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Precocious and Problematic? The Consequences of Youth Violent Victimization for Adolescent Sexual Behavior

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Abstract

Purpose—Violent victimization is concentrated in adolescence and is disruptive to both the timing and sequencing of key life course transitions that occur during this developmental stage. Drawing on recent work establishing the interpersonal consequences of youth victimization, we examined the effect of violent victimization on adolescents' timing of sexual debut and involvement in additional sexual risk behaviors (multiple sexual partnering and inconsistent contraceptive use).

Methods—This study relied on secondary data analysis of 10,070 youth from four waves of the National Longitudinal Study of Adolescent to Adult Health (Add Health). To predict sexual debut and subsequent sexual risk-taking, analyses were limited to youth not yet sexually active at their wave I interview.

Results—Findings from Cox proportional hazards models, negative binomial regression, and repeated measures ordinal logistic regression showed that adolescent victims of violence initiated sex sooner than non-victims and accumulated more sexual partners, but patterns varied by age at victimization. Youth victimized in late adolescence displayed an accelerated trajectory of sexual activity while youth victimized in early adolescence were less likely to debut or engage in other sexual risk behaviors (although younger victims were more likely to engage in other deviant activities).

Conclusion—Sexual activity is a normative part of adolescent development, yet this study finds that violent victimization may disrupt the timing of this life course task, exacerbating deviant risk-taking and undermining youths' subsequent well-being. This study also highlights the importance of life course criminology's attention to timing in lives, given that the consequences of victimization varied by the age when it occurred.

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Keywords

Adolescence; Victimization; Sexual debut; Sexual risk-taking; Life-course criminology

Sexual activity is a developmental stepping stone in adolescents' trajectories of interpersonal and romantic relationship formation. Indeed, by age 19, many teenagers have had sexual intercourse. Data from the National Survey of Sexual Health and Behavior (NSSHB) shows that among 18–19-year-olds, 63% of males and 64% of females reported having had intercourse [35]. However, adolescent sexual activity shifts from normative to problematic when it involves sexual risk-taking (e.g., an early age at sexual debut, having many sexual partners, and low rates of contraceptive use; [9, 86]) as this undermines youths' health and well-being (e.g., via increased risk of STIs, unintended pregnancy). Particularly, important for criminology, sexually active teens are also more likely to engage in delinquent behaviors, drink alcohol, and use drugs [47].

Yet despite its developmental normativity, the *timing* of sexual activity is critical, and although life course criminology is attuned to the significance of life course transitions, there has been much less attention to the implications of the timing of such experiences (for exception, see [73]). This is an unfortunate limitation, as attention to the timing of life events is a key tenet of sociological life course and developmental theories [15, 30] and one that is similarly applicable to life course criminology [93, 95]. For instance, sexual activity occurring “off-time” in adolescence (compared to average experiences of one's peers)—especially precocious activity (that occurring sooner than average)—is particularly problematic. Early sexual activity can spur youth into subsequent deviant behavior, such as substance use, running away from home, and other forms of delinquency [10] and/or place them at increased risk of intimate partner violence [39], all of which potentially lock youth in a trajectory of cumulative disadvantage [48]. Early sexual debut is linked to having more sexual partners and using condoms less consistently, which increase youths' risk of contracting a sexually transmitted infection (STI) [81] and/or having an unintended pregnancy [86, 92].

The specific factors that increase adolescents' likelihood of engaging in precocious and/or otherwise risky sexual activity arise from the multiple domains in which adolescent development is embedded and unfolds across the life course. These factors include characteristics of families (e.g., family structure, parental supervision) as well as individuals' biological and psychological disposition (e.g., relative pubertal development, depression) [64, 72, 102]. Extensive scholarship, particularly research motivated by Jessor's “problem behavior” theory, has also documented a co-occurrence between delinquent behavior (e.g., offending, substance use) and sexual activity [22, 74]. Much less criminological scholarship, however, has examined the extent to which *violent victimization* and sexual risk-taking similarly cluster. Even more limited has been the application of life course principles to victimization research [11, 95]. This is an unfortunate shortcoming, for—as we discuss below—there are several theoretical reasons to expect that violent victimization has implications for adolescent sexual risk-taking.

Violent Victimization and the Adolescent Life Course

Life course theories view adolescence as a sensitive period of development. It is a period characterized by rapid and significant physical, cognitive, and social growth [15], increasing autonomy and experimentation and, as a result, greater exposure to various risks. Particularly troubling for pro-social adolescent development is the risk of violent victimization, which is disproportionately concentrated among youth [34, 94]. Youth violent victimization (YVV)—also referred to as community or “street” victimization [38, 43]—has long-term life-altering emotional and behavioral consequences. YVV is a risk factor for depressive symptoms [57], anger and aggression [1, 96], fatalism [99], and substance abuse [18]. Victimized youth are at risk of subsequent victimization and becoming violent perpetrators themselves [84]; indeed, the victim-offender overlap is one of the most consistently observed associations in criminology [14].

Yet in addition to its strong association with offending—and particularly relevant for life course theory’s attention to timing in lives—YVV has explicit developmental consequences. That is, it is disruptive to both the timing and the sequencing of life course transitions. As Turanovic [95] recently noted when advocating for a life course theory of victimization, victimization can be a negative turning point in the life course. For instance, YVV is associated with transitions that mark precocious (“off-time”) exits from adolescence [38, 43], which themselves further compromise adolescent well-being. Whereas scholarship on precocious exits has focused on deviant activities such as dropping out of high school, running away from home, and having criminal justice contact, YVV is also associated with premature entry into ostensibly pro-social, young adult roles, such as the formation of dating and co-residential intimate relationships [56, 100]. This is particularly the case among youth victimized later in adolescence, a period when intimate relationships become an increasingly important source of social status and social support. Unfortunately, such early relationships themselves can exacerbate future victimization risks [55]. Given this, it is possible that YVV is also associated with premature entry into experiences of sexual activity, as well as precocious exits from adolescence via engagement in deviant/risky sex (i.e., multiple partnering, inconsistent contraceptive use—behaviors that do not reflect positive adolescent development). Precocious sexual activity and/or sexual risk-taking may thus emerge as a maladaptive coping strategy to the strain of victimization [3, 46]. We return to this below.

When life course transitions happen “off-time,” the consequences are often harmful [10], and this is even applicable to intimate interpersonal relationships and activities. As Connolly et al. [25] note, youth who engage in non-normative, off-time, intimate activities “...are at a greater risk for maladjustment because they are unprepared for the demands of advanced relationships,” and these youth also “lack the support provided by peers who are engaged in similar romantic [sexual] activities.” Given the links between early sexual debut and multiple sexual partnering, as discussed above, such activity may “...launch adolescents on a troublesome life course trajectory of cumulative disadvantage characterized by the contraction of an STI, an unplanned pregnancy, and even later marital instability” ([86], p. 480). Below we draw from developmental, sociological, and criminological perspectives to discuss several correlates of adolescent sexual risk-taking and consequences of YVV that may be especially likely to accelerate adolescents’ entry into sexual activity.

Correlates of Sexual Risk-Taking and Consequences of Youth Victimization

Demographic and Familial Correlates of Sexual Risk

There are well-established patterns of adolescent sexual risk-taking across key demographic groups and by family structure. As summarized in Zimmer-Gimbeck and Helfand [106] thorough review, adolescent sexual debut tends to correlate with gender (occurring earlier among females); adolescent boys report more sexual partners, while girls report less consistent contraceptive use [54]. Other correlates of sexual debut and risk include age (younger adolescents use contraception less consistently) [61], race/ethnicity (with earlier debut for Black youth [especially males], later for Asian youth), and family structures (with earlier debut and pregnancy more likely for youth in living arrangements other than with two biological parents) [69]. Youth living in family structures other than with two biological parents may be subject to less supervision and thus may have more opportunities for sexual activity [92]. Adolescents' autonomy from parents with respect to decision-making has also been linked to earlier sexual debut [78], while parental monitoring is associated with later debut [60].

Sexual activity and risk-taking vary not only by the demographic and family characteristics described above, but such experiences can also be influenced by interpersonal, socioemotional, psychological, and/or behavioral characteristics that themselves may emerge as consequences of violent victimization. That is, there are a number of implications of violent victimization that may predispose adolescents to precocious sexual activity and sexual risk-taking. We discuss examples of each below.

Dispositional Consequences of YVV: Emotional, Cognitive, and Physiological

Violent victimization in adolescence is a stressor with numerous mental health consequences, including internalizing symptoms such as depression and anxiety [11], which themselves increase sexual risk-taking [103]. For instance, Schuster et al. [85] outline three theoretical pathways through which depression may facilitate sexual risk-taking. First, depression may disrupt cognitive processes (e.g., self-regulation) responsible for the motivation and implementation of safe-sex practices. Second, depression undermines self-efficacy, which may lead to decreased confidence in one's ability to resist peer pressure and negotiate safe sex practices. Third, depressed adolescents are more likely to have deviant friends and to be susceptible to deviant peer influences.

As Agnew et al. [4] general strain theory (GST) posits, victimization is a strain conducive to negative emotions, such as anger. Anderson's [8] ethnographic research observed similar negative emotionality and anger resulting from victimization [83]. Violent victimization also increases feelings of loneliness [17] and, in addition to reduced self-efficacy, is associated with mistrust and separation anxiety [62]. It compromises individuals' self-esteem [77], and as such, youth victims may seek out sexual relationships to reaffirm their sense of self-worth, especially via peer approval [41]. That strategy, however, may vary by gender. For instance, Robinson et al. [81] found that adolescent males were more likely than females to endorse self-esteem enhancing (e.g., had sex to feel better, to feel proud) and power-related (e.g., had sex to control partner) reasons for sexual activity and sexual risk-taking.

Adolescents with low self-esteem report more risky sexual activity, such as earlier debut and not using condoms [59]. Those with lower self-esteem often lack a sense of control and are vulnerable to unhealthy/unsafe sexual decision-making, whereas adolescents (especially girls) with higher self-esteem are better equipped to resist pressures to engage in unsafe/unhealthy sexual behaviors [81].

There are also biological and physiological responses to YVV that may lead to earlier initiation of sexual activity. For instance, repeated activation of the stress response system resulting from exposure to violence—especially during a period of the life course when individuals are undergoing rapid brain development [14]—can compromise neurological development, and undermine functioning related to stress response and coping, emotion management, planning, and decision-making [103]. That is, it may compromise the development of self-control. The anger that may result from violent victimization has been linked to several of the traits comprising low self-control, such as impulsivity, risk-taking, and irritability [4]. Violent victimization may also lead to risky sexual activity via its effect on sensation-seeking [18] as a coping mechanism (see also [51, 78]). Youth with higher levels of self-control are less likely to initiate sex, and, when they do become sexually active, they report fewer sexual partners [47].

Finally, sexual debut is associated with pubertal onset [74], itself a correlate of violent victimization [44, 63]. The connection between early puberty and early sexual debut may be because early maturing adolescents (especially girls) are more likely to be accepted into older peer groups—where sexual activity is normative and expected—but lack the self-regulatory skills to make good decisions about engaging in safer sexual activity [74]. Even perceptions of development matter, as other research [9] finds that adolescents who dated older partners felt subjectively older than their peers, which in turn increased their likelihood of engaging in sexual activity, given the influence of age-graded expectations for behavior [29, 30]. Early maturing girls view themselves (and are viewed by others) as older, which may push them into contexts that encourage problem behaviors [10].

Relational Consequences of YVV

Given the established links between YVV and diminished psychological well-being (e.g., depression, anger), one may expect that victimization also undermines individuals' interpersonal and relational development—that is, their interest in and capacity for interacting and forming relationships (especially intimate ones) with others. For instance, as Margolin and Gordis [63] note, victimization may "...shatter the essential assumptions fundamental to the developmental task of learning to trust others and form secure attachment relationships." Youth victims of violence may thus become "rejection sensitive" [28]: hostile, withdrawn, and distrusting of intimacy with others. Indeed, victimized youth frequently manifest their rejection sensitivity via avoidance strategies: isolating themselves, developing hostile attitudes toward intimate relationships [88], or shunning these relationships altogether [89]. Simons and Burt's [88] social schematic theory is instructive here, positing that these negative attitudes are learned because exposure to adverse conditions (e.g., violence) communicates harshness and unpredictability. This in turn promotes adaptation of "social schemas" (internalized heuristics [mental short cuts]

for processing experiential social information) that involve hostile views of people and relationships, a preference for immediate rewards, and cynicism toward conventional norms. Given such messaging, as well as more general processes of social learning ([5] [1994]), it seems reasonable to expect victims of violence to be at least apprehensive—if not outwardly hostile—toward intimate interactions.

Downey et al. [28], however, describe a second (seemingly contradictory) strategy these rejection-sensitive adolescents may adopt: *overinvestment* in securing intimacy and love and engaging in intimate activities more quickly than their peers. This is similar to patterns observed in research linking early childhood physical and sexual abuse with later attachment anxiety (i.e., intense desire for intimacy, fear of rejection, see [79]). Although not using Downey et al.'s [28] conceptual framework of these two responses, Kuhl et al. [56] did observe something akin to the overinvestment strategy, wherein YVV spurred adolescents' premature entry into co-residential (cohabiting and marital) unions. Recent work by Warner et al. [100] extended this, exploring withdrawal and overinvestment more directly by examining the effect of YVV on adolescent dating. That study illustrated age-differentiated responses to YVV: early adolescent victims displayed a withdrawal response (being less likely to enter into dating relationships) while older adolescent victims' behavior was more consistent with overinvestment—rapid entry into dating relationships and faster progression from dating into co-residential unions. If some adolescent victims of violence experience overinvestment or anxious attachment-related responses to their victimization and are then propelled into precocious intimate relationships (as observed by [100]), these youth may also be at greater risk of engaging in precocious sexual activity. That is, anxiously attached adolescents may be more likely to engage in sexual activity, perhaps due to a desire for intimacy and closeness.

Interestingly—and where violent victimization may operate differently than observed by Warner et al. [100]—individuals with a more avoidant (even hostile) orientation toward intimate relationships may *also* experience increased odds of risky sexual activity. As Yarkovsky and Fritz [105] note, individuals may turn to casual (non-relationship) sexual activity (and/or activity with multiple partners) as a way of *avoiding* emotional intimacy. Chen [21] found that avoidant attachment (discomfort with emotional closeness in romantic relationships) was positively associated with more permissive attitudes about sex (e.g., approval of casual sex). Davis et al. [27] found that attachment anxiety was related to numerous motivations for sexual activity, including emotional closeness, reassurance, self-esteem enhancement, stress reduction, and power exertion. This latter point is important, as sexual activity may have a very different *meaning and utility* than emotionally close, romantic relationships, and these meanings are gendered (see also discussion of gendered responses to strain by [38]). That is, sexual prowess/promiscuity may be a marker of status attainment (at least for men—e.g., sex as conquest; [8]), wherein romantic relationship involvement is not. As such, it is possible that victims of violence may adopt a hostile view of intimate relationships while still being at increased risk of sexual activity—indeed, Simons and Burt [88] describe a hostile view of relationships as promoting the exploitation of others, which could theoretically extend to (casual) sexual encounters, especially given that this social schema also emphasizes instant gratification.

Behavioral Consequences of YVV

Sexual risk-taking often co-occurs with other problem behaviors, such as delinquency and substance use [52]. Substance use, especially, has been linked to multiple sexual partnering and inconsistent contraceptive use [54, 91], via the disinhibiting effect of substances and/or that both substance use and risky sex are manifestations of low self-control [80]. Indeed, Kotchick and colleagues [54] suggest that part of the co-occurrence of sexual risk-taking and other problem behaviors may be attributable to personal characteristics such as impulsivity and sensation-seeking, themselves linked to experiences of victimization [4]. Among criminologists, low self-control is often cited as a common cause of both offending and victimization [16], and Agnew et al. [4] even observed that victimization exacerbates low self-control. As discussed above, low self-control may also be a common cause of both victimization and sexual risk-taking. Delinquent behaviors themselves may also be consequences of violent victimization—victimized youth may turn to substance use/abuse and/or other deviant activities as a means of coping with the strain of their victimization [3, 76].

From a routine activity perspective, victims and offenders are often the same individuals because such individuals find (or place) themselves in situations/opportunities conducive to *both* offending and victimization, e.g., via shared routines and lifestyles that lead to increased exposure to motivated offenders [14, 23]. Involvement in deviant behaviors, such as violent offending and substance use, may facilitate subsequent sexual risk-taking through engagement in “party” lifestyles [37], through low self-control [36] or, as Jessor and Jessor [53] argue, because both offending and sexual deviance are manifestations of the same phenomenon (also [66]). Thus, connections between YVV and sexual risk-taking may operate, at least somewhat, through increased involvement in other problematic and deviant lifestyles and behaviors.

Current Study

Youth violent victimization leads to faster entry into romantic relationships in adolescence [100], possibly because YVV leads to attachment insecurity. Given that such anxious attachment embodies not only just intense desire for intimacy but also higher sexual motivation [12], it seems reasonable to suspect that YVV may be similarly linked to precocious sexual activity. Furthermore, as discussed above, youth who develop hostility toward committed intimate relationships may be motivated to engage in sexual risk-taking. We draw on the life course perspective to focus on the extent to which sexual activity in adolescence may be problematic when it occurs off-time and/or involves behavior(s) that are especially health-compromising. Specifically, we examine the consequences of youth violent victimization for sexual risk-taking during adolescence and the transition to adulthood. We focus on youth not yet sexually active to examine if YVV spurs earlier sexual debut and/or whether victimized youth are more likely than non-victimized peers to subsequently engage in risky sexual behaviors (i.e., accumulating more sexual partners and inconsistent contraceptive use). The current study is guided by the following three main research questions:

1. Do victims of youth violence sexually debut sooner than their non-victimized peers?
2. Do victims of youth violence accumulate more sexual partners than non-victimized peers?
3. Do victims of youth violence use contraceptives less consistently than non-victimized peers?

Our analyses also give attention to the ways in which the consequences of YVV for adolescent sexual risk-taking may be structured by age and/or gender. A focus on age is supported by the life course perspective's principal of timing in lives [30], which motivates further our expectation that the age at which victimization occurs may have implications for the intimate/interpersonal consequences of that experience. Expecting age-differentiated effects of victimization is also consistent with applications of general strain theory [2, 38, 45], which integrate life course perspective principles to illustrate how the effects of strain are dependent on life course stages. Victimization is, as Schreck et al. [83] recently described it, "...an event whose effects may differ according to age, taking on more personal and social significance" (see also [95]).

Prior life course studies have shown that adverse experiences in adolescence (compared to childhood) are particularly consequential in undermining well-being (e.g., [15, 49, 93]), possibly because they occur during a time of rapid and significant growth and change wherein numerous developmental milestones are expected to be met. Attention to variation by age in experiences and their consequences is of key importance to life course criminology, as it moves beyond an ontological view of age to a more thorough sociological understanding of the ways that people and their lives *change* with age ([75], p. 7, emphasis added). Finally, attention to gender is also warranted given established patterns of gender differences in sexual debut, sexual risk-taking, and attitudes and expectations about sexual activity more broadly [106].

Data and Methods

We used data from the nationally representative National Longitudinal Study of Adolescent to Adult Health (Add Health), which contains detailed information on intimate relationship experiences and youth violent victimization (YVV). At wave I (1994–1995), a random subsample of adolescents in grades 7 to 12 (ages 11–21) in sampled schools completed an In-Home Questionnaire. A subset of these respondents was reinterviewed in 1996 (wave II). The full sample was reinterviewed in 2001–2002 (wave III) and 2007–2008 (wave IV), when respondents were 18–26 and 24–32 years old, respectively (for sampling details, see [42]).

The analytic sample was limited to respondents not yet sexually active at wave I; those already sexually active were excluded ($n = 9218$). One method of dealing with selection bias that may result from this exclusion is via the Heckman two-step estimator; however, since the focal dependent variable (sexual activity) is the same as the dependent variable in a selection equation (being sexually active before wave I), this correction could introduce multicollinearity problems [90]. Further, the Heckman two-step estimator is designed for linear outcomes, and there is no analogue for discrete-choice models. Therefore, we limited

the analytic sample to non-sexually active respondents at wave I (see also [100]). Our final analytic sample was comprised of 10,570 adolescents with valid sample weights.

Supplemental analyses (not shown) indicated that, compared with the analytic sample, excluded cases (sexually active wave I respondents) were more likely to have been victims of violence. They were also older, more likely to be male and non-White, less likely to live with two biological parents, had a lower family SES, lived in urban areas, reported more parental autonomy, higher depression, less self-control, slightly lower self-esteem, lower marital expectations, were more physically developed, reported more frequently lying to parents, more frequent violent and non-violent delinquency, and more alcohol use. They were also more likely to have experienced physical and sexual abuse in childhood but were less likely to have avoidant or anxious attachment styles.

Measures

Outcomes—Although our analyses use data from all four waves of Add Health, the waves from which dependent variables were derived varied due to inconsistencies in survey questions across waves. We detail the derivation of each outcome measure below.

Time to sexual debut was measured as the number of years that elapsed between respondents' age at wave I and their reported age at sexual debut. This measure was based on respondents' report to the waves III and IV question, "How old were you the first time you had vaginal intercourse?"¹ If respondents participated and were sexually active at both waves III and IV, reported age at debut should be the same at both waves. When there were inconsistencies in respondents' reported debut age, we deferred to the earliest age reported. About 6% of respondents who became sexually active reported an age at sexual debut that preceded their age at the wave I interview (an implausible value since the analytic sample was limited to virgins at wave I); we reset these values to missing and multiply imputed them (see below). It is important to note that our analyses model *time* to debut, not *age* at debut. We expand on this below in our discussion of the analytic strategy.

Among adolescents who became sexually active during the study period, *lifetime number of sexual partners* was measured via the question "With how many partners have you ever had vaginal intercourse, even if only once?" We record the number reported at respondents' last interview observation (wave III or wave IV); this question was not asked at wave II. Respondents reported between 1 and 50 partners. We winsorized this measure at 25 given data sparseness at higher partner counts, especially when considering age and/or gender differences in the effect of victimization.

Our final indicator of sexual risk-taking concerned contraceptive use asked of respondents who reported being sexually active. *Past year contraceptive use consistency* was measured via the waves II and III question "On how many of these occasions of vaginal intercourse

¹We used the wave III or wave IV reports of age at debut over any wave II reports because of inconsistency in measurement. Specifically, at wave II, respondents were asked about debut timing following questions concerning sexual touching and a comparison of reports between waves II and III suggests that a sizeable number of respondents may have conflated sexual intercourse and sexual touching as a result. However, for the 168 respondents who dropped out of the panel after wave II but who experienced sexual debut by wave III, we had to rely on wave III reports. Preliminary analyses excluding these respondents (not shown) did not differ in substantive ways from the findings including them presented here.

in the past 12 months did you or your partner use some form of birth control or pregnancy protection?” Response options ranged from 0 = “none of the time” to 4 = “all of the time.”

Focal Independent Variable

Youth Violent Victimization: YVV was assessed by wave I reports of how often in the past 12 months: (1) “someone had pulled a knife or gun” on them; (2) “someone cut or stabbed” them; (3) “someone shot” them; or (4) they “were jumped.” Original response options were “never,” “once,” and “more than once.” Given the low prevalence of each item, we created a dummy indicator for any experience of YVV [32]. Although the identity of the perpetrator is unknown, prior research indicates that these items broadly capture “street” violence [38, 43]. This interpretation is further reinforced by our controls for childhood abuse by a parent or caregiver (described below).

Control Variables—We controlled for several sets of factors to avoid spurious interpretations of the effect of YVV. To guard against overcontrol bias [31], we only considered variables that were measured at wave I (with two exceptions, described below) and that prior work (as discussed above) suggests may be common causes of both YVV and sexual risk behaviors. We briefly describe the control measures included in our final models below (full details on item coding are presented in Table 1), although we provide a detailed description of our measurement of attachment style (given the complexity of this operationalization).

Demographics: Five sociodemographic indicators controlled for well-established group differences in YVV and sexual activity: *age*, *gender*, *race/ethnicity*, *immigrant status*, and *family SES*.

Family Structure and Supervision: Analyses included measures of respondents’ family structure and *parental autonomy* (respondents’ independent decision-making about personal behaviors and social activities) as proxies for parental supervision.

Disposition: We controlled for *depression* (measured via the 19-item CESD), *self-esteem*, respondents’ self-assessed *relative pubertal development*, and *marital expectations*. Given that victimization reduces self-control [4], we also controlled for *low self-control*, modeled after McGloin and Shermer’s (2009) measure using the same data. Our construct combines six items that capture Gottfredson and Hirschi’s [36] concepts of impulsivity and physical (as opposed to mental) orientations. We depart from McGloin and Shermer’s [67] measure, however, and do not include “having trouble keeping your mind on what you were doing...” because that question is part of the CESD, which we used to measure depressive symptoms.

Attachment Style: Add Health gauged youths’ definitions of an “ideal” romantic relationship by presenting respondents with a deck of 17 cards, each card listing a behavioral or experiential attribute of a hypothetical relationship (e.g., “I would meet my partner’s parents;” “We would hold hands”). Respondents were to return any card whose attribute did not match their personal definition of an ideal romantic relationship. We coded respondents as having an *Avoidant Attachment* if they rejected “I would tell my

partner that I loved him or her” and “My partner would tell me that he/she loves me” as characterizing an ideal relationship. In a preliminary factor analysis, these two measures held together uniquely apart from the other relationship items. Although admittedly a very rough proxy of attachment style, these two items loosely correspond to the “cognitive and emotional” process that Collins [24] identifies in his five-feature framework of adolescent romantic relationships. After retaining the cards describing their ideal romantic relationship, respondents were next instructed to organize the remaining cards into the order in which they think things should happen in a perfect relationship. We coded respondents as having an *Anxious Attachment* if they selected as the first thing that should happen “I would see less of my friends so I could spend more time with my partner,” “I would tell my partner that I loved him or her,” or “My partner would tell me that he or she loved me.” We selected these items to approximate anxious attachment because desiring that these activities occur first in an ideal relationship reflects a departure from the normative progression of adolescent romantic relationships, which tend to progress from affiliative activities, to group-based dating, and then to romantic relationships [25]. The implied reference group is having a secure attachment style.

Deviant Behavior: We controlled for four measures of respondents’ deviant behavior that may co-occur with YVV [84] and are linked to sexual activity [66]: *lying to parents*, *violent perpetration*, *non-violent delinquency*, and *alcohol use*.

Childhood Abuse: To isolate the unique effect of YVV, all models controlled for respondents’ reports of *physical abuse* and *sexual abuse* perpetrated by a parent or caregiver prior to sixth grade (age 12; these questions were asked retrospectively at waves III and IV).

Additional Controls: As described below in the analytic section, we adjusted for design effects though the inclusion of the underlying variables that defined the Add Health complex sample in our models: wave I *urban* residence and U.S. Census *region*. We also controlled for the *number of interviews completed* to account for differential non-response over time.

Analytic Strategy

To address research question 1—do victims of youth violence experience sexual debut sooner than their non-victimized peers?—we used Cox regression. The advantage of Cox models for studying the timing of events is that they are semiparametric, allowing for the estimation of covariate effects on the underlying hazard rate without requiring the specification that baseline hazard rate [6]. Beginning with wave I virgins, our model for research question 1 predicts the rate of sexual debut after wave I as a function of an unspecified baseline hazard rate; the effect of youth violent victimization; and our controls for demographic characteristics, family structure and supervision, disposition, attachment style, deviant behaviors, childhood abuse, and the additional survey controls. Respondents remained at risk until they debuted or were right-censored at their final interview having never experienced sexual debut [6].

For research question 2—do victims of youth violence accumulate more sexual partners than non-victimized peers?—we used negative binomial regression (since this is a count variable)

to examine the effect of YVV on adolescents' lifetime count of sexual partners, reported at their final interview.

For research question 3—do victims of youth violence use contraceptives less consistently than non-victimized peers—we used repeated measures ordinal logistic regression. Repeated measures regression allows us to account for the fact that multiple observations within individuals are likely correlated (thus violating assumptions of independence in generalized linear models).

To assess whether the effect of youth violent victimization on sexual behavior differed for youth who were victimized at earlier versus later ages or by gender, we repeated the analyses of each dependent variable using an internal moderator approach (see [70]). This approach allows inclusion of variables applicable only to victims (i.e., YVV at certain ages) but retains comparisons with non-victims. Thus, to assess age differences, we created two separate dummy variables based on age at wave I: respondents victimized at age 14 and younger (“early” adolescence) and those victimized after age 14 (“late” adolescence)²; non-victims are coded as 0 on each variable and served as the reference (see also [87, 100]). To examine gender differences in the effect of YVV, we similarly created separate victimization variables for males and females. We used a Wald χ^2 test to assess whether the age- or gender-specific YVV terms differed from one another. Unfortunately, given limited statistical power for some age-by-gender-by-YVV groups, we were not able to consider the potential for age differences in the effect of YVV to be gendered.

To handle missing data on the dependent and independent variables, we used multiple imputation using the Multivariate Imputation using Chained Equations (MICE) procedure via Stata's *mi impute chained* command. MICE imputes the missing values for each variable as a function of the other variables in the analysis (including the sexual debut and risk-taking measures; [101]). We performed 30 imputations, following the guideline that the number of imputations should be similar to the percentage of incomplete cases [101]; missing data were most substantial for consistency of contraceptive use in the past year (15.06%), childhood physical abuse (13.27%), childhood sexual abuse (12.07%), age at first sex (7.95%), family socioeconomic status (4.67%), low self-control (2.14%), and number of sex partners (1.74%).^{3,4}

All analyses were performed using Stata 14 MP and weighted using the wave I grand sample weight. Although Stata offers a number of procedures that permit adjustment for complex survey design with multiply imputed data, such adjustment is not possible in a repeated-measures logistic regression, the model used for research question 3. In order to maintain a consistent strategy across all analyses, as noted above, we adjusted for the design

²A limitation is that respondents were not asked the timing of first victimization. This is less a methodological problem for the early adolescent subsample because they were just entering the period of increased victimization risk. It poses a challenge, however, for the late adolescent subsample because it may contain youth first victimized during late adolescence *and* those victimized in both early and late adolescence. This conflation should work against detecting significant effects between YVV in early and late adolescence, and thus, our findings should be somewhat conservative.

³As Allison [7] has noted, multiple imputation routines are ill-equipped to deal with complex event-timing data and indeed an average of 84 respondents (1.09%) in each imputed dataset had implausible values for age at first sex that resulted in negative time to debut; we set age at first sex for these respondents to be equal to age at wave I.

⁴Analyses performed on unimputed data produced substantively similar findings.

effects in all models by including controls for *urban* residence and U.S. Census *region*. We note that models for research questions 1 and 2 with and without complex survey adjustments yielded substantively similar findings (not shown).

Results

Descriptives

We present descriptive statistics for the total analytic sample as well as stratified by YVV status in Table 2. Among our sample of youth who were not yet sexually active at the wave I interview, almost 13% had experienced violent victimization in the prior year. Nearly 9 in 10 (85.17%) respondents reported ever having sexual intercourse during the course of the panel, at an average first age of 17.44 years, and they went on to have an average of 8.36 sexual partners. Sexually active respondents reported using contraceptive between “about half of the time” and “most of the time” (mean = 2.87; not shown) in the past year.

Differences between victims and non-victims on our control variables were generally consistent with prior studies. Victims were slightly younger, more likely to be male, to be Black or Hispanic, to be from lower SES families, and to live in single parent (marginal, $p = .083$) or stepparent arrangements. Victims reported less autonomy from parents. Victims reported higher relative pubertal development, were more depressed, had lower self-esteem, and less self-control than non-victims. Victims were more likely than non-victims to have an anxious attachment style, but marginally less likely to express avoidant attachment ($p = .061$). Victims lied to parents about their whereabouts more frequently than non-victims, reported engaging in more violent and non-violent deviant behaviors, and drank alcohol more frequently. Retrospective reports of childhood physical abuse were greater among victims, but reports of childhood sexual abuse did not differ by YVV. Victims were more likely to live in urban areas and in the West and provided slightly fewer interviews than non-victims.

Although not shown in Table 2, victims of youth violence experienced sexual debut at a slightly earlier age than non-victims (17.10 vs. 17.49, $p < .001$) even as there was no differences in the percentage of respondents that ever reported having sexual intercourse during the panel. Victims accumulated one more sexual partner on average (9.45 vs. 8.19, $p < .001$) and had slightly less consistent contraceptive use in the past year (2.74 vs. 2.89, $p = .008$) than non-victims.

Multivariate Results

Sexual Debut Timing—Our first research question asked whether victims of youth violence experience sexual debut sooner than non-victimised peers. The Cox regression results addressing this question are shown in Table 3 with a series of stepwise models. The covariate estimates in Cox regression represent the effect on the rate (log hazard) of the focal event (e.g., sexual debut timing) conditional on survival to time t . As the hazard coefficients lack intuitive meaning, we present the exponentiated effects or hazard ratios. Hazard ratios are more intuitive than the hazard rate coefficients because they correspond to notions of the risk of an event in a given unit of time [6].

As indicated in Table 3, model 1, net of our controls for demographic and family characteristics, victims of youth violence experienced sexual debut faster than their non-victimized counterparts following the wave I interview. Youth experiencing violent victimization in the year prior to their first interview had 1.253 times the risk of sexual debut compared to non-victims. This means that victims were about 56% ($\text{prob} = \text{HR}/(1 + \text{HR}) = 1.253/(1 + 1.253) = .556$) more likely to debut. The effect of YVV on sexual debut timing remains significant net of dispositional characteristics and attachment style (model 2)—that is, the effect of victimization on sexual debut is not due to victimization's effect on attachment orientation [28, 88] or low self-control [4]. However, the effect is reduced to statistical non-significance in model 3 with the inclusion of controls for deviant behavior (in particular, lying to parents, violent perpetration, and alcohol use). This is because victims were more likely than non-victims to be engaged in these additional types of deviant activities at wave I, each of which was associated with an accelerated rate of sexual debut.

Turning to our controls (in model 3), the effects follow anticipated patterns. Sexual debut occurred more quickly for older respondents, females, and those living with single or stepparents (compared to two biological parents); debut was delayed for Asians (compared to non-Hispanic Whites) and youth from higher SES families. Youth who had more parental autonomy debuted more quickly, as did those who rated their pubertal development more advanced and expressed greater marital expectations. Youth with avoidant attachments debuted more slowly (marginal; $p = .086$). Childhood sexual abuse was associated with an accelerated rate of sexual debut until we controlled for deviant activities. Respondents who resided in the Midwest and South, as well as those who provided more interviews, had increased rates of sexual debut (not shown).

Age and Gender Differentiation in the Effect of YVV on Sexual Debut—We next examined whether the effect of YVV on the rate of sexual debut differed between “early” adolescence (age 14 at wave I) and “late” adolescence (> age 14 at wave I). As described above, to do this, we included two dummy variables for the age-specific YVV effects in our models. Evidence of an age-differentiated response to youth violent victimization is presented in Table 4 for a model that includes all of the controls listed in model 3 of Table 3. For early adolescents, YVV was associated with about a 13% reduction in the rate of sexual debut. That is, YVV in early adolescence appears to delay initiation of sexual activity throughout adolescence and into young adulthood. The effect of YVV on the rate of sexual debut among late adolescents, however, is consistent with the results shown in the prior section illustrating an increased rate of sexual debut for victims. YVV accelerates sexual debut for youth victimized in late adolescence by about 55%.

That the age-differentiated effects of youth violent victimization were statistically significant even net of controls for deviant behavior, unlike the full model 3 in Table 3, requires some explanation. This difference between the undifferentiated (Table 3) and age-differentiated (Table 4) effects reflects the fact that deviant behavior is differentially associated with sexual debut for early adolescent and late adolescent victims. Supplemental analyses (not shown) indicate specifically that the effect of violent perpetration on the rate of sexual debut differs by age of victimization. Among all respondents, violent victimization was significantly and positively associated with violent perpetration, as we would expect, given

the persistently documented victim-offender overlap [14, 58]. However, the *consequences* of violent perpetration for victims' sexual debut timing were age-differentiated. Among early adolescent victims, violent perpetration was *negatively* associated with sexual debut and thus a slower rate. This means that early adolescent victims who also engaged in violent offending experienced sexual debut more slowly than those not engaging in violent behavior. In contrast, for late adolescents, violent perpetration was *positively* associated with sexual debut and thus a faster rate. That is, late adolescent victims of violence who were also violent perpetrators themselves experienced sexual debut more quickly than victims not engaged in violence. As such, age at victimization was acting as a suppressor in the final model of Table 3, and the failure to account for the opposite age effects of violent perpetration reduced the coefficient for youth violent victimization to statistical non-significance.

Interestingly, early adolescent victims were significantly more likely than late adolescent victims to engage in violent perpetration (not shown)—this is consistent with Schreck et al.' [83] recent observation that the victim-offender overlap wanes with age. This nuanced pattern of findings warrants further examination in future research, as these age-differentiated findings hold net of personal characteristics (such as low self-control; see [16]) and behavioral characteristics (such as lifestyles; see [14]) that we might expect would lead to a directionally consistent constellation of violent victimization, violent perpetration, and sexual risk-taking. Importantly, theories focused on low self-control or routine activities/lifestyle have not been attuned to potential variations by timing; however, this finding here speaks to the significance of the life course principle of timing in lives, as the consequences of violent perpetration varied depending on when in the life course it occurred (early vs. late adolescence).

We considered gender differences in the effect of YVV on the rate of sexual debut, creating separate dummy variables for youth violent victimization for males and females. As observed in Table 3, the rate of sexual debut was higher for females and we found some preliminary evidence that the rate of sexual debut was faster for female victims of youth violence compared to male victims. However, the greater effect for female victims was explained by higher levels of deviant behavior and once we controlled for this, we found no evidence that the effect of YVV on sexual debut differed by gender (not shown). Unfortunately, as noted above, we were unable to assess whether there were gender differences in the age-differentiated effects describes above due to limited statistical power.

Lifetime Number of Sexual Partners—Our second research question asked whether victims of youth violence accumulate more sexual partners than their non-victimized peers. The results of negative binomial regression models predicting lifetime number of sexual partners reported at respondents' last interview are shown in Table 5. Similar to our models predicting sexual debut (Table 3), we present a series of stepwise models—although here we also include age at first sex in the model with deviant behaviors. As model 1 shows, net of our controls for demographic and family characteristics, victims of youth violence report more sexual partners than non-victimized youth. Youth experiencing violent victimization in the year prior to their first interview accumulated sexual partners at about 1.122 times the rate of non-victimized youth. The effect of YVV on partner accumulation remained

significant net of dispositional characteristics and attachment style (model 2); however, the effect is explained in model 3 with the inclusion of controls for age at sexual debut (see model 3; Table 3). This is not surprising—youth who initiate sexual activity at younger ages have more time (more “exposure”) in which to accumulate sexual partners.

Regarding our other control variables, lifetime number of sexual partners was higher for youth who were older, male, Black ($p = .060$), came from higher SES families, and those who lived with single or stepparents ($p = .073$; compared to two biological parents). Hispanic and Asian youth accumulated fewer partners (compared to non-Hispanic Whites), as did those who reported a higher likelihood of being married by age 25 ($p = .084$). Low self-control was not associated with the rate of sexual debut but *was* significantly associated with accumulating a greater number of sex partners. Depressed and anxiously attached youth ($p = .056$) accumulated fewer partners. Youth engaged in non-violent delinquency and who used alcohol more frequently accumulated a greater number of sex partners. Childhood physical and sexual abuse were also associated with having more sex partners.

Age and Gender Differentiation in the Effect of YVV on Number of Sex Partners—We next examined whether the effect of YVV on sexual partnering differed between early and late adolescence and between males and females. We did not observe any differences between early adolescent and late adolescent victims in the number of sex partners once we included the control for age at first sex (not shown). The timing of youth violent victimization appears to matter for sexual debut, but not the number of partners one accumulates following debut.

We found some limited evidence, however, of gender differences in the effect of youth violent victimization on the number of sex partner (not shown). Net of all controls, there was no difference between male victims of youth violence and male non-victims (IRR = 1.052, SE = 0.055, $p = .330$). However, female victims of violence accumulated *fewer* partners (IRR = 0.694, SE = 0.045, $p < .001$) and this effect differed from male victims of youth violence (Wald χ^2 , F (1, 2347.9) = 32.87, $p = .000$) and marginally so from female non-victims (Wald χ^2 , F (1, 2434.3) = 2.88, $p = .0897$). Given the marginal nature of this difference between female victims and female non-victims, we are hesitant to make more of this difference. We note, however, that comparisons between female victims and non-victims are under-powered as just 9.72% of females reported YVV (compared to 24.15% of males; not shown).

Past Year Contraceptive Use Frequency—Finally, our third research question asked if victims of youth violence use contraceptives less consistently than non-victimized peers. Table 6 presents the results of stepwise repeated measures ordinal logistic regressions. Overall, we found little evidence that YVV was associated with contraceptive use consistency in any of the models presented. We note, however, that victims had lower odds of more consistent contraceptive use before we controlled for demographic characteristics, specifically family SES (OR = 0.877, SE = 0.076, $p = .049$). We observed a pattern of significant effects among the control variables, such that older youth and Black and Hispanic youth (compared to non-Hispanic Whites) used contraceptives less consistently; youth from higher SES families and those with more parental autonomy used contraceptives

more consistently. Having greater expectations to marry ($p = .078$), more depressive symptoms, lower self-esteem ($p = .089$), and low self-control were all associated with less consistent contraceptive use. Violent perpetration ($p = .071$) and non-violent delinquency were associated with less consistent use of contraceptives. Childhood sexual abuse was also associated with lower odds of consistent contraceptive use.

Age and Gender Differentiation in the Effect of YVV on Contraceptive Use Consistency

—As with the other outcomes, we examined whether YVV's effects on contraceptive use differed by age and gender, observing age—but not gender—differentiation (not shown). Net of our controls, victims of youth violence in early adolescence—given that they debuted—were more likely to use contraceptives consistently (OR = 1.376, SE = 0.188, $p = .020$) than were non-victims. Contraceptive use among sexually active victims of youth violence in late adolescence did not significantly differ from non-victims (OR = 0.925, SE = 0.108, $p = .507$). The age-differentiated effects of youth violent victimization significantly differed from one another (Wald χ^2 , $F(1, 3908.7) = 6.17$, $p = .0130$). Given that a majority of our sample experiencing YVV was older than age 14 at wave I (61%), the non-significant effect of late-adolescent victimization canceled out the significant effect of early adolescent victimization in the models presented in Table 6.

Discussion

Sexual activity is a normative part of adolescence and the transition to young adulthood. However, adolescent sexual activity becomes non-normative when it occurs off-time—in particular, earlier than average—and/or involves other health-compromising behaviors, such as multiple partner accumulation and lack of consistent contraceptive use. Criminologists approaching adolescent sexual activity have tended to focus on the links between sexual activity and offending; however, given the overlap between offending and *victimization*, coupled with recent scholarship establishing the consequences of youth violent victimization (YVV) for intimate, relational behaviors [56, 100], there remains a need to examine more fully the implications of victimization for adolescent sexual activity and risk-taking. Adolescents are particularly vulnerable to risk-taking behaviors (especially socially and emotionally rewarding ones), given that this period of the life course is characterized by increased sensitivity to stressors [71], a heightened proclivity toward rewarding and thrilling sensations, and an underdeveloped system of self-regulation and impulse control [20].

Youth violent victimization has emotional and behavior consequences—e.g., depressive symptoms [57], anger and aggression [2, 96], fatalism [99], substance abuse [18], impulsivity [71], repeat victimization, and offending [14, 84]—and it is disruptive to the timing and sequencing of life course transitions, linked to precocious exits from adolescence and premature entry into adulthood [38, 43, 56, 100]. The current study thus addresses a gap in criminological attention to adolescent sexual risk-taking. Specifically, we assess whether victims of youth violence initiate sexual activity earlier, have sex with more partners, and use contraceptives less consistently than their non-victimized peers. Furthermore, in addition to also examining gendered effects of YVV on sexual risk-taking, we integrate the life course principle of “timing in lives” to explore age-graded effects of YVV. This is an important addition because the consequences of YVV may—and as we show, do—

differ depending on when in the life course that victimization occurs. This is consistent with Finkelhor's [33] point that "... we could expect the nature, quantity, and impact of victimization to vary across childhood [and adolescence] with the different capabilities, activities, and environments characteristic of different stages of development."

Among our sample of Add Health respondents who had not yet experienced sexual debut at their wave I interview, we found that, relative to non-victimized peers, victims initiated sexual activity sooner, accumulated more sexual partners, and used contraceptives less consistently (the latter association significant only at the bivariate level). We also observed disparate effects by age for certain outcomes. We summarize and expand on our four key findings below.

First, YVV is associated with a faster initiation of sexual activity. The effect of YVV on the timing of sexual debut persists, independent of demographic, family, and dispositional characteristics and attachment styles; however, in the full sample, it is attributable to deviant behavior (lying to parents, violent perpetration, non-violent delinquency, and alcohol use). This should not be interpreted as suggesting that YVV is inconsequential for sexual debut. Rather, YVV *is* consequential precisely because it is strongly associated with increased involvement in other types of deviant activities, all of which are associated with an accelerated rate of sexual debut; however, this pattern itself is age-differentiated, as we note below. Indeed, the extent to which deviant activities mediate the effect of YVV on sexual risk-taking is an important avenue for future research.

Second, we found that the consequences of YVV for sexual debut differ based on the age at which the victimization occurred. Following Warner et al.' [100] recent work, we discussed two potential socioemotional and interpersonal responses to violent victimization: withdrawal and overinvestment [28]. For early adolescents (age 14), our findings show that victimization appears to be associated with a slowing of sexual debut—a withdrawal response. That is, early adolescent victims initiate sexual activity more slowly than their non-victimized peers. Importantly, this slower initiation among early adolescent victims is only observed after we account for deviant activity (especially violent perpetration), because violent perpetration slows sexual debut among early adolescent victims but accelerates it among late adolescent victims. Thus, early adolescent YVV may be fundamentally transformative, potentially reducing the motivation, ability, and/or opportunity of early adolescents to experience the developmental task of sexual initiation. This may be because, as Wojciechowski [104] recently observed, victimization is more likely to elicit anger among younger adolescents. Since early adolescent victims were significantly more likely than later adolescent victims to also be perpetrating violence themselves, it appears these youth may be turning to violent means of coping with their victimization while also adopting a hostile attribution bias toward intimate relationships, which may lead to shunning intimacy altogether [88]. In supplemental analyses (not shown), early adolescent victims were also less likely than non-victims and late adolescent victims to indicate wanting a romantic relationship in the next year. Although we discuss early sexual debut as problematic, debut experienced *later* than average has also been linked with subsequent maladjustment—"late-starting" youth may be at increased risk of continued social isolation and emotional withdrawal (although such findings have been less consistent, see [25]). However, slower

sexual debut does lead to fewer sexual partners and, as we show for early adolescent victims, more consistent contraceptive use.

By contrast, youth victimized in late adolescence (> age 14) show accelerated entry into sexual activity (compared to non-victims), suggestive of an overinvestment response. As romantic and sexual activity become more normative in late adolescence [50], such activities may increase in their utility as coping mechanisms for the social and psychological challenges brought on by YVV [18, 57, 96]. In supplemental analyses (not shown), YVV undermined self-esteem among late adolescent victims but had no effect on self-esteem for early victims. Future research is needed to explore age-differentiation in both the consequences of violent victimization and the motivations for and expectations about sexual activity among victims of violence.

Third, in addition to initiating sex more quickly than non-victimized peers, youth victims accumulate more sexual partners. The effect of YVV on partner accumulation is significant net of demographics, family and dispositional characteristics, and attachment style; however, the effect is explained by age at sexual debut. YVV matters for partner accumulation because of its link to precocious sexual debut. We did not observe any differences between early adolescent and late adolescent victims in the number of sex partners after accounting for differences in the rate of debut but did observe a modest difference by gender, such that female victims of violence accumulated fewer sexual partners than both male victims and female non-victims.

Finally, we found that violent victimization was associated with less consistent contraceptive use but that this was principally explained by demographic differences—especially family SES—between victims and non-victims. Thus, we have no evidence to suggest that YVV increases risky contraceptive behaviors overall. Yet these null findings might reflect that contraceptive behaviors may be contingent on characteristics of specific intimate relationships themselves (e.g., duration of relationship, power dynamics, emotional intimacy)—measures that we were unable to include in the current analyses. Future research is needed that analyzes these relationship characteristics more directly, perhaps also via a dyadic modeling approach (e.g., respondents nested within relationships).

Importantly, however, we did observe age differentiation in the consequences of violent victimization for contraceptive use. Early adolescent victims of violence (who, recall, experienced delayed sexual debut) actually reported using contraceptives more consistently than both late adolescent victims and non-victims. This more consistent contraceptive use may be another manifestation of early adolescent victims' hesitancy surrounding sexually intimate activities or it could be a by-product of their sexual debut occurring later when they are perhaps more mature. Future research is needed to understand the sexual health behaviors of those early adolescent victims who overcome the tempering effects of YVV on the initiation of sexual activity.

Taken together, our findings have several implications for practitioners serving and intervention programs directed at victims of youth violence. Although initiation of sexual activity is a normative developmental task (especially during later adolescence), special

attention should be given to the earlier *timing* at which victims of violence—later adolescent victims in particular—initiate sex. Of concern here is not that victims of youth violence are engaging in sexual activity, but that they are doing so more quickly than may be developmentally appropriate. As discussed above, precocious sexual activity has been linked to a number of negative consequences that may further compromise successful adolescent development and positive well-being. The withdrawal response we observe among early adolescent victims of violence may not elicit the same level of concern from caregivers, practitioners, etc. as the earlier sexual debut occurring among late adolescent victims; however, withdrawal and/or “late debut” among these earlier victims may also be problematic to the extent that it signals socioemotional withdrawal and isolation. Given late adolescent victims’ earlier initiation of sexual activity and accumulation of a greater number of sexual partners, additional research is needed to identify the emotional, cognitive, physiological, and/or behavioral factors motivating these victims to engage in earlier and riskier sexual activity. That is, are victims seeking to rebuild trust, reaffirm self-worth, or improve social status? Further, given the extent to which violent victimization and deviant activity (offending, substance use, etc.) co-occur, as a constellation of problem behaviors, more attention should be given to sexual risk-taking as an additional deviant activity characterizing the presumed “problem behavior syndrome” [52].

Our conclusions should be considered in light of a few key study limitations. First, Add Health is a school-based study, and as such, our population of interest—youth victims of violence—could have been more likely than non-victims to be truant or to have dropped out of school altogether. To the extent that these victims have different sexual activities and experiences (and our supplemental analyses indicated that youth already sexually active at wave I were more likely have experienced YVV), our results may be biased toward more conventional sexual experiences (e.g., fewer partners) and less differentiation between victims and non-victims.

Second, our measures of sexual risk-taking are somewhat limited (debut timing, partner accumulation, contraceptive use consistency) due to differential availability of, and inconsistencies between, survey questions across waves. For instance, we are unable to measure consistently additional indicators of sexual risk-taking, such as a causal sex (sex outside of a romantic relationship), “hooking-up” (e.g., sexual experiences with a one-time partner), sexual activities outside of penile-vaginal intercourse (e.g., oral or anal sex), or sexual risk-taking among sexual minority youth. Also important, there is no measure of whether these sexual experiences were coerced, experiences that could be more likely to occur among victims of violence. Further, variation in measurement across waves prevents us from examining change in sexual risk-taking throughout adolescence and into emerging adulthood. For instance, the measure of contraceptive use consistency was only available at waves II and III; thus, youth who experienced sexual debut *after* wave III are missing from that analysis. This may partially explain our unexpected finding that early adolescent victims reported using contraceptives more consistently—those victims may be a select sample who deviated from the pattern of delayed debut among early adolescent victims that we observed in our analyses of sexual debut timing. Another limitation related to our measurement of contraceptive behavior is that it is not possible to discern if respondents were intentionally

not using contraceptives (i.e., because they were trying to get pregnant). We do not examine pregnancy intentions in the current paper, but this is an important area for future research.

A third issue concerns our measurement of attachment styles. Although our expectations regarding the role of attachment style were theoretically motivated by the existing scholarship, our analyses provided minimal evidence that attachment style was associated with sexual risk-taking and—although victims were more likely to have an anxious attachment style—it did not explain the effects of YVV we observed. However, and as we noted above, Add Health was not designed to measure concepts such as the emotional complexity of attachment orientation, and our operationalizations of anxious and avoidant attachment were intended as rough proxies. Future research attuned more carefully to attachment orientation should be mindful of the potentially disruptive consequences of violent victimization.

Notwithstanding these limitations, the current study fills a notable gap in the criminological scholarship on adolescence, violence and victimization, and intimate/relationship behavior [62]. The notion that some victimized youth engage in sexual activity more quickly than non-victimized peers may seem counterintuitive, given research illustrating that violent victimization instills anger and hostility and leads victims to withdraw from, and become untrustworthy of, others. However, as recent scholarship has observed [100], withdrawal is only one strategy for dealing with the strains and anxieties victimization often brings (see also [28]). Importantly, given Warner et al.' [100] finding that victims of youth violence enter romantic relationships sooner, we do not interpret our findings to suggest that victimized youth are engaging in earlier/riskier sexual activity *in place of* more emotionally involved relationships. Rather, violent victimization appears to spur adolescents into *both* precocious romantic *and* sexual relationships—whether their motivations are the same for both endeavors remains a question for future research. For example, victims may enter romantic relationships to rebuild trust but enter into sexual activity to regain status. Future studies are needed to explore whether the motivations and decision-making processes suggested by prior studies—and about which we speculate here—do actually underlie the behaviors we identify. Further, although we observed few gender differences in the current analyses, additional studies are needed to examine the extent to which these processes may be patterned by race/ethnicity [97, 103], or the intersection of age, gender, and race/ethnicity [26, 68], and to also examine the broader role of neighborhood contexts, which themselves likely shape both victimization risks and sexual risk-taking [19, 40, 65, 82, 98].

The experience of YVV has implications for when adolescents initiate sexual activity and the extent to which they engage in subsequent risky sexual behaviors. A key finding of this study is that the consequences of YVV for sexual risk-taking can vary among adolescent victims of violence depending on *timing in lives*, consistent with the life course perspective argument that the developmental impact of life events is contingent on when they occur in a person's life [30]—an argument we believe should be more central in life course criminology and victimology. Our observed age-differentiation also aligns with and is supportive of Jessor's [52] assertion that being “at risk” may have two different meanings (and thus require different responses) at varying points in the life course. Thus, intervention (rather than prevention) may be more appropriate for older adolescents already enmeshed

in a constellation of co-occurring risk behaviors (e.g., offending, substance use, risky sex [as we observed here]). For younger adolescents not yet involved in sexual risk behaviors (as we also observed here, where early adolescent victims of violence were less likely to initiate sexual activity), prevention may be the best response. Because violent victimization is disproportionately concentrated in adolescence [34], the life course timing of YVV is therefore an important dimension to which criminological scholarship on victimization (and its consequences) should be attuned. Although risk behaviors (like precocious sexual activity) may be functional, purposive, and goal-directed for the adolescents themselves [52], it is unlikely that early initiation of sexual activity and additional sexual risk-taking will provide meaningful resolution to the social, psychological, and emotional consequences of youth violent victimization. Instead, such behaviors are more likely to embed youth within continued trajectories of cumulative disadvantage.

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Table 1

Control variables

Construct	Indicators and response options
Demographic characteristics	
Age	Continuous indicator; centered at 16 in multivariate analyses
Gender	Dummy variable for female (0/1)
Race/ethnicity	Dummy variables for (a) non-Hispanic White [reference], (b) Black, (c) Hispanic, (d) Asian, and (e) other (includes American Indian) races (0/1)
Immigrant status	Dummy variable for respondent not born in the USA (0/1)
Family SES	Combined scale of parent's education and parent's occupational level (0–9 [13])
Family structure and supervision	
Family structure	Dummy variables for lived with (a) both biological parents [reference], (b) a single parent, (c) a stepparent, or (d) some other arrangement (0/1)
Parental supervision	7-Item count of whether parents let respondent make decisions (1 = yes, 0 = no) about their curfew, friends, clothing, TV, etc.
Disposition	
Relative pubertal development	Self-rated physical development compared to same-aged peers (range – 2 = “I look younger than most” to 2 = “I look older than most”)
Marital expectations	“What do you think the chances are that you will be married by age 25?” (range 0 = almost no chance–4 = almost certain)
Depression	19-Item summated scale of frequency of past week feeling “bothered by things,” “unable to shake the blues,” “too tired to do things,” etc. (range 0 = never or rarely–3 = most or all of the time)
Self-esteem	6-Item summated scale of R's agreement that they “have a lot of good qualities,” “have a lot to be proud of,” etc. (range 0 = strongly disagree–4 = strongly agree)
Low self-control	6-item summated scale of responses to items, e.g., “When you have a problem to solve one of the first things you do is get as many facts about the problem as possible”; “When you are attempting to find a solution to a problem you usually try to think of as many different ways to approach the problem as possible” (reverse-coded range 0 = strongly agree–4 = strongly disagree)
Attachment style	
Anxious attachment	Dummy variable for endorsing (a) seeing less of friends, (b) telling partner I loved him/her, or (c) partner says he/she loves me as the ideal first thing to happen in a perfect romantic relationship; see text for additional details.
Avoidant attachment	Dummy variable for disagreeing that “I would tell my partner that I loved him or her” is characteristics of an ideal romantic relationship (0/1); see text for additional details
Deviant behavior	
Lying to parents	Past year frequency of lying to parents/guardians about where respondent has been or with whom they were (range 0 = never–3 = 5 or more times)
Violent perpetration	4-item count of any past year perpetration (e.g., “been in a serious fight”; range 0–4)
Non-violent delinquency	10-item summated scale of frequency of past year perpetration (e.g., vandalism, theft; range 0 = never to 3 = 5 or more times)
Alcohol use	Past year frequency of alcohol use (range 0 = never–6 = every day or almost every day)
Childhood abuse	
Physical abuse	Dummy variable for any parent/caregiver physical abuse experienced before 6th grade/age 12 (0/1); measured at either wave III or IV
Sexual abuse	Dummy variable for any parent/caregiver sexual abuse (including forced touching) experienced before 6th grade/age 12 (0/1); measured at either wave III or IV
Additional controls	
Urban	Dummy variable for whether the respondent resided in an urban area
Region	Dummy variables for U.S. Census region of residence: West, Midwest, South, or Northeast
Number of interviews	Number of follow-up interviews respondent completed (1–3)

Unless otherwise noted, all indicators are measured at wave I; preliminary analyses considered additional indicators that were ultimately excluded from the final models. See text for details.

SES socioeconomic status

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Table 2

Sample descriptive statistics, overall and by youth violent victimization: means (standard errors) and *t* tests (*N* = 10,570)

Variables	Mean	(SE)	Non-victims		Victims		Sig. ^a
			Mean	(SE)	Mean	(SE)	
Youth violent victimization	0.129	–	–	–	–	–	
Demographic characteristics							
Age ^b	14.876	0.023	14.898	0.025	14.725	0.063	*
Female	0.516	–	0.548	–	0.298	–	***
Race/ethnicity							
Non-Hispanic White ^c	0.706	–	0.716	–	0.643	–	***
Black	0.106	–	0.102	–	0.132	–	**
Hispanic	0.123	–	0.115	–	0.176	–	***
Asian	0.047	–	0.049	–	0.036	–	
Other race	0.017	–	0.018	–	0.014	–	
Immigrant	0.074	–	0.073	–	0.079	–	
Family SES	4.677	0.035	4.751	0.038	4.179	0.099	***
Family structure							
Both biological parents ^c	0.617	–	0.630	–	0.527	–	***
Single parent	0.130	–	0.127	–	0.150	–	†
Stepparent	0.224	–	0.215	–	0.286	–	***
Other arrangement	0.029	–	0.028	–	0.037	–	
Parental supervision							
Parental autonomy	2.894	0.020	2.921	0.021	2.711	0.057	**
Disposition							
Relative pubertal development	0.158	0.015	0.144	0.015	0.252	0.043	**
Marital expectations	2.278	0.014	2.286	0.015	2.226	0.043	
Depression	9.853	0.093	9.435	0.095	12.680	0.306	***
Self-esteem	18.916	0.046	19.014	0.049	18.253	0.137	***
Low self-control	7.046	0.046	6.920	0.047	7.894	0.151	***
Attachment style							
Secure attachment ^c	0.835	–	0.835	–	0.837	–	
Anxious attachment	0.064	–	0.061	–	0.082	–	*
Avoidant attachment	0.106	–	0.109	–	0.084	–	†
Deviant behavior							
Lie to parents	0.709	0.013	0.661	0.013	1.032	0.041	***
Violent perpetration	0.554	0.012	0.419	0.011	1.470	0.043	***
Non-violent delinquency	1.719	0.037	1.446	0.033	3.566	0.170	***
Alcohol use frequency	0.638	0.015	0.583	0.015	1.012	0.058	***
Childhood abuse							

Variables	Mean	(SE)	Non-victims		Victims		Sig. ^a
			Mean	(SE)	Mean	(SE)	
Physical abuse	0.252	–	0.243	–	0.308	–	**
Sexual abuse	0.052	–	0.052	–	0.051	–	
Additional controls ^d							
Urban	0.512	–	0.503	–	0.579	–	***
Region							
West	0.177	–	0.172	–	0.210	–	**
Midwest	0.316	–	0.320	–	0.287	–	
South	0.361	–	0.360	–	0.364	–	
Northeast	0.147	–	0.148	–	0.139	–	
Number of Interviews	2.402	0.011	2.413	0.012	2.322	0.031	**

National Longitudinal Study of Adolescent to Adult Health (Add Health), 1994–2008. Means for dummy variables can be interpreted as the proportion of the sample coded 1 on that indicator; estimates are multiply imputed and weighted

SE standard error (omitted for dummy variables), *SES* socioeconomic status

[†] $p < 0.10$;

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (two-tailed tests)

^a Test for statistically significant difference between means for non-victims and victims

^b Centered at age 15 in the multivariate analyses

^c Serves as the reference category in the multivariate analyses

^d Not displayed in the multivariate tables

Table 3The effect of youth violent victimization on the rate of sexual debut (Cox regression models, $N = 10,570$)

	Model 1		Model 2		Model 3	
	HR	SE	HR	SE	HR	SE
Youth violent victimization	1.253 ^{***}	0.051	1.225 ^{***}	0.051	1.025	0.046
Age ^a	1.039 ^{***}	0.009	1.040 ^{***}	0.010	1.033 ^{***}	0.010
Female	1.101 ^{**}	0.031	1.096 ^{**}	0.032	1.123 ^{***}	0.033
Race/ethnicity ^b						
Black	1.000	0.046	1.031	0.048	1.076	0.049
Hispanic	0.987	0.045	0.986	0.046	0.951	0.044
Asian	0.799 ^{***}	0.051	0.816 ^{**}	0.051	0.800 ^{**}	0.051
Other race	1.067	0.101	1.087	0.102	0.999	0.098
Immigrant	0.899 [†]	0.052	0.914	0.053	0.950	0.056
Family SES	0.980 ^{***}	0.005	0.979 ^{***}	0.005	0.974 ^{***}	0.005
Family structure ^c						
Single parent	1.257 ^{***}	0.052	1.266 ^{***}	0.052	1.251 ^{***}	0.050
Stepparent	1.196 ^{***}	0.040	1.204 ^{***}	0.040	1.184 ^{***}	0.040
Other arrangement	0.935	0.100	0.967	0.103	0.951	0.101
Parental supervision						
Parental autonomy	1.059 ^{***}	0.010	1.054 ^{***}	0.010	1.049 ^{***}	0.011
Disposition						
Relative pubertal development			1.061 ^{***}	0.014	1.040 ^{**}	0.013
Marital expectations			1.047 ^{**}	0.015	1.039 ^{**}	0.014
Depression			1.003	0.002	0.997	0.003
Self-esteem			0.996	0.005	0.997	0.005
Low self-control			1.006	0.005	0.995	0.005
Attachment style ^d						
Anxious attachment			0.893 [†]	0.053	0.916	0.056
Avoidant attachment			0.890 ^{**}	0.039	0.930 [†]	0.039
Deviant behavior						
Lie to parents					1.103 ^{***}	0.020
Violent perpetration					1.098 ^{***}	0.019
Non-violent delinquency					1.005	0.007
Alcohol use frequency					1.138 ^{***}	0.017
Childhood abuse						
Physical abuse	1.016	0.034	1.010	0.034	0.975	0.033
Sexual abuse	1.181 [*]	0.077	1.153 [*]	0.075	1.116	0.076
<i>N</i> of events	8927					

	Model 1		Model 2		Model 3	
	HR	SE	HR	SE	HR	SE
Observations	10,570					

National Longitudinal Study of Adolescent to Adult Health (Add Health), 1994–2008. Estimates are multiply imputed and weighted; all models also include controls for urban, region of residence, and number of interviews

HR hazard ratio = $\exp(b)$, *SE* standard error, *SES* socioeconomic status

[†] $p < 0.10$,

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$ (two-tailed tests)

^a Centered at age 15

^b Non-Hispanic White is the reference

^c Two biological parents is the reference

^d Secure attachment is the reference

Table 4

First interview age differences in the effect of youth violent victimization on the rate of sexual debut (Cox regression models; $N = 10,570$)

	HR	SE
Early adolescence (age 14)	0.872 ^{**a}	0.050
Youth violent victimization Late adolescence (> age 14) Youth violent victimization	1.211 ^{**}	0.075
<i>N</i> of events	8927	
Observations	10,570	

National Longitudinal Study of Adolescent to Adult Health (Add Health), 1994–2008. Estimates are multiply imputed and weighted; models also include all the controls listed in model 3; Table 3

HR hazard ratio = $\exp(b)$, *SE* standard error

[†] $p < 0.10$;

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (two-tailed tests)

^a Difference in the effects of YVV in early adolescence and late adolescence is statistically significant (Wald χ^2 , $F(1, 744,751.4) = 17.55$, $p = 0.0000$)

Table 5

The effect of youth violent victimization on lifetime number of sexual partners (negative binomial regression models; $N = 8927$)

	Model 1		Model 2		Model 3	
	IRR	SE	IRR	SE	IRR	SE
Youth violent victimization	1.122**	0.045	1.093*	0.045	1.004	0.044
Age ^a	0.934***	0.009	0.934***	0.009	1.030**	0.010
Female	0.769***	0.022	0.773***	0.022	0.760***	0.021
Race/ethnicity ^b						
Black	1.056	0.042	1.084*	0.044	1.049 [†]	0.043
Hispanic	0.889*	0.042	0.907*	0.043	0.899*	0.039
Asian	0.775**	0.064	0.793**	0.065	0.852*	0.065
Other race	1.173	0.128	1.183	0.132	1.185	0.127
Immigrant	0.898	0.063	0.922	0.064	0.984	0.062
Family SES	1.015**	0.006	1.013*	0.006	1.019***	0.006
Family structure ^c						
Single parent	1.257***	0.050	1.250***	0.050	1.142**	0.045
Stepparent	1.137***	0.040	1.128**	0.039	1.062 [†]	0.036
Other arrangement	0.995	0.082	1.002	0.081	0.931	0.733
Parental supervision						
Parental autonomy	1.011	0.010	1.005	0.010	0.991	0.009
Disposition						
Relative pubertal development			1.034**	0.013	1.004	0.012
Marital expectations			0.979 [†]	0.013	0.978 [†]	0.012
Depression			0.999	0.002	0.994**	0.002
Self-esteem			1.004	0.005	1.004	0.005
Low self-control			1.027***	0.005	1.016**	0.005
Attachment style ^d						
Anxious attachment			0.876*	0.050	0.900 [†]	0.050
Avoidant attachment			0.926	0.043	0.958	0.041
Deviant behavior						
Lie to parents					1.022	0.017
Violent perpetration					0.999	0.017
Non-violent delinquency					1.014*	0.006
Alcohol use frequency					1.055***	0.013
Age at first sex					0.854***	0.006
Childhood abuse						

	Model 1		Model 2		Model 3	
	IRR	SE	IRR	SE	IRR	SE
Physical abuse	1.092 ^{**}	0.035	1.086 ^{**}	0.034	1.063 [*]	0.032
Sexual abuse	1.372 ^{***}	0.086	1.358 ^{***}	0.087	1.308 ^{***}	0.088

National Longitudinal Study of Adolescent to Adult Health (Add Health), 1994–2008. Estimates are multiply imputed and weighted; all models also include controls for urban, region of residence, and number of interviews

IRR incident rate ratio, *SE* standard error, *SES* socioeconomic status

[†] $p < 0.10$;

^{*} $p < 0.05$;

^{**} $p < 0.01$;

^{***} $p < 0.001$ (two-tailed tests)

^a Centered at age 15

^b Non-Hispanic White is the reference

^c Two biological parents is the reference

^d Secure attachment is the reference

Table 6

The effect of youth violent victimization on past year contraceptive use consistency (repeated measures ordinal logistic regression models; $N = 8247$)

	Model 1		Model 2		Model 3	
	OR	SE	OR	SE	OR	SE
Youth violent victimization	0.890	0.078	0.973	0.087	1.099	0.108
Age ^a	0.960 [†]	0.021	0.957 [*]	0.021	0.949 [*]	0.021
Female	1.033	0.067	1.046	0.071	1.014	0.070
Race/ethnicity ^b						
Black	0.844 [†]	0.078	0.821 [*]	0.079	0.817 [*]	0.080
Hispanic	0.764 ^{**}	0.078	0.768 [*]	0.079	0.782 [*]	0.080
Asian	0.794	0.133	0.819	0.138	0.834	0.141
Other race	0.793	0.151	0.794	0.153	0.807	0.151
Immigrant	0.885	0.122	0.861	0.121	0.836	0.118
Family SES	1.081 ^{***}	0.013	1.078 ^{***}	0.014	1.079 ^{***}	0.014
Family structure ^c						
Single parent	0.908	0.087	0.908	0.087	0.914	0.088
Stepparent	0.864 [†]	0.068	0.871 [†]	0.068	0.879	0.069
Other arrangement	0.820	0.147	0.804	0.144	0.809	0.147
Parental supervision						
Parental autonomy	1.079 ^{**}	0.025	1.077 ^{**}	0.025	1.083 ^{**}	0.025
Disposition						
Relative pubertal development			1.000	0.029	1.007	0.029
Marital expectations			0.941 [†]	0.029	0.943 [†]	0.029
Depression			0.976 ^{***}	0.005	0.978 ^{***}	0.005
Self-esteem			0.980 [†]	0.011	0.980 [†]	0.011
Low self-control			0.965 ^{**}	0.010	0.972 [*]	0.011
Attachment style ^d						
Anxious attachment			1.071	0.134	1.074	0.135
Avoidant attachment			0.892	0.093	0.886	0.092
Deviant behavior						
Lie to parents					1.016	0.038
Violent perpetration					0.932 [†]	0.036
Non-violent delinquency					0.972 [*]	0.012
Alcohol use frequency					0.988	0.030
Childhood abuse						
Physical abuse	0.865 [*]	0.063	0.893	0.066	0.905	0.067
Sexual abuse	0.603 ^{***}	0.075	0.639 ^{***}	0.079	0.659 ^{**}	0.083

National Longitudinal Study of Adolescent to Adult Health (Add Health), 1994–2008. Estimates are multiply imputed and weighted; all models also include controls for urban, region of residence, and number of interviews

OR odds ratio, *SE* standard error, *SES* socioeconomic status

[†] $p < 0.10$;

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (two-tailed tests)

^a Centered at age 15

^b Non-Hispanic White is the reference

^c Two biological parents is the reference

^d Secure attachment is the reference

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