whiteman et al. 2012). Thus, as the parent-child relationship changes function and form throughout the life course, the trajectory of IPV may also differ. Such a process can be understood through a life-course perspective, which highlights that as people age, they perform a variety of normative and non-normative social roles. With these roles often come expectations that affect individuals' behavior in general, and their relationships with others more specifically (Elder 1995). It is also during the adolescent and early adult years that individuals are likely to experience the greatest variety of and alteration in their social roles, given the many transitions experienced along the pathway to adulthood. These often include leaving the parental home, starting college, entering a cohabiting or marital union, and beginning their careers.

As a result of the transition to adulthood, individuals may be less, or differently, influenced by their relationships with their parents, compared to their childhood and adolescent years. Researchers have found that these changes may be either positive or negative. For instance, as individuals age, the parent-child relationship may become one of two mutually respecting adults, leading to increased levels of trust, communication and understanding (Aquilino 1997, 2006; Lefkowitz 2005). Conversely, the increased autonomy that adulthood brings may lead to disparate beliefs between parents and adult children in attitudes and behavioral choices, leading to declines in parental support and acceptance (Whiteman et al. 2012).

While relatively limited, research examining parental physical abuse in later adolescence has found that such violence exposure continues to have negative effects in later life. These later experiences also often serve as better predictors of adolescent and young adult outcomes than abuse measured during earlier childhood (Thornberry et al. 2001, 2010; Thornberry and Henry 2013), likely due to the more developmentally disruptive nature of more proximally occurring events (Elder 1998). Relatedly, continued physical abuse has been shown to have stronger effects on a variety of both internalizing and externalizing problems than abuse that occurs at only one point in time (Stewart et al. 2008; Thornberry et al. 2001, 2010).

Whether due to increased age and maturity, the changing nature of interpersonal relationships, or the many transitions and role changes that occur during emerging adulthood, past research has found that both intimate and parental relationships exhibit change throughout time. A substantial body of empirical work also exists supporting the link between early family-of-origin experiences and extra-familial relationship outcomes in later life. Yet, to date, these literatures remain largely disconnected. We integrate these bodies of work with our use of longitudinal data that collects information about both familial characteristics and IPV experiences at five different time points.

From a life course perspective (Elder 1998), we also expected that both PCRQ and PCPA would exhibit greater effects on the likelihood of IPV perpetration as individuals made the transition into adulthood. More specifically, it was expected that continued or more proximal parent-child physical aggression would have greater effects on individuals' externalizing behaviors in later life, which includes their likelihood of perpetrating IPV. Meanwhile, although parent-child relationship quality may suffer during the transition to adulthood

(Whiteman et al. 2012), adulthood also brings with it the choice to cut ties with parents if one chooses. Thus, where individuals continue to report positive relationships with parents as adult children, it was expected PCRQ would signify even greater relationship quality and would be more protective against a variety of deleterious outcomes, including IPV perpetration.

Current Investigation

The primary aim of the present study was to analyze the effect of familial characteristics on IPV perpetration from adolescence through young adulthood. Specifically, we assessed how experiences of parent-child physical aggression (PCPA) and parent-child relationship quality (PCRQ) affected individuals' reports of IPV perpetration at five different points in time. This is an important advancement over past research efforts which often have been limited in their analysis of those familial characteristics that may affect romantic relationship violence, or which have limited their examination of such characteristics to only one point in time. While we expected that parent-child physical aggression and parent-child relationship quality would have strong effects on IPV perpetration in earlier adolescence, we also anticipated these familial characteristics would continue to matter into young adulthood.

We also accounted for individual and dyadic correlates shown to influence intimate violence in past research. These included respondent's age (Bonomi et al. 2012;Halpern et al.2009) socioeconomic status (Cui et al. 2013; Alvira-Hammond et al. 2014), race (Black et al. 2011) and gender (e.g., Cho 2012; Fang and Corso 2008), as well as relationship duration (Giordano et al. 2010) and union status (i.e., dating, cohabiting and married) (Cui et al. 2013; Renner and Whitney 2010) at each wave of data collection. Following prior research, we placed a particular emphasis on gender. Specifically, we sought to explore whether a gender difference in IPV perpetration existed at any given point in time, and whether family background characteristics were more predictive of either men's or women's IPV reports.

Some researchers have noted when analyzing IPV experiences in younger populations that women's reports of perpetrating violence were often equivalent to or greater than men's (e.g., Cho 2012; Cui et al. 2010; Gelles et al. 2007; Straus 2009). Yet others claim that when the type of violence and negative effects of IPV victimization are accounted for, men are still disproportionately the perpetrators of relationship violence (e.g., Caldwell et al. 2011; Johnson 2011). Similar inconsistences exist when analyzing IPV perpetration in the context of familial background characteristics. For instance, a relatively large body of literature suggests that parent-child physical aggression (i.e., child physical abuse) is associated with IPV perpetration for men and women (Smith et al. 2011; Swinford et al. 2000; Giordano et al. 2015). Yet, some research has found this relationship to be stronger for women than for men (Fang and Corso 2008), while others have found PCPA to be predictive of only boys' and young men's IPV perpetration (e.g., Laporte et al. 2011). Likewise, studies have also concluded that the quality of the parent-child relationship may be more protective for women in deterring a variety of deleterious outcomes (Alarid et al. 2000; Kerpelman and Smith-Adcock 2005). This appears to be especially true concerning aspects of parental warmth and attachment, the primary components of PCRQ utilized in the present study. Given the variability of gendered findings in these arenas, there was not enough evidence to

pose definitive hypotheses in the current study. Accordingly, differences in men's and women's IPV perpetration reports and the effects of family background experiences on these reports served as exploratory aims of this research.

Finally, a measure of peer violence was included at each wave of data collection. While the main goal of the current research was to demonstrate the complex ways in which the family may influence IPV perpetration over the life course, peer relationships are central to adolescents' development (e.g., McClean and Jennings 2012; Newman et al. 2007). In fact, prior research indicates that peers may be just as influential, if not more so, than parents during adolescence and young adulthood in predicting a number of problem behaviors (e.g., Ary et al. 1999; Giordano et al. 2015). Specific to the present study, prior research also indicates that individuals who experience hostility or violence within their friendships are also more likely to report hostility and violence within later romantic relationships (Giordano et al. 2015; Stocker and Richmond 2007; Williams et al. 2008). Thus, the utility of including a measure of peer violence was two-fold. First, although the primary conceptual focus was on variability in family dynamics including parent-child relationship quality and parent-child physical aggression, including a time-varying measure of peer violence allowed for the recognition that IPV perpetration may result from a range of violence exposures, including those which occur outside the familial domain. Second, the inclusion of peer violence would provide a comparative read of the magnitude of family relative to peer influences, consistent with a more comprehensive social learning framework.

Data and Methods

Data

Five waves of data from the Toledo Adolescent Relationships Study (TARS) were used in the current investigation. The TARS study initially was based on a stratified random sample of 1,321 adolescents in the 7th, 9th, and 11th grades and their parents/guardians in Lucas County, Ohio. Devised by the National Opinion Research Center, the sampling frame was derived from public and private school enrollment records in Lucas County, Ohio; however, school attendance was not a requirement for inclusion in the study. The stratified random sample also includes over-samples of Black and Hispanic adolescents; and the geographic area of Lucas County is similar to estimates of race and ethnicity, family incomes, and education to the national population based on 2010 U.S. Census data. Data were collected from adolescent and young adult respondents through structured in-home interviews using laptop computers. Parent data were collected via a short, self-administered questionnaire at the first wave.

Data were originally collected to investigate adolescents' romantic and sexual behaviors, and to examine how these behaviors were influenced by their families, peers, and romantic partners. The first wave of data was collected in 2001, when respondents were, on average, 15 years of age. Wave II was collected in 2002, wave III in 2004, wave IV in 2006-2007, and wave V in 2011-2012, when respondents were, on average, 16, 18, 20, and 25 years old, respectively. By wave V, there were 1,021 respondents, with a retention rate of 77 percent from wave I. Comparison analyses between study dropouts and study completers revealed no statistically significant differences in IPV perpetration or PCPA reports at the wave I

interview. Marginally significant differences (p = 0.052) were found for parent-child relationship quality, with dropouts reporting lower PCRQ at the wave I interview than those respondents who remained in the study at the wave V interview.

The analytic sample was restricted based on the requirements of the research questions. Focusing on the IPV experiences of adolescents and young adults, the sample consisted of only those individuals reporting on a romantic partner in at least one wave of data (N = 979). In particular, 987 respondents reported on a romantic relationship at wave I, 774 at wave II, 993 at wave III, 1,006 at wave IV, and 950 at wave V. Moreover, individuals missing on any between-subjects characteristics were excluded, bringing the final analytic sample to N = 950 (443 male and 507 female) respondents and, correspondingly, 4,750 person-period observations.

It is also important to note that information was available about victimization by IPV as well as perpetration of IPV in the present data. However, due to the focus on social learning processes, the conceptual motivation here was directed toward how familial characteristics influenced variability in respondents' own behavior (perpetration) within the romantic relationship. Thus, the focus here was limited to IPV perpetration. However, acknowledging that victimization experiences undoubtedly shaped a more complete understanding of violence occurring in intimate partnerships, models were also run with IPV victimization as the outcome of interest. Although not presented here, supplemental models relying on this alternative dependent variable produced a similar pattern of results and reinforced the findings presented below. These results are available from the senior author upon request.

Measures

Dependent Variable—We used four items to measure the presence or absence of respondents' IPV perpetration at each wave, based on the revised Conflict Tactics Scale (CTS2) (Straus et al. 1996). These items asked respondents: "During this relationship, how many times have you, "…thrown something at (partner)" "…pushed, shoved, or grabbed (partner)" "…slapped (partner) in the face or head with an open hand" and "…hit (partner)?" Response categories ranged from 1 (*never*) to 5 (*very often*). However, each measure was skewed in that the majority of respondents reported never perpetrating any of these acts. Hence, respondents were coded 1 if they reported having perpetrated any of these acts on a partner and 0 otherwise, resulting in a binary response variable for IPV perpetration.

Key Independent Variables—Parent-child physical aggression (PCPA) was a dichotomous variable assessed at each wave measuring whether the respondents' parents pushed, slapped or hit them during arguments and disagreements. Respondents exposed to parent-child physical aggression were coded as 1, and 0 otherwise. Parent-child relationship quality (PCRQ) was assessed with seven items. Respondents were asked to report their extent of agreement with the following five statements: "My parents give me the right amount of affection," "My parents trust me," "My parents sometimes put me down in front of other people" (reverse coded), "My parents seem to wish I were a different type of person" (reverse coded), and "I feel close to my parents." Two additional items assessed the frequency of verbal aggression between the respondent and his or her parents: "In general,

how often do you and your parents yell or shout at each other because you are mad?" (reverse coded) and "…call each other names or insult each other?" (reverse coded). Given the different response scales across these seven times, all items were standardized so as to provide equal weight in the measurement of PCRQ. These items were then combined resulting in one continuous measure of parent-child relationship quality at each wave (wave I α =.82, wave II α =.82, wave III α =.82, wave IV α =.82, wave V α =.83). Respondents reporting on PCPA and PCRQ experiences were asked to report on those experiences occurring within the last 12 or 24 months prior to the interview. The 12-month timeframe was used in waves I and II to ensure no overlap of reports, given the wave I and II interviews took place only one year apart. Meanwhile, the 24-month timeframe was used in waves III-V when interviews were at least two years apart

Peer Influence—Peer violence was a dichotomous measure at each wave, measuring whether respondents' friends had "attacked someone with the idea of seriously hurting him/her" in the last year prior to the interview. Respondents whose friends had engaged in such violent behavior were coded as 1, and 0 otherwise.

Relationship Correlates—Two indicators assessed basic characteristics of respondents' romantic relationships. The duration of the relationship was measured continuously by one item, with responses ranging from 1 (*less than a week*) to 8 (*a year or more*). Union status assessed whether the respondent was in a dating, cohabiting or married relationship. It was measured by two dichotomous variables, "cohabiting" and "married," with dating respondents serving as the comparison category.

Sociodemographic Indicators—Age was measured at the wave I interview. After analytic sample restrictions, respondents were, on average, 15 years of age, with a range of 12-19 years. Gender was a dichotomous variable, with male serving as the contrast category. Three dichotomous variables represented the respondents' racial-ethnic status, which included non-Hispanic White, serving as the contrast category, non-Hispanic Black, Hispanic and "other" race-ethnicity.

Socioeconomic status was assessed by two different measures; one based on the parents', usually mothers', socioeconomic status, and one based on the respondents' own socioeconomic status. Parents' socioeconomic status was based on the highest level of education completed, as reported in the wave I parent questionnaire. It is represented by two dichotomous variables, less than a high school education and college graduate, with high school graduate serving as the comparison category. Respondents' socioeconomic status was an age-appropriate dichotomous measure referred to as "gainful activity" (Alvira-Hammond et al. 2014), which assessed educational and employment statuses. Specifically, those respondents who were either attending school or employed full-time at the time of the interview were considered gainfully active and coded as 1, while all others were considered not gainfully active and coded as 0. Gainful activity was measured at all five waves of data collection.

Time—The present study utilized longitudinal data to analyze the trajectory in IPV perpetration over time. Therefore "time" was a respondent-specific indicator of the passage

of time across all waves of data, based on the number of months between respondents' interviews at each wave. As wave I represented individuals' baseline responses, "time" was thus set to 0 (zero) for all respondents. Time at waves II, III, IV, and V represented the difference in months occurring between waves II and I, III and I, IV and I, and V and I, respectively. On average, these values were 14, 36, 61 and 122 months. This measure allowed for the possibility that the trajectory in IPV perpetration would exhibit a linear increasing trend over time. However, to allow for the possibility of a trend for IPV that mimics the age-crime curve, we also included the quadratic term, time-squared ($time^2$) in the model.

Statistical Model

The current study utilized growth-curve models to explore the trajectory in IPV perpetration, and how this trajectory was further affected by variations in parent-child physical aggression and parent-child relationship quality over time. We also examined how these trajectories were further affected by between-subjects characteristics, including intimate relationship correlates and sociodemographic factors, with a particular focus on gender. Population-averaged nested logistic regression models investigating linear versus nonlinear parameterizations of time were employed to model the likelihood of reporting IPV perpetration. Model parameters were estimated using generalized estimating equations, which adjusted for the dependence that resulted when taking responses from the same individuals over time. Quasilikelihood under the Independence model Criterion (QIC) statistics were relied on for model comparison purposes (Hardin and Hilbe 2003; Pan 2001). QIC statistics are analogous to Akaike's Information Criterion (AIC) as goodness of fit measures, but do not require the use of likelihood-based equations. A smaller QIC value indicates the better-fitting model. Models were estimated for the entire sample as well as for men and women separately.

Results

Descriptive Statistics

Table 1 presented descriptive statistics for both time-varying and time-stable characteristics of the current sample. IPV perpetration experiences were reported by approximately 11%-22% of respondents across the five waves of data. The largest number of reports occurred in wave IV, when respondents were on average 20 years old. In examining familial characteristics, between 11%-22% of individuals reported experiencing parent-child physical aggression across time. As expected, respondents also reported less PCPA as they aged; the greatest levels were at the first wave when respondents were adolescents and living with their parents. Since parent-child relationship quality was a summed score of standardized items, mean scores were approximately zero and illustrated little variation across time. To gain a better understanding of the change in parent-child relationship quality across time, Table 4, found in the appendix, includes the mean scores of all seven items used to construct PCRQ before they were standardized. These scores demonstrated, on average, parent-child relationship quality either remained stable or was slightly more positive over time. Meanwhile, between 16-29% of respondents reported having peers who engaged in

physically violent behaviors toward others. This percentage was highest at wave I and lowest at wave V.

In terms of relationship correlates, duration, on average, was between 2-5 months at waves I and II, 6-8 months at wave III, and nine months to a year at waves IV and V. The results also showed that most respondents reported on a dating relationship at all five waves, although the percentage reporting on cohabiting and married relationships increased substantially in waves IV and V when respondents were on average 20 and 25 years of age, respectively.

Turning to sociodemographic indicators, a slight majority of the sample was female (53.4%). The majority of respondents reported their racial-ethnic classification as White, although there were significant portions of Black (20.8%) and Hispanic (10.8%) respondents as well. The sample was, on average, 15 years of age at the time of the wave I interview and 16, 18, 20 and 25 years of age at waves II-V, respectively. Most respondents were also gainfully active across all five waves of data, although this number declined sequentially as individuals finished school and navigated the world of employment. At the time of the wave I interview, almost two-thirds of respondents' parents, usually mothers, were high school graduates (65%), while 11% reported having less than a high school education, and approximately one-quarter were college graduates.

Multivariate Results

Full Sample Analyses—Table 2 presents the series of logistic regression models for IPV perpetration. Model 1 included the longitudinal components of time in both their linear and quadratic forms (i.e., Time and Time^2 since Baseline), respondent's age at the wave I interview, serving as both a cross-sectional and between-subjects component of time, respondent's gender, and the main effects of both PCPA and PCRQ. Results indicated that the trajectory of IPV perpetration with time was nonlinear, whereby the likelihood of reporting violence perpetration in romantic relationships varied as a result of both respondent age at baseline and the passage of time. Specifically, respondents who were older at baseline had higher odds of IPV perpetration. The Time coefficient indicated that at baseline (i.e., wave I interview), the odds of IPV perpetration increased by about 3% per month (OR = 1.028) or 39% per year (OR = 1.386). However, the effect of Time also became less positive at a rate of −0.0004 units per month, and became negative after Time equals 68 months or 5.67 years (0.0272/0.0004), indicating a trend that was curvilinear over time.

Model 1 also illustrated that women were significantly more likely than men to report perpetrating IPV. At any given time, women's, compared with men's, odds of being violent toward an intimate partner were approximately 62% higher. Finally, both PCPA and PCRQ were significant predictors of IPV perpetration, and both effects operated in the expected directions. Respondents who experienced parent-child physical aggression had 42% greater odds of perpetrating IPV, compared to those with no parent-child physical aggression exposure, net of time, age, and gender. Conversely, each unit increase in parent-child relationship quality led to a 6% reduction in the odds of becoming violent toward a romantic partner, net of other model covariates.

In order to more fully demonstrate the relative effects of familial characteristics on IPV perpetration, peer violence was included in Model 2. Results indicated that peer violence was a highly significant and positive predictor of IPV reports. At any given time, respondents whose peers engaged in physical violence toward others had 84% greater odds of perpetrating IPV, compared to those individuals whose peers did not engage in such violent behavior. Importantly, while the effect size of peer violence was larger than the effects of both PCPA and PCRQ, its inclusion did not diminish the significance of either measure. In other words, peer violence does serve to further explain the variability in IPV perpetration reports, but does not appear to mediate the effects of familial characteristics.

Based on the present study's hypothesis that PCPA and PCRQ may become more important as individuals transition to adulthood, model 3 tested whether the effects of familial characteristics varied over time with the inclusion of interactions between both PCPA and PCRQ with time. Results indicated that, although small, the interaction of PCRQ with time was negative and significant. The main effect of PCRQ, also negative and significant, became increasingly negative over time by −0.0004 units per month or −0.0048 units per year. Thus, the influence of parent-child relationship quality increased with time. In contrast, the interaction between PCPA and time was nonsignificant, suggesting the effect of PCPA on IPV perpetration was invariant over time. Supplemental analyses (not shown) were also run with each of these interactions added separately to the model; the significance of these results remained the same.

Romantic relationship and sociodemographic indicators were also included in model 3 to examine whether these correlates further influenced the trajectory in IPV perpetration. Union status (i.e., dating, cohabiting and married) and duration exhibited positive and significant effects on the likelihood of perpetrating violence against a romantic partner. Compared to individuals in dating relationships, respondents who cohabited with their romantic partners had approximately 54% greater odds of IPV perpetration. Meanwhile, married respondents' odds of becoming violent toward their romantic partners were about 45% higher than those in dating relationships, although this effect only reached marginal significance ($p < 0.10$). Respondents in longer duration relationships experienced higher odds of perpetrating violence. The inclusion of this block of variables also reduced the effect of respondent age to insignificance. This suggests that it is more likely the characteristics of romantic relationships which were associated with age (i.e., longer duration, greater investment), and not age itself, which led to the greater risk of IPV perpetration.

Examining the remaining correlates in model 3, both respondent race and parental socioeconomic status, as measured by education, had significant effects on respondents' IPV perpetration. Results indicated that both Black and Hispanic individuals had greater odds of perpetrating IPV than White individuals, at approximately 75% and 40%, respectively; although Hispanic respondents' odds reached only marginal significance ($p < 0.10$). Meanwhile, compared to parents who have a high school diploma, respondents whose parents were college graduates had about 34% lower odds of being violent toward a romantic partner at any given point in time. Conversely, having parents with less than a high school education compared to parents who have a high school diploma had no significant effect. Neither the effect of "other race" respondent identification, nor of respondent

socioeconomic status, as measured by gainful activity, was significantly associated with IPV perpetration.

To assess the possibility of gender differences in the effects of familial characteristics on IPV perpetration risk, based on prior research noted herein, we re-ran model 3 with the inclusion of interactions between each PCPA and PCRQ, on the one hand, and gender on the other. Model 4 includes these interactions with gender, but removes the interactions between each PCPA and PCRQ with time that were included in model 3. This was done to account for the varied findings which may result from potential issues with multicollinearity when PCPA and PCRQ are included in multiple interactions in the model. The final model, Model 5, then includes both sets of interaction terms, between each PCPA and PCRQ, on the one hand, with each gender and time on the other. Results indicated that in both the reduced (model 4) and full (model 5) models that the interaction between PCPA and gender was marginally significant ($p = 0.076$, $p = 0.099$, respectively) in the negative direction. This suggested that the effect of parent-child physical aggression on IPV perpetration for men was stronger than for women. Specifically, at baseline, for men, experiencing PCPA increased the odds of perpetrating violence against a romantic partner by approximately 71% (OR=1.707). Meanwhile, these odds increased by only 15% (OR=1.151) among women, net of other model covariates. Although parent-child relationship quality was associated with IPV perpetration, there were no statistically significant differences in the effect of PCRQ on IPV perpetration between men and women. The remaining covariates (i.e., relationship and sociodemographic correlates) in models 4 and 5 illustrated little change from model 3.

Gendered Analyses—Given the higher likelihood of perpetrating IPV among women, as well as the differential effect of PCPA by gender, we also split the full sample and re-ran model 1 from Table 2 separately for men and women. Table 3 depcits these gendered analyses. As was the case for the full sample, both the male and female models illustrated that the trajectory in IPV perpetration was nonlinear, specifically curvilinear, in nature. However, the risk for IPV perpetration at baseline was different for males and females. Specifically, at baseline, the odds of reporting IPV perpetration for women increase by approximately 3% per month (OR=1.031) or 44% per year (OR=1.440), whereas these odds are approximately 2% per month (OR=1.022) or 30% per year (OR=1.297) for men. Meanwhile, for both men and women, Time becomes less positive at rate of −0.0004 units per month or −0.0048 per year. Accordingly, the effect of Time for men became negative after Time equals (0.0217/0.0004) 54.25 months or 4.52 years, almost two years prior to that of women.

Results also indicated that both men’s and women’s trajectories in IPV perpetration were further affected by PCPA and PCRQ, although to differing degrees. Experiencing PCPA increased women’s odds of perpetrating violence against a romantic partner by approximately 31%, while men’s odds of IPV perpetration increased by approximately 62% when exposed to parent-child physical aggression. Conversely, each unit increase in PCRQ reduced women’s odds of reporting IPV by approximately 5% (OR=0.954) at any given point in time, but reduced men’s odds by 8% (OR=0.920). As discussed previously in

reference to Table 2, results also indicated that the difference in effect of PCPA for men and women was marginally significant.

To more fully illustrate these gender differences, we also plot males' and females' trajectories in IPV perpetration based on results from Table 3 Figure 1 provides this graphical representation. Time and Time^2 are allowed to vary, while respondent age, PCPA and PCRQ are set to the sample means of 15, 0.154 and 0.139, respectively. The slopes in Figure 1 illustrate that men's and women's initial risk of IPV perpetration is relatively equal, with women's being only marginally higher. However, as time passes, the female trajectory increases at an accelerated rate, and continues to increase while the male trajectory plateaus, leading to an increased difference in the two trajectories over time. This difference is greatest between 60-80 months or approximately 5-7 years, when the odds of IPV perpetration are at their peak for women, but steadily declining from an already relatively low risk for men.

Discussion

Although research on adolescent and young adult IPV continues to grow, comparatively little attention has been paid to the multiple ways in which the family may influence IPV experiences and how this influence may vary across time. Following this acknowledgement, the present research relied on two basic premises. One, the family environment entails more than simply the presence or absence of abuse, and these additional familial characteristics may affect individuals' relationships with others. Two, like all interpersonal relationships, familial experiences may exhibit both stability and change across time. As these experiences change over the life course, so too may their effects on individuals' likelihood of experiencing violence in romantic relationships. This was especially likely to be the case during adolescence and young adulthood, when individuals continue to be influenced by their families, especially parents, but were also experiencing many life transitions. Accordingly, this study sought to examine how two aspects of family life, parent-child physical aggression and parent-child relationship quality, contributed to intimate partner violence over an 11-year period spanning adolescence and young adulthood.

Replicating previous research using the TARS data (Johnson et al. 2015), we found that both men's and women's IPV perpetration trajectories were curvilinear over time. This finding is also consistent with the trajectory in violent crime more generally, where rates have tended to peak between the ages of 16-19 and decline thereafter (Mosher et al. 2002). Yet there were also important differences in these trajectories based on gender. In particular, women's risk for perpetrating violence against a romantic partner was higher than men's at any given point in time. Women's trajectory in IPV perpetration also accelerated at a faster rate, and did not begin to decline from its peak until approximately two years following men's peak decline. As trajectory analyses are still relatively rare in the IPV literature, further empirical research is needed to decipher the exact processes driving these gendered risks over time. However, one potential source of influence, as demonstrated by the present study, is the differing effects of familial background characteristics on IPV perpetration between men and women.

Supporting previous literature (e.g., Renner and Whitney 2012; Smith et al. 2011), we found that exposure to violence in the family-of-origin, as measured by parent-child physical aggression, was a significant and consistent predictor of adolescent and young adult experiences with IPV perpetration. Moreover, our measure of parent-child physical aggression was not static so it reflects the experiences with parents from adolescence through adulthood. This finding is consistent with the notion put forth by social learning theorists (Bandura 1977, 1986; Kalmuss 1984) that individuals exposed to violence in their family-of-origin may come to view violence as acceptable or necessary in their relationships with others, whether in interacting with romantic partners specifically or in seeking to maintain control and power in their lives more generally (Wolfe et al. 2001). Yet, contrary to the expectation put forth in the present study, the effect of PCPA does not vary over time, among either men or women. Regardless of time or age, individuals who are exposed to parent-child physical aggression are significantly more likely to perpetrate violence against a romantic partner. What accounts for the time-invariant nature of this finding is unclear. It is possible that any exposure to PCPA, regardless of when it occurs, leads to the formation of deleterious beliefs about violence that then carry over into individuals' intimate relationships across the life course. However, it may also be that these effects only vary if and when additional factors are accounted for. These may include the severity of the abuse, the gender of the parent or other caregiver perpetrating the abuse, or if maltreatment is not confined to solely physical abuse. Future research efforts should continue to expand upon this line of inquiry in hopes of implementing more effective violence intervention strategies for individuals and their families.

Results from the present study also illustrated that parent-child physical aggression was a marginally better predictor of men's, compared with women's, experiences with IPV perpetration. One possible explanation for this finding may be that because society is often more accepting of female-to-male than male-to-female violence (Harris and Cook 1994), and where young adolescent men are often taught it is wrong to hit women (Owens et al. 2005), experiencing family violence may serve as a catalyst for men perpetrating violence in their romantic relationships. Meanwhile, as female-to-male violence is seen as less serious and more socially acceptable, family violence exposure may not be necessary to incite women's violence. Conversely, PCPA and other familial background characteristics may be less methodologically predictive of women's IPV perpetration if they are using violence in response to male-initiated aggression (i.e., self-defense) and not due to their own hostility or anger (e.g., Swan and Snow 2006). However, it is important to note that, in the present study, women are more likely to report perpetrating IPV and less likely to report being a victim than are men. For example, in wave II, when IPV reports are lowest, 13% of women and 9% of men report perpetrating IPV, while 10% of women and 18% of men report being IPV victims. Similarly, in wave IV, when IPV reports are highest, 28% of women and 16% of men report perpetrating IPV, while 20% of women and 32% of men report being IPV victims. While these findings are consistent with community-based samples and samples of adolescents and young adults in particular (e.g., Archer 2000; Capaldi et al. 2007; Hamby 2009), future research efforts should continue to explore the gendered motivations for perpetrating violence against a romantic partner, in regard to familial influences and more broadly.

Contributing to the literature on adolescent and young adult experiences with IPV, the findings presented here also demonstrate that parent-child relationship quality is an important and independent predictor of violence in romantic relationships. Specifically, individuals who reported greater PCRQ were significantly less likely to report IPV perpetration at any given point in time. This finding supports social learning and attachment theories, in that individuals learn how to view and interact with others based on the quality of their relationships with parents, just as they learn how to view violence based on the violence they viewed or experienced via their parents. In other words, when individuals feel loved and accepted by parents, and feel that parents and other caregivers are responsive to their needs, they are more likely to form secure attachments with others in later life (Bartholomew and Horowitz 1991). This sense of security, in turn, helps to protect against negative relationship beliefs concerning partner unavailability, distrust or abandonment, all of which may increase the likelihood of violence in romantic relationships (e.g., Caldwell et al. 2009). This conclusion is also consistent with the finding that violent men and women often evidence insecure attachment types in the form of preoccupied, fearful and anxious attachments (Ali and Naylor 2013).

Importantly, and consistent with the present study's hypothesis, the effect of parent-child relationship quality on IPV perpetration was also dependent on time. Specifically, while each unit increase in PCRQ (i.e., where an increased score indicates greater quality) decreased the odds of IPV at any given time, this effect actually became stronger with the passage of time. While not tested in the present study, it is plausible that the protective effect of PCRQ on IPV perpetration was attributable to more than just the simple transition from adolescence to young adulthood. More specifically, it may be that cumulatively positive PCRQ serves as a protective factor against IPV, while cumulatively negative PCRQ may be a marker for a poor life-course trajectory overall, which may include a heightened risk for IPV. Conversely, as individuals age and begin achieving the "traditional" markers of adulthood such as residing outside the parental home, starting a career and beginning a family of their own, PCRQ may come to signify a variety of additional parental supports more specific to the needs of young adults. These supports may take emotional forms, such as seeking relationship or parenting advice, or more tangible forms, such as monetary assistance and help with childcare. Thus, while the measure of PCRQ was consistent across all five waves of data collection, the actual meaning of parent-child relationship quality for respondents may vary across time. This possibility, combined with the various ways in which PCRQ may be measured, indicate that more research is needed to explore the specific details of the relationship between PCRQ and IPV experiences.

Overall, the findings presented here indicate that experiences in the family-of-origin continue to matter throughout the lifecourse in predicting individuals' experiences of intimate partner violence. Accordingly, violence prevention and intervention programs would do well to highlight the importance of familial effects that may influence the character of individuals' ongoing romantic relationships, even where the primary focus is on individual or dyadic change. Many programs exist for primary, secondary and postsecondary students to reduce the risk of dating violence. Yet, often their primary focus is on such notions of gender stereotyping, encouraging constructive communication between partners and teaching conflict-management skills, promoting equity in dating relationships, and

promoting individual empowerment and self-esteem (e.g., Avery-Leaf et al. 1997; Foshee et al. 2004; Rosen and Bezold 1996). While each of these program components is undoubtedly essential in combating violence, long-term success rates of such programs may be markedly improved if familial sources of negative attitudinal and behavioral repertoires are also identified and addressed. Similarly, intervention programs for adult male batterers often take a feminist psychoeducational or cognitive-behavioral therapy approach, which focus on challenging the batterers' right to control or dominate their partners, as well as teach awareness of alternatives to violence through constructive communication and anger management techniques (Adams 1988; Babcock et al. 2004; Pence and Paymar 1993). Given the effect sizes of these programs in reducing IPV recidivism are often relatively small (e.g., Babcock et al. 2004), a larger focus on uncovering and addressing family precursors of violence between loved ones may also prove beneficial to program improvement. Specifically, as the present study's findings illustrate that poor parent-child relationship quality may be more predictive of older versus younger individuals' IPV perpetration experiences, such efforts might usefully emphasize the need to either work to improve these relations or develop alternative sources of support and direction.

Although the present study contributes significantly to the literature on adolescent and young adult experiences with IPV, there were several limitations worth noting. First, the TARS sample has characteristics similar to the national population; nonetheless, it is a regional sample. As such, generalizability of the findings presented here should be made with caution. Future research efforts should replicate the findings presented here, with nationally representative data. Second, only respondent reports were used for the measurement of IPV perpetration. Although issues of under- or over-reporting are possible with any self-reported data, this may be especially the case here given the absence of partner reports in the current dataset. The use of couple-level data is an important avenue for new advances.

Although both parent-child physical aggression and parent-child relationship quality were important predictors of IPV perpetration, the exact processes by which these associations unfold were not examined in the present analyses. For instance, although social learning theory presupposes that individuals exposed to parent-child physical aggression are taught to see violence as an acceptable solution to conflict, or come to believe violence is a legitimate component of healthy, loving relationships, measures of respondents' attitudes toward violence were not examined. Related, emotional and behavioral dysregulation resulting from violence exposure and other deleterious familial experiences were not assessed in the present study. Future research efforts including such measures would advance upon the current study by illustrating more explicitly how parent-child physical aggression and parent-child relationship quality affect violence in romantic relationships.

Finally, while direct exposure to family violence was assessed via being a victim to parental physical aggression, the present study does not include a measure for witnessing family violence, nor does it include being a victim of or witness to violence between other members of the family unit (i.e., siblings or extended family members). These additional sources of violence exposure may help to further explain the variability in IPV reports. Likewise, there are likely many additional facets of the familial environment, outside of PCPA and PCRQ,

which may contribute to IPV experiences in adolescence and young adulthood that were not examined in the present study. Given the potential utility of family-based interventions in preventing IPV where maltreatment, conflict and poor parenting practices are evident (Langhinrichsen-Rohling and Capaldi 2012), future research should expand the examination of these potential predictors and pathways, including interactions among family processes that may result in cumulatively different risks for IPV perpetration.

Continued research is needed to further understand intimate partner violence experienced in earlier life. Yet, the current study makes several strides to improve upon past research efforts. Through the use of growth curve analyses, the results presented here add to a relatively sparse literature examining trajectories in IPV perpetration across the adolescent and young adult stages. This study also broadens the scope of family influence beyond family-of-origin violence, supporting the continued exploration of additional familial characteristics that may affect romantic relationship experiences.

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Appendix

Table 4

Parent-Child Relationship Quality Across Time, Itemized Measures

INDIVIDUAL CONSTRUCT ITEMS	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
My parents give me the right amount of affection.	4.15 (1-5)	4.00 (1-5)	4.11 (1-5)	4.08 (1-5)	4.11 (1-5)
My parents trust me.	4.00 (1-5)	4.00 (1-5)	4.10 (1-5)	4.18 (1-5)	4.25 (1-5)
My parents sometimes put me down in front of other people.	3.94 (1-5)	3.93 (1-5)	4.10 (1-5)	4.07 (1-5)	4.24 (1-5)
My parents seem to wish I were a different type of person.	4.13 (1-5)	4.03 (1-5)	4.13 (1-5)	4.10 (1-5)	4.17 (1-5)
I feel close to my parents.	4.14 (1-5)	3.97 (1-5)	4.16 (1-5)	4.17 (1-5)	4.15 (1-5)
When you and your parents disagree about things, how often do you call each other names and insult one another?	5.27 (1-6)	5.27 (1-6)	5.38 (1-6)	5.44 (1-6)	4.20 (1-5)
When you and your parents disagree about things, how often you do yell at each other?	4.13 (1-6)	4.12 (1-6)	4.27 (1-6)	4.49 (1-6)	4.61 (1-5)

N = 950 respondents

Source: Toledo Adolescent Relationships Study

Note: Items are reported in means; ranges are shown in parentheses.

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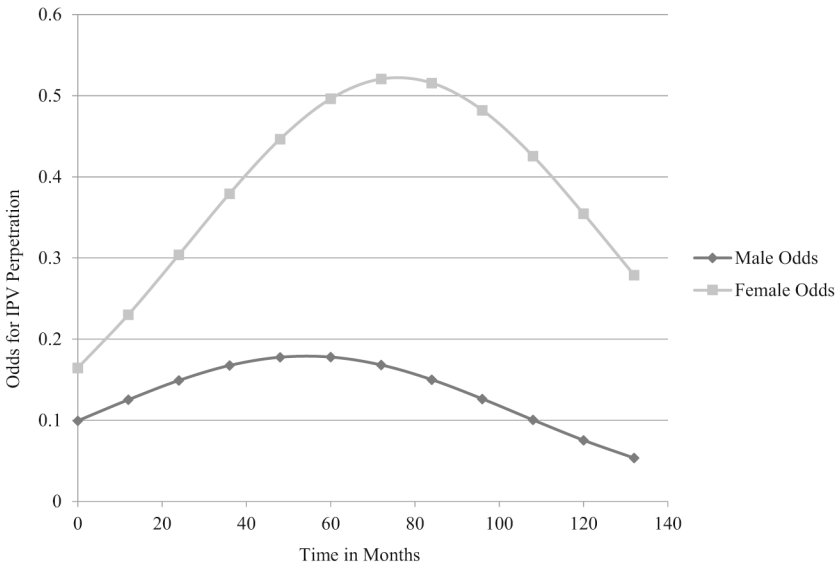

Figure 1.
Gendered Trajectories in IPV Perpetration, Time and Familial Characteristics

Table 1

Intimate Partner Violence and Associated Risk Factors

	Wave I	Wave II	Wave III	Wave IV	Wave V
	Mean or %	**Mean or %**	**Mean or %**	**Mean or %**	**Mean or %**
DEPENDENT VARIABLE					
IPV Perpetration	13.26%	11.16%	17.37%	22.32%	13.58%
FAMILY CHARACTERISTICS					
Parent-child physical aggression	22.48%	18.73%	14.35%	10.71%	10.95%
Parent-Child Relationship Quality	0.14	0.14	0.19	0.22	0.02
PEER INFLUENCE					
Peer Violence	28.83%	25.00%	22.07%	24.37%	16.32%
RELATIONSHIP CORRELATES					
Relationship Status					
Dating (omitted)	75.16%	66.21%	82.84%	70.11%	41.26%
Cohabiting	0.32%	1.89%	7.68%	20.05%	30.63%
Married	0.21%	0%	1.05%	6.26%	22.42%
Relationship Duration	4.79	5.49	5.89	6.72	7.16
SOCIODEMOGRAPHIC					
INDICATORS					
Age	15.22	16.38	18.17	20.33	25.41
Gainful Activity					
Yes	100.0%	72.21%	79.26%	71.16%	63.89%
No (omitted)	0%	27.79%	20.74%	28.84%	36.11%
Parental SES					
Less than High School	11.1%				
High School Grad (omitted)	64.8%				
College Graduate	24.1%				
Gender					
Male (omitted)	46.6%				
Female	53.4%				
Race					
Non-Hispanic White (omitted)	65.9%				
Non-Hispanic Black	20.8%				
Hispanic	10.8%				
Other Race	2.4%				

N = 950

Source: Toledo Adolescent Relationships Study

Note: Parent-Child Relationship Quality is standardized. Ranges: −18-7; −18-7; −21-7; −21-7; −25-6

Table 2

GEE Coefficient Estimates (standard errors) for Logistic Regression Models of IPV Perpetration

	Model 1	Model 2	Model 3	Model 4	Model 5
Initial Status	−3.8755 (0.5005) ***	−4.1380 (0.5000) ***	−3.1078 (0.5532) ***	−3.1603 (0.5339) ***	−3.1523 (0.5542) ***
Time Since Baseline *(linear component)*	0.0272 (0.0032) ***	0.0280 (0.0033) ***	0.0092 (0.0037) *	0.0095 (0.0037) **	0.0091 (0.0037) *
Time^2 Since Baseline *(nonlinear component)*	−0.0002 (0.0000) ***	−0.0002 (0.0000) ***	−0.0001 (0.0000) ***	−0.0001 (0.000) ***	−0.0001 (0.0000) ***
Age at Wave I Interview	0.0908 (0.0315) **	0.1030 (0.0311) ***	−0.0087 (0.0332)	−0.0120 (0.0316)	−0.0109 (0.0332)
Female Respondent	0.4815 (0.1089) ***	0.5813 (0.1089) ***	0.4473 (0.1118) ***	0.5591 (0.1186) ***	0.5601 (0.1217) ***
PCPA	0.3523 (0.1126) **	0.3229 (0.1141) **	0.2997 (0.1734) Λ	0.5659 (0.1875) **	0.5345 (0.2241) *
PCRQ	−0.0587 (0.0087) ***	−0.0537 (0.0089) ***	−0.0308 (0.0143) *	−0.0766 (0.0176) ***	−0.0535 (0.0196) **
PCPA *Time			0.0013 (0.0027)		0.0008 (0.0027)
PCRQ *Time			−0.0004 (0.0002) *		−0.0004 (0.0002) *
Peer Violence		0.6096 (0.0953) ***	0.5487 (0.1002) ***	0.5411 (0.1031) ***	0.5446 (0.1007) ***
Cohabiting *(dating omitted)*			0.4323 (0.1291) ***	0.3987 (0.1276) **	0.4191 (0.1293) **
Married			0.3718 (0.1932) Λ	0.3031 (0.1875) Λ	0.3460 (0.1936) Λ
Relationship Duration			0.1935 (0.0275) ***	0.1962 (0.0288) ***	0.1939 (0.0276) ***
Black *(white omitted)*			0.5570 (0.1311) ***	0.5682 (0.1398) ***	0.5624 (0.1315) ***
Hispanic			0.3360 (0.1730) Λ	0.3345 (0.1656) *	0.3336 (0.1735)
Other Race			−0.0494 (0.3750)	−0.0595 (0.3542)	−0.0825 (0.3775)
Gainful Activity *(Respondent SES)*			−0.0568 (0.1036)	−0.0644 (0.1011)	−0.0469 (0.1037)
(*Parent SES – HS omitted)* Less than High School			0.2575 (0.1616)	0.2794 (0.1765)	0.2645 (0.1619)
College Graduate			−0.4114 (0.1468) **	−0.4143 (0.1344) **	−0.4177 (0.1469) **
PCPA *Female				−0.4237 (0.2455) Λ	−0.3937 (0.2393) Λ
PCRQ *Female				0.0312 (0.0206)	0.0311 (0.0197)
QIC	3826.12	3750.48	3373.36	3370.30	3370.01

N = 950 respondents, 4750 person-periods;

Λ p < 0.10;

* p < 0.05;

** p < 0.01;

*** p < 0.001

Source: Toledo Adolescent Relationships Study

Note: Model 3 interactions between PCPA*time and PCRQ*time, and model 4 interactions between PCPA*gender and PCRQ*gender were entered separately in supplemental analyses. Results remained the same.

Table 3

GEE Coefficient Estimates (standard errors) for Logistic Regression Models of IPV Perpetration, Gendered Analyses

	Female Model	Male Model
Initial Status	−3.6370 (0.6599)***	−3.4260 (0.7479)***
Time Since Baseline *(linear component)*	0.0304 (0.0041)***	0.0217 (0.0051)***
Time^2 Since Baseline *(nonlinear component)*	−0.0002 (0.0000)***	−0.0002 (0.0000)***
Age at Wave I Interview	0.1018 (0.0419)*	0.0703 (0.0476)
Parent-child physical aggression	0.2709 (0.1484)Λ	0.4824 (0.1702)**
Parent-Child Relationship Quality (PCRQ)	−0.0474 (0.0107)***	−0.0835 (0.0150)***
QIC	2271.52	1554.19

N = 950 respondents, 4750 person-periods;

Λ p < 0.10;

* p < 0.05;

** p < 0.01;

*** p < 0.001

Source: Toledo Adolescent Relationships Study