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**THE INFLUENCE OF INTIMATE PARTNER VIOLENCE ON TRAJECTORIES OF
DEPRESSIVE SYMPTOMS FROM ADOLESCENCE TO YOUNG ADULTHOOD**

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Abstract

Using longitudinal survey data from the Toledo Adolescent Relationships Study (TARS), and growth curve analyses, we assessed the influence of intimate partner violence on trajectories of depressive symptoms from adolescence to early adulthood (N = 1, 286) while controlling for time stable (age, gender, race/ethnicity) and time-varying correlates associated with both IPV and depressive symptoms. Results show that IPV exerts a positive effect on depressive symptoms over time after controlling for potential confounding factors. While prior work has theorized that certain populations may be at increased psychological vulnerability from IPV, our results indicate that the influence of IPV on depressive symptoms is similar irrespective of age, gender or minority status. While prior studies have documented that adolescent girls, and women are at increased risk of physical injury due to IPV, our study highlights that with respect to one aspect of psychological well-being (depressive symptoms), IPV exerts similar effects across gender.

THE INFLUENCE OF INTIMATE PARTNER VIOLENCE ON TRAJECTORIES OF DEPRESSIVE SYMPTOMS FROM ADOLESCENCE TO YOUNG ADULTHOOD

Introduction

Intimate partner violence (IPV) is a serious social problem and public health concern that affects millions of women and men in the United States (Tjaden and Thoennes 2000; Straus and Gelles 1990). Prior research has linked IPV victimization to a host of deleterious outcomes including poor mental health (Fergusson, Horwood and Ridder 2005), physical injury (Tjaden and Thoennes 2000; Stets and Straus 1990), and early mortality (Catalano, Smith, Snyder and Rand 2009). While the general association between IPV and depressive symptoms is well established (e.g., Beydoun, Beydoun, Kaufman et al. 2012; Caetano and Cunradi 2003; Callahan, Tolman and Saunders 2003; Coker, Davis, Arias et al. 2002), few investigations have examined whether certain periods of the life course represent particular turning points for violence, or whether experiences of intimate partner violence are uniquely gendered or differ by race in their effects on depressive symptoms.

The transition from adolescence to young adulthood marks a period in the life course in which individuals increasingly are involved in intimate relationships including casual dating, exclusive dating, cohabitation and marriage, with 75% of young people likely to be romantically involved by age 25 (Scott et al. 2011), and consequently at increased risk for intimate partner violence. Using data from the National Longitudinal Study of Adolescent Health (Add Health) Halpern, Spriggs, Martin and Kupper (2009) found that 8% of respondents reported IPV victimization in adolescence and by young adulthood 22% of young men and 27% of young women did so. Similarly, Rhoades and her colleagues (2010) found that almost 36% of their sample of young adults (ages 18-35 years) reported experiencing IPV in the last year, with no

significant gender difference. While romantic relationships occurring during young adulthood, on average, are of longer duration relative to those in adolescence (Furman and Shaffer 2003), a great deal of relationship churning involving breaking up and getting back together characterizes the early adult years (Arnett 2004). Moreover, in a cross-sectional analysis, Halpern-Meekin and colleagues (forthcoming) demonstrated that relationship churning is associated with verbal disagreements and physical violence reflecting the difficulty of navigating conflict during this stage of the life course. Thus, adolescence through early adulthood may represent a volatile period in which young people are relatively inexperienced at appropriately managing relationship conflict, while simultaneously experiencing stressors associated with the transition to adulthood. Our primary goals for the current study were twofold: (1) to examine whether the link between intimate partner violence and depressive symptoms found in cross-sectional studies holds in a more rigorous longitudinal design; and (2) to assess differential vulnerability for depressive symptoms associated with IPV by structural characteristics including age, gender and race/ethnicity. Using longitudinal survey data from the Toledo Adolescent Relationships Study (TARS), and growth curve analyses, we assessed the influence of intimate partner violence on trajectories of depressive symptoms from adolescence to early adulthood while controlling for other known correlates associated with both IPV and depressive symptoms. While studies using shelter samples have identified women as the primary victims of IPV, this represents a severe form of IPV generally referred to as “intimate terrorism,” and is distinguished from “common couple violence” typically found in general social surveys (Johnson 1995; Archer 2000) such as those in the current study. We examine reports of any violence (perpetration and/or victimization) among male and female respondents.

Background

Much of the prior work documenting the link between IPV and depressive symptoms has relied on cross-sectional designs (e.g., Banyard and Cross 2008; O'Campo, Kub, Woods et al. 2006; Holt and Espelage 2005). Such studies have identified potentially confounding factors in the intimate partner violence-depressive symptoms relationship including early coercive parenting, socioeconomic status while growing up and preexisting pathology (Fergusson, Horwood and Ridder 2005). While cross-sectional studies that control for such factors provide a useful starting point for addressing potential issues of selection, reliance on a single point in time hampers these efforts in establishing a causal link between intimate partner violence and depressive symptoms.

Longitudinal survey designs examining the influence of intimate partner violence on depressive symptoms generally include only two time points. These studies have examined whether current intimate partner violence leads to feelings of depression after controlling for prior exposure to IPV, as well as preexisting pathology. For example, drawing on data from the first and third interviews of National Longitudinal Study of Adolescent Health (Add Health), when respondents were aged 11-19 years and 18-26 years respectively, Fletcher (2010) investigated the influence of current and past IPV victimization on current depressive symptoms. While both current and prior IPV were positively related to depressive symptoms, the effects for current IPV surpassed those of prior IPV. Similarly, Bonomi et al. (2006) found stronger effects for recent compared with prior victimization on depressive symptoms. These results suggest that experiences with intimate partner violence may cast lingering effects; yet, it is the current or most recent relationship that most affects current emotional well-being.

While considerable attention has been given to gender differences in rates of IPV prevalence and its associated risk factors, fewer studies have attended to potential gender differences in outcomes associated with IPV (Banyard and Cross 2008). A few recent studies examining outcomes associated with men's victimization experiences can be found in the medical literature (e.g., Reid, Bonomi, Rivara et al. 2008; Mills, Avegno and Haydel 2006). However, within sociology prior work has tended to focus almost exclusively on women's victimization experiences. This implies that attention to men is not warranted, and experiences related to perpetration, including women's own involvement as perpetrators are not relevant (Straus, forthcoming). Yet, Caetano and Cunradi (2003) in a cross-sectional analysis found that female-to-male partner violence exerted a stronger effect on depression among both men and women compared to male-to-female partner violence. They argued that for women greater depressive symptoms may result from violence perpetration not being consistent with gender norms that associate femininity with nurturance.

Additionally, few studies consider the relationship between IPV and depression spanning from adolescence into adulthood. Researchers have tended to examine samples consisting solely of adults or adolescents. Fergusson and colleagues (2005) and Fletcher (2010) examined young adults; a life stage in which the risk of IPV is highest (Halpern et al. 2001; Kaura and Allen 2004). However, their studies did not account for contextual factors associated with the transition from adolescence to adulthood, such as employment, pursuit of post-secondary education and moving out of the parental home, which may also affect psychological well-being (Galambos and Krahn 2008). As such, these factors should be included in empirical analyses. Additionally, young people may enter and exit violent relationships numerous times; thus, there studies should account for these transitions while examining IPV and depressive symptoms.

Finally, many prior studies examining IPV and depressive symptoms have focused on specific at-risk groups, such as adolescent mothers (e.g., Lindhorst and Oxford 2008) or college-based samples (e.g., Amar and Gennaro 2005) that do not reflect the experiences of the general population. In contrast, our work considers the critical and potentially vulnerable period from adolescence to young adulthood examining a diverse sample of young people.

Sociological examinations of mental health emphasize the importance of social and environmental factors. In particular, stress theory emphasizes that individuals' locations in the social structure as reflected in age, gender, and race and access to coping resources produces variations in the experience of acute and chronic stressors (Pearlin 1999; Thoits 2010). Yet, prior work on IPV and depressive symptoms has tended to focus on specific subgroups. The lack of comparative studies has left us with little understanding of how or whether variations by social location in the relationship between IPV and depressive symptoms exist. Consequently, there is a need to investigate whether IPV exerts differential effects across key demographic characteristics.

Vulnerability to the Effects of IPV on Depressive Symptoms by Age

Some scholars have suggested that young people may be more vulnerable to the psychological effects of intimate partner violence during adolescence because they lack relationship experience, rely more on peers for information and support, and desire greater autonomy from parents (Callahan, Tolman and Saunders 2003). Consequently, some teens may not avail themselves of adult sources of support that can direct them to needed resources (Ocampo, Shelley, and Jaycox 2007). Additionally, research has shown that self-esteem and psychological well-being increases with age (Galambos, Barker and Krahn 2006), suggesting that adolescents are still in the process of developing internal coping resources that may help

buffer the effects of a stressor such as IPV on depressive symptoms. As such, we control for self-esteem is controlled in the current investigation.

However, prior work has highlighted that age is associated with the increasing centrality of romantic relationships (Giordano, Longmore, Manning and Flanigan 2012). Additionally, some studies have shown age to be associated positively with exposure to intimate partner violence (Catalano et al. 2009) and to more severe forms of violence (Coker, Smith, McKeown and King 2000). Thus, there is some evidence to suggest that individuals may be more psychologically vulnerable to IPV during young adulthood relative to adolescence.

Vulnerability to the Effects of IPV on Depressive Symptoms by Gender

Studies examining men's mental health outcomes and intimate partner violence are notably lacking. Prior research consistently has demonstrated that women are more vulnerable to physical injury because of IPV (Straus 2008). This evidence coupled with women's disadvantaged location within the social structure makes it understandable that researchers have focused on assessing women's psychological outcomes associated with intimate violence victimization. However, survey evidence has suggested that men are often at the receiving end of IPV and do not always walk away from such encounters psychologically unscathed (Hines and Malley-Morrison 2001). Additionally, Archer's (2000) meta-analysis revealed rates of female perpetration that were higher in younger compared to older samples. Thus, attention to men's as well as women's outcomes is worthy of exploration in our examination of IPV and depressive symptoms in adolescence and young adulthood.

Prior work focused on adolescent populations has drawn on relational theory to argue that adolescent girls compared with boys experience greater psychological vulnerability to IPV (e.g., Callahan, Tolman and Saunders 2003). The underlying premise is that adolescent girls' greater

reliance on relationships for identity formation and need for connection (Miller 1990) will render them more vulnerable to the effects of IPV. This suggests that since boys, relative to girls are socialized to be more independent and less reliant on relationships, IPV should be less detrimental to their sense of well-being. However, prior work examining romantic relationships among adolescents has revealed that adolescent boys report similar levels of intimate engagement as their female counterparts (Giordano, Longmore and Manning 2006). Thus, adolescent boys may not be as immune to psychological distress associated with IPV, particularly during the formative periods of adolescence and early adulthood.

Vulnerability to the Effects of IPV on Depressive Symptoms by Race/Ethnicity

A few studies have examined the influence of intimate partner violence on depressive symptoms among specific racial/ethnic groups (e.g. Wong et al. 2011; Rodriguez et al. 2010). While these represent important contributions, we continue to lack evidence of differential effects of IPV on mental health *across* racial and ethnic groups. Prior work has demonstrated that prevalence rates of IPV are higher among racial and ethnic minorities (Halpern et al. 2009). However, higher rates do not necessarily equate to stronger effects. Numerous studies have documented the association between racial/ethnic minority status and structural disadvantage across educational (Aud, Fox and KewalRemani 2010), occupational (Wickrama, Simons and Baltimore 2012), and health (Wickrama, Merten and Wickrama 2012) domains, as well as exposure to everyday discrimination (Ayalon and Gum 2011). This increased exposure to stressors would suggest compromised access to coping resources (Turner, Finkelkor and Ormrod 2010). Thus, we might expect racial and ethnic minorities to be more vulnerable to the deleterious effects of a given stressor such as IPV.

The Current Study

Considerable work has documented the association between IPV and poor psychological outcomes (e.g., Coker et al. 2002; Caetano and Cunradi 2003; Callahan, Tolman and Saunders 2003). However, much of this work has relied on cross-sectional designs that fail to account for the temporal order of the variables of interest. Consequently, there is difficulty in ascertaining the nature of the relationship between relationship violence and depressive symptoms.

Generally, it is theorized that exposure to violence, particularly victimization, leads to increases in psychological distress including depression, anxiety and PTSD. However, researchers have noted (e.g., Lehrer, Buker, Gortmaker, and Shrier 2006) that it is also plausible that distressed individuals may be more likely to select into abusive relationships.

Using longitudinal data, the current study examined trajectories of depressive symptoms among a diverse group of young people across the life stages of adolescence and young adulthood. Our analytic approach allowed us to assess the influence of IPV on depressive symptoms while controlling for both time-stable characteristics such as age, gender, and race/ethnicity, and a number of time-varying factors that could influence selection into abusive relationships and depressive symptoms. Time-varying factors used in the current analyses include two measures of the quality of intimate ties (coercive parenting, peer support), an index of disadvantage (receipt of public assistance, mother's education, lack of food, neighborhood unemployment), as well as measures reflecting other life course circumstances (education, employment, whether the respondent lived at home).

We hypothesized that consistent with findings from cross-sectional studies, IPV experiences would increase depressive symptoms. Although adolescence is a time of increased vulnerability due to lack of relationship experience, and reduced access to coping resources, the increased centrality of romantic relationships in early adulthood lead us to hypothesize that IPV

would exert stronger effects among young adults compared to adolescents. Additionally, we hypothesized that while IPV would influence depressive symptoms for male and female respondents, the effect for girls/women would be stronger. Finally, we hypothesized that racial/ethnic minorities would be more vulnerable to increased depressive symptoms as a result of IPV due to greater structural disadvantage.

Method

Data

The TARS sample (n = 1,321) was drawn from the year 2000 enrollment records of all youths registered for the seventh, ninth, and eleventh grades in Lucas County, Ohio. The initial sample universe encompassed records elicited from 62 schools across seven school districts. All schools complied with requests for these data, as this information is legally available under Ohio's Freedom of Information Act. The stratified, random sample, devised by the National Opinion Research Center, oversampled Black and Hispanic adolescents. Unlike school-based studies, school attendance was not a requirement for sample inclusion, and we conducted interviews in the respondent's home using preloaded laptops to administer the survey while maintaining privacy. Based on Census data, the socio-demographic characteristics of Lucas County closely paralleled those of the nation in terms of race (13% in Toledo and 12% in the U.S. are Black); education (80% in Toledo and 84% in the U.S. are high school graduates); median income (\$50,046 in Toledo and \$50,287 in the U.S.); and marital status (73.5% in Toledo and 75.9% in the U.S. are married couple families).

An asset of the Toledo Adolescent Relationships Study (TARS) is the longitudinal design. We drew on interviews 1 through 4 (2001, 2002/2003, 2004/2005, 2006/2007) to assess changes in depressive symptoms over this period. The analytic sample at each interview used in

the growth curve analyses was limited to respondents who reported their race/ethnicity as White, Black or Hispanic and were not missing on the dependent variable (the sample size ranges from 1,054 to 1,122 respondents across the four interviews, with a total of 1,286 subjects and 4,383 person-period observations used in the analyses). Respondents' ages ranged from 12 to 19 years of age at interview 1 collected in 2001, to 17 to 24 years of age at interview 4 collected in 2006. Respondents aged 12 and 24 were excluded due to the small number of respondents in those age groups. Thus, the data reflected a 6-year accelerated longitudinal design across four periods with three overlapping cohorts, allowing for the study of developmental patterns across the ages of 13 to 23 years of age.

An advantage of our analytic strategy is that it allowed us to include even those respondents with some missing data. We conducted t-tests comparing depression scores at interview 1 between those missing at any interview to those who participated. We detected no significant differences. Additionally, we examined the correlations between the number of times of participation, with age, gender and race/ethnicity. We found two significant correlations suggesting that those with higher participation rates were slightly younger in age and less likely to be Black. Neither gender, nor Hispanic ethnicity was significantly correlated with participation.

Measures

The dependent variable for the analysis was *depressive symptoms* as measured across interviews 1 through 4. The measure was a seven-item version of the Center for Epidemiological Studies' depressive symptoms scale (CES-D). This measure asked respondents at each interview how often each of the following statements was true during the past seven days: (1) "you felt you just couldn't get going;" (2) "you felt that you could not shake off the blues;" (3) "you had

trouble keeping your mind on what you were doing;” (4) “you felt lonely;” (5) “you felt sad;” (6) “you had trouble getting to sleep or staying asleep;” and (7) “you felt that everything was an effort.” Response categories ranged from 1 for never to 8 for every day with higher scores indicating greater frequency of occurrence. We calculated the scale score as the mean of the items, with alpha reliability scores that ranged from .83 to .84.

Within-Subject Predictors

Our primary independent variable was *Intimate Partner Violence (IPV)* using items from the Conflict Tactics Scale (Straus and Gelles 1990) assessed at interviews 1 through 4. We asked respondents how often their current or most recent partner had done the following: “thrown something at you;” “pushed, shoved or grabbed you;” “slapped you in the face or head with an open hand;” and “hit you.” Additionally, we asked how often respondents had committed these acts against their current or most recent partner. We coded reports of any violence (victimization or perpetration) as 1 and 0 if no violence was reported. Alpha reliability scores ranged from .89 to .92.

We measured IPV and depressive symptoms concurrently, rather than using a lagged measure of IPV. However, with IPV assessed for any time within the current or most recent relationship, and the reference period for depressive symptoms being the previous week, it seemed logical to infer that IPV likely occurred prior to the experience of depressive symptoms, thereby establishing the time order of the variables of interest. Additionally, it is possible that some respondents reported IPV at later interviews that actually occurred in previous interviews if they were with the same partner. However, only a small portion of our sample reported having the same partner at two or three interviews ($n = 82$). No respondents reported the same partner at all four interviews. Supplemental analyses (available on request) that eliminated these

respondents yielded results that were substantively the same as those presented in the current study.

Self-esteem was assessed at each wave by taking the mean of Rosenberg's six-item self-esteem scale (Rosenberg, Schooler, Schoenbach, and Rosenberg 1995). Respondents were asked how much they agreed or disagreed with the following items: (1) "I am able to do things as well as other people," (2) "I feel that I have a number of good qualities," (3) "I feel I do not have much to be proud of" (reverse coded), (4) "At times I think I am no good at all" (reverse coded), (5) "I feel that I am a person of worth, at least on an equal basis with others," and (6) "I take a positive attitude toward myself." Responses ranged from 1 for strongly disagree to 5 for strongly agree. Alpha reliability scores ranged from .71 to .77.

Coercive parenting was a three-item mean scale measured at all four interviews. We asked respondents: "When you and your parents disagree about things, how often do they do the following?" (1) "call you names or insult you;" (2) "push, slap, or hit you;" and (3) "yell at you?" Responses ranged from 1 for never to 6 for two or more times a week. Alpha reliability scores ranged from .66 to .72.

Peer support was a three-item mean measured at all four interviews. We asked respondents: "How much do you agree or disagree with the following things about your friends?" Items were (1) "I can tell them private things and know they won't tell other people;" (2) "They care about me;" and (3) "My friends make me feel good about myself." Responses ranged from 1 for strongly disagree to 5 for strongly agree. Alpha reliability scores ranged from .70 to .81.

Disadvantage was measured at wave 1 with four items from the parent survey. Items refer to parents who reported less than twelve years of education, receiving government

assistance for needy families (e.g., TANF, food stamps, or a housing subsidy), not having enough money to make a meal in the past 12 months, and unemployment as a “problem” in their neighborhood. The content of these items is consistent with previous work that suggests measuring socioeconomic status with educational, economic, and neighborhood indicators (Krieger, Williams, and Moss, 1997). These items were summed into an index of disadvantage with scores that ranged from 0 to 4.

Not in school, employment, and live away from home were each dichotomous variables assessed at each interview indicating whether the respondent was pursuing post-secondary education, was actively employed and has moved out of the parental home, respectively. Given that these factors were likely to be most meaningful for young adults, we constrained the effects of these variables to equal 0 until age 18.

Between-Subject Predictors

Gender was a dummy-coded variable with male respondents as the reference category. *Race and ethnicity* was composed of White non-Hispanic, Black non-Hispanic, and Hispanic. We created dichotomous variables for each race/ethnic category, with White used as the reference category.

Analytic Strategy

Our primary interest was to assess the influence of intimate partner violence on trajectories of depressive symptoms. To accomplish this we employed a linear mixed effects model. According to Raudenbush and Chan (1992) this allows specification of the shape of the mean and individual change functions, while taking into account time-invariant as well as time-varying covariates. We describe examples of the level-1 and level-2 models from the current analyses below.

Level-1 Model

We began the level-1 model with a simple linear model that demonstrated an increase in depressive symptoms as respondents were aging:

$$Y_{it} = \pi_{0i} + \pi_{1i} (\text{Age} - 13)_{it} + e_{it},$$

where Y_{it} is the score for depressive symptoms for subject i at time t , $i = 1, 1,286$;

$(\text{Age} - 13)_{it}$ is the age of subject i at time t minus 13 so that $(\text{Age} - 13)_{it}$ is 0, 1, ..., 11, or ages 13, 14, ..., 23, respectively, corresponding to times $t = 1, 2$ or 3; π_{0i} is the intercept of subject i , so that, given the coding of $(\text{Age} - 13)$, π_{0i} is the expected outcome of subject i at age 13; e_{it} is the random within-subject error of prediction for subject i at time t , conditional on the subject's change parameters π_{0i} and π_{1i} . These within-subject errors are assumed mutually independent and normally distributed with mean of zero.

Level-2 Model

While the level-1 model addressed the question of whether depressive symptoms vary across individuals over time, the level-2 model addressed how IPV and the other covariates influenced individual trajectories. Below is an example of the level-2 model in which IPV is added to the equation:

$$Y_{it} = \beta_{00} + \beta_{10} (\text{Age} - 13)_{it} + \beta_{01} \text{IPV}_i + \varepsilon_{it},$$

Where β_{00} is the grand mean depressive symptoms score for those not reporting IPV at age 13; $\beta_{10} (\text{Age} - 13)_{it}$ is the increase in depressive symptoms over time for all respondents; $\beta_{01} \text{IPV}_i$ is the effect for IPV on depressive symptoms at any given age; and ε_{it} is the composite error term.

Due to the presence of serial correlation and heteroscedasticity in the error terms, estimation using ordinary least squares regression was inappropriate. Specifically, modeling the

above using OLS would result in inefficient standard error estimates, and given the unbalanced nature of the data, would likely yield biased estimates for the fixed effects as well (Singer and Willett 2003). Thus, we choose to estimate the linear mixed-effects model using maximum likelihood estimation.

In the models presented below, the intercept and age are presented as random. At each interview we used single year of age as the measure of time, which is modeled linearly. We investigated the possibility of a curvilinear relationship between age and depressive symptoms; however, including a quadratic term indicated that age has a linear influence on depressive symptoms.

Results

Descriptive Results

Table 1 provides the distributions of depressive symptoms by age for the full sample, followed by gender and then race/ethnicity. Depressive symptoms increased with age for both male respondents and female respondents. Consistent with prior research, scores for depressive symptoms were higher among female respondents. Scores for depressive symptoms among White and Hispanic respondents appeared to be similar, while depressive symptoms among Black respondents appeared to start lower and increase over time.

Figure 1 illustrates that experiences with intimate partner violence demonstrated considerable fluidity over time. Few respondents reported perpetrating violence (0.5% of male respondents and 1.5% of female respondents) or being victimized (2.4% of male respondents and 0.8% of female respondents) at all four interviews. Rather, it was more common for those who ever experienced intimate partner violence to report violence in only one relationship, suggesting the utility of considering potential changes in the relationship context and for using a time-

varying measure of partner violence when considering its long-term influence on depressive symptoms.

Multi-Level Models

We began by estimating an unconditional means model with no predictors, which demonstrated that approximately 43% of the variation in depressive symptoms is within individuals ($\beta = 0.092$ $p < .001$), and 57% of the variation is between individuals ($\beta = 0.123$ $p < .001$). Model 1 in Table 2 shows the results for the unconditional growth model in which all variance components were significant. The intercept is the initial level of depressive symptoms at age 13, while the effect of time represents the increase in depressive symptoms for each additional year in age. The effect of change in depressive symptoms was not quite significant ($p = .06$), suggesting that depressive symptoms remained largely stable over time.

Yet this portrait became slightly more complicated in model 2 once we added our between-subject predictors. Adding gender and race/ethnicity, as well as their interactions with age, improved the model fit ($\chi^2 = 26.11$, $p < .001$). In model 2, the intercept represents the initial level of depressive symptoms for White male respondents at age 13. The main effect for female was significant demonstrating that female compared with male respondents, on average, reported higher initial levels of depressive symptoms. However, there was no gender difference in the rate of change over time. Black and Hispanic respondents did not differ significantly from White respondents with respect to initial depressive symptoms. However, Black compared with White respondents demonstrated an increase in depressive symptoms by age. These between subject findings remained significant in our subsequent models.

In Model 3, we added the IPV measure and its interaction with age. The inclusion of IPV resulted in an improvement in model fit ($\chi^2 = 32.11$, $p < .001$). Those who reported IPV at any

given point in time experienced higher rates of depressive symptoms compared to those with no IPV. However, the interaction between IPV and age was not significant. Hence, the effect of IPV on depressive symptoms was largely the same regardless of the respondent's age at the time relationship violence occurred.

In Model 4, we added our additional time-varying predictors of self-esteem, coercive parenting, peer support, receipt of public assistance, not in school, employment, and living away from home. Inclusion of these variables significantly improved model fit ($\chi^2 = 247.50$, $p < .001$). Self-esteem, peer support, being employed, and living away from the parental home were negatively related to depressive symptoms, while coercive parenting, receipt of public assistance, and not attending school were positively related to depressive symptoms. While the effect was reduced by 28%, IPV remained positively and significantly associated with depressive symptoms net of these other correlates. Finally, the effect for age was positive after controlling for contextual factors reflecting an increase in depressive symptoms as respondents transition from adolescence to adulthood.

Additional results (available on request) for models examining potential interactions of IPV with gender, and IPV with race/ethnicity failed to yield significant results. Thus, IPV demonstrated a similar deleterious effect on depressive symptoms for both male and female respondents. Similarly, White, Black and Hispanic respondents appeared to be comparably susceptible to IPV-related depressive symptoms. Additional models (available on request) assessed the influence of IPV perpetration and victimization separately. Results from these models were substantively the same as those presented in Tables 2 and 3.

Discussion

This paper provided an analysis of the association between intimate partner violence and depressive symptoms among a contemporary cohort of adolescents and young adults. Our findings provide considerable support for prior work arguing that intimate partner violence produces psychological harm in the form of increases in depressive symptoms. Using longitudinal data and a diverse sample, we found that consistent with our hypothesis, IPV exerted a positive effect on depressive symptoms over time after controlling for potential confounding factors. These included factors that were not only associated with selection processes, but could also operate as additional sources of stress. Contrary to our hypothesis that IPV exerted a stronger effect in early adulthood when romantic relationships have greater meaning, our results showed that IPV exerted a similar effect regardless of whether it was experienced as an adolescent or a young adult. Consistent with our expectations, we found that IPV exerted a positive effect on depressive symptoms among adolescent boys and young men, as well as for adolescent girls and young women. However, contrary to our hypotheses, the effect of IPV on depressive symptoms was not stronger for female respondents relative to their male counterparts. These findings are important, as they document that young men are not immune to negative psychological effects associated with IPV, even though, as prior research has demonstrated, young women are more vulnerable in terms of odds of physical injuries (Whitaker, Haileyesus, Swahn and Saltzman 2007). Supplementary analyses assessing the effect of IPV by race/ethnicity also failed to yield a significant interaction. Thus, intimate partner violence demonstrated a positive influence on depressive symptoms irrespective of age, gender, or race/ethnicity. Our findings highlight the need for IPV interventions to be inclusive.

These results were consistent with a stress proliferation perspective, which posits that individual stressors are not likely to differentially influence psychological well-being in and of

themselves (Turner, Wheaton and Lloyd 1995). Rather, differences based on structural characteristics are likely to be a function of cumulative stress. While the transition to adulthood has been shown to be associated with improvements in psychological well-being (Galambos, Barker and Krahn 2006), additional research has shown such improvements are conditional. Wickrama et al. (2008), for example, found that adversity in adolescence was associated with early transitions into adulthood, which subsequently predicted increases in depressive symptoms. Similarly, our own findings indicated that while IPV exerted similar effects on depressive symptoms across race, increases in the growth parameter were higher for Black relative to White respondents. Future research should focus on how IPV differentially affects depressive symptoms within the context of additional stressors including both chronic and acute stressors. While the current analyses did allow for changes in trajectories of depressive symptoms based on partner changes, it did not account for cumulative IPV experiences. This, too, represents an avenue for future exploration.

While the current study represented an improvement over prior work by using a longitudinal design, and a time-varying measure of IPV, some additional limitations remain. The current data did not allow assessment of the severity of intimate partner violence and more importantly, injuries sustained as a result. As noted by several scholars, while female respondents may engage in relationship violence as frequently or more frequently than their male counterparts, they are more likely to be injured (Archer 2000). It is possible that sustaining physical injury because of IPV could moderate the effect of IPV on depressive symptoms. Additionally, the current study only assessed a single dimension of psychological well-being, namely depressive symptoms. Differences by age, gender or race/ethnicity may exist between intimate partner

violence and other dimensions of psychological well-being such as anxiety, PTSD and major depressive disorder.

Few respondents reported being continually involved in intimate partner violence across relationships. Rather, a more common pattern is for violence to be present in one or two relationships. Nevertheless intimate partner violence appears to leave an indelible mark on the psychological well-being of young adults. Identity construction is a key developmental task over the course of adolescence, and is instrumental in facilitating the transition to adulthood (Schwartz, Côté, and Arnett 2005). Psychological distress, including depressed mood, may undermine self-confidence and self-efficacy (Bandura 1989), thus compromising young people's ability to comfortably navigate the transition to adult identities and roles. Consequently, the costs of intimate partner violence may be long term, and have additional implications for individuals' choices associated with family formation and stability, as well as economic and educational attainment.

References

- Amar, Angela F. and Susan Gennaro. 2005. "Dating Violence in College Women: Associated Physical Injury, Healthcare Usage, and Mental Health Symptoms." *Nursing Research* 54:235-242.
- Archer, John. 2000. "Sex Differences in Aggression between Heterosexual Partners: A Meta-Analytic Review." *Psychological Bulletin* 126:651-680.
- Arnett, Jeffrey J. 2004. *Emerging Adulthood: The Winding Road from the Late Teens Through the Twenties*. New York, NY: Oxford University Press.
- Aud, Susan, MaryAnn Fox, and Angelina KewalRamani. 2010. *Status and Trends in the Education of Racial and Ethnic Groups* (NCES 2010-015). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.
- Avison, William R., Jennifer Ali, and David Walters. 2007. "Family Structure, Stress, and Psychological Distress: A Demonstration of the Impact of Differential Exposure." *Journal of Health and Social Behavior* 48:301-317.
- Ayalon, Liat, and Amber M. Gum. 2011. "The Relationship between Major Lifetime Discrimination, Everyday Discrimination, and Mental Health in Three Racial and Ethnic Groups of Older Adults." *Aging and Mental Health* 15:587-594.
- Bandura, Albert. 1989. "Human Agency in Social Cognitive Theory." *American Psychologist* 44:1175-1184.
- Banyard, Victoria L. and Charlotte Cross. 2008. "Consequences of Teen Dating Violence: Understanding Intervening Variables in Ecological Context." *Violence Against Women* 14:998-1013.

- Beydoun, Hind A., May A. Beydoun, Jay S. Kaufman, Bruce Lo, and Alan B. Zonderman. 2012. "Intimate Partner Violence against Adult Women and its Association with Major Depressive Disorder, Depressive Symptoms and Postpartum Depression: A Systematic Review and Meta-Analysis." *Social Science & Medicine*, 75, 959-975.
- Bonomi, Amy E., Robert S. Thompson, Melissa Anderson, Robert J. Reid, David Carrell, Jane A. Dimer, and Frederick P. Rivara. 2006. "Intimate Partner Violence and Women's Physical, Mental and Social Functioning." *American Journal of Preventive Medicine* 30:458-466.
- Caetano, Raul and Carol Cunradi. 2003. "Intimate Partner Violence and Depression among Whites, Blacks and Hispanics." *Annals of Epidemiology* 13:661-665.
- Callahan, Michelle R., Richard M. Tolman, and Daniel G. Saunders. 2003. "Adolescent Dating Violence Victimization and Psychological Well-Being." *Journal of Adolescent Research* 18:664-681.
- Catalano, Shannon, Erica Smith, Howard Snyder, and Michael Rand. 2009. *Female Victims of Violence*. Washington, DC: U.S. Department of Justice.
- Coker, Ann L., Keith E. Davis, Ileana Arias, Sujata Desai, Maureen Sanderson, Heather M. Brandt, and Paige H. Smith. 2002. "Physical and Mental Health Effects of Intimate Partner Violence for Men and Women." *American Journal of Preventive Medicine* 23:260-268.
- Coker, Ann L., Paige Hall Smith, Robert E. McKeown, and Melissa J. King. 2000. "Frequency and Correlates of Intimate Partner Violence by Type: Physical, Sexual, and Psychological Battering." *American Journal of Public Health* 90:553-559.

- Fergusson, David M., L. John Horwood, and Elizabeth M. Ridder. 2005. "Partner Violence and Mental Health Outcomes in a New Zealand Birth Cohort." *Journal of Marriage and Family* 67:1103-1119.
- Fletcher, Jason. 2010. "The Effects of Intimate Partner Violence on Health in Young Adulthood in the United States." *Social Science and Medicine* 70:130-135.
- Frias, Sonia M. and Ronald J. Angel. 2007. "Stability and Change in the Experience of Partner Violence among Low-Income Women." *Social Science Quarterly* 88:1281-1306.
- Furman, Wyndol and Laura Shaffer. 2003. "The Role of Romantic Relationships in Adolescent Development." Pp. 3-22 in *Adolescent Romantic Relations and Sexual Behavior: Theory, Research, and Practical Implications*, edited by P. Florsheim. Mahwah, NJ: Erlbaum.
- Galambos, Nancy L. and Harvey J. Krahn. 2008. "Depression and Anger Trajectories During the Transition to Adulthood." *Journal of Marriage and Family* 70:15-27.
- Galambos, Nancy L., Erin T. Barker, and Harvey J. Krahn. 2006. "Depression, Self-Esteem, and Anger in Emerging Adulthood: Seven-Year Trajectories." *Developmental Psychology* 42:350-365.
- Giordano, Peggy C., Monica A. Longmore, and Wendy D. Manning. 2006. "Gender and the Meanings of Adolescent Romantic Relationships: A Focus on Boys." *American Sociological Review* 71:260-287.
- Giordano, Peggy C., Wendy D. Manning, Monica A. Longmore, and Christine M. Flanigan. 2012. "Developmental Shifts in the Character of Romantic and Sexual Relationships from Adolescence to Young Adulthood." Pp. 133-164 in *Early Adulthood in a Family Context* edited by A. Booth, S.L. Brown and N.S. Landale. New York: Springer.

- Halpern, Carolyn Tucker, Selene G. Oslak, Mary L. Young, Sandra L. Martin, and Lawrence L. Kupper. 2001. "Partner Violence Among Adolescents in Opposite-Sex Romantic Relationships: Findings From the National Longitudinal Study of Adolescent Health." *American Journal of Public Health* 45:1679-1685.
- Halpern, Carolyn Tucker, Aubrey L. Spriggs, Sandra L. Martin, and Lawrence L. Kupper. 2009. "Patterns of Intimate Partner Violence Victimization from Adolescence to Young Adulthood in a Nationally Representative Sample." *Journal of Adolescent Health* 45:508-516.
- Halpern-Meehin, Sarah C., Wendy D. Manning, Peggy C. Giordano, and Monica A. Longmore. Forthcoming. "Relationship Churning, Physical Violence, and Verbal Abuse in Young Adult Relationships." *Journal of Marriage and Family*.
- Hammen, Constance, Eunice Y. Kim, Nicole K. Eberhart, and Patricia A. Brennan. 2009. "Chronic and Acute Stress and the Prediction of Major Depression in Women." *Depression and Anxiety* 26:718-723.
- Hill, Terence D., Lauren M. Kaplan, Michael T. French, and Robert J. Johnson. 2010. "Victimization in Early Life and Mental Health in Adulthood: An Examination of the Mediating and Moderating Influences of Psychosocial Resources." *Journal of Health and Social Behavior* 51:48-63.
- Hines, Denise A. and Kathleen Malley-Morrison. 2001. "Psychological Effects of Partner Abuse against Men: A Neglected Research Area." *Psychology of Men and Masculinity* 2:75-85.

- Holt, Melissa K. and Dorothy L. Espelage. 2005. "Social Support as a Moderator between Dating Violence Victimization and Depression/Anxiety among African American and Caucasian Adolescents." *School Psychology Review* 34:309-328.
- Johnson, Michael P. 1995. "Patriarchal Terrorism and Common Couple Violence: Two Forms of Violence against Women." *Journal of Marriage and Family* 57:283-294.
- Kaura, Shelby A. and Craig M. Allen. 2004. "Dissatisfaction with Relationship Power and Dating Violence Perpetration by Men and Women." *Journal of Interpersonal Violence*, 19: 576-588.
- Lehrer, Jocelyn A., Stephen Buka, Steven Gortmaker, and Lydia A. Shrier. 2006. "Depressive Symptomatology as a Predictor of Exposure to Intimate Partner Violence among U.S. Female Adolescents and Young Adults." *Archives of Pediatrics and Adolescent Medicine* 160:270-276.
- Lindhorst, Taryn and Monica Oxford. 2008. "The Long-Term Effects of Intimate Partner Violence on Adolescent Mothers' Depressive Symptoms." *Social Science and Medicine* 66:1322-1333.
- Marmot, Michael, Carol D. Ryff, Larry L. Bumpass, Martin Shipley, and Nadine F. Marks. 1997. "Social Inequalities in Health: Next Questions and Converging Evidence." *Social Science and Medicine* 44:901-910.
- Miller, Jean B. 1990. *Connections, Disconnections, and Violations*. Work in Progress No. 33. Wellesley, MA: Stone Center, Working Paper Series.
- Mills, Trevor J., Jennifer L. Avegno, and Michelle J. Haydel. 2005. "Male Victims of Partner Violence: Prevalence and Accuracy of Screening Tools." *The Journal of Emergency Medicine*, 31, 447-452.

- O'Campo, Patricia, Joan Kub, Anne Woods, Mary Garza, Alison Snow Jones, Andrea C. Gielen, Jacqueline Dienemann, and Jacquelyn Campbell. 2006. "Depression, PTSD, and Comorbidity Related to Intimate Partner Violence in Civilian and Military Women." *Brief Treatment and Crisis Intervention* 6:99-110.
- Ocampo, Beverly W., Gene A. Shelley, and Lisa H. Jaycox. 2007. "Latino Teens Talk about Help Seeking and Help Giving in Relation to Dating Violence." *Violence Against Women* 13:172-189.
- Pearlin, Leonard I. 1999. "Stress and Mental Health: A Conceptual Overview." Pp. 161-175 in *A Handbook for the Study of Mental Health: Social Contexts, Theories, and Systems*, edited by A.V. Horwitz and Teresa L. Scheid. New York, NY: Cambridge University Press.
- Raudenbush, Stephen W. and Wing-Shing Chan. 1992. "Growth Curve Analysis in Accelerated Longitudinal Designs." *Journal of Research in Crime and Delinquency* 29:387-411.
- Reid, Robert J., Amy E. Bonomi, Frederick P. Rivara, Melissa L. Anderson, Paul A. Fishman, David S. Carrell and Robert S. Thompson. 2008. "Intimate Partner Violence Among Men: Prevalence, Chronicity, and Health Effects." *American Journal of Preventive Medicine*, 34, 478-485.
- Rhoades, Galena K., Scott M. Stanley, Gretchen Kelmer, and Howard J. Markman. 2010. "Physical Aggression in Unmarried Relationships: The Roles of Commitment and Constraints." *Journal of Family Psychology* 24:678-687.
- Rodríguez, Michael A., Jeanette Valentine, Sawssan R. Ahmed, David P. Eisenman, Lekeisha A. Sumner, MarySue V. Heilemann, and Honghu Liu. 2010. "Intimate Partner Violence and

- Maternal Depression during the Perinatal Period: A Longitudinal Investigation of Latinas.”
Violence Against Women 16:543-559.
- Rosenberg, Morris, Carmi Schooler, Carrie Schoenbach, and Florence Rosenberg. 1995.
“Global Self-Esteem and Specific Self-Esteem: Different Concepts, Different Outcomes.”
American Sociological Review 60:141-156.
- Schwartz, Seth J., James E. Côte, and Jeffrey Jensen Arnett. 2005. “Identity and Agency in
Emerging Adulthood: Two Developmental Routes in the Individualization Process.” *Youth
and Society* 37:201-229.
- Scott, Mindy E., Nicole R. Steward-Streng, Jennifer Manlove, Erin Schelar, and Carol Cui.
2011. *Characteristics of Young Adult Sexual Relationships: Diverse, Sometimes Violent,
and Often Loving*. Washington, DC: Child Trends.
- Singer, Judith D. and John B. Willett. 2003. *Applied Longitudinal Data Analysis: Modeling
Change and Event Occurrence*. New York: Oxford University Press.
- Stets, Jan E. and Murray A. Straus. 1990. “Gender Differences in Reporting Marital Violence
and Its Medical and Psychological Consequence.” Pp. 151-166 in *Physical violence in
American families: Risk factors and adaptations to violence in 8,145 families*, edited by
M.A. Straus and R.J. Gelles. New Brunswick, NJ: Transaction.
- Straus, Murray A. 2008. “Dominance and Symmetry in Partner Violence by Male and Female
University Students in 32 Nations.” *Children and Youth Services Review* 30:252-275.
- Straus, Murray A. Forthcoming. “Blaming the Messenger for the Bad News about Partner
Violence by Women: The Methodological, Theoretical, and Value Basis of the Purported
Invalidity of the Conflict Tactics Scales.” *Behavioral Sciences & the Law*.

- Straus, Murray A. and Richard J. Gelles. 1990. *Physical Violence in American Families: Risk Factors and Adaptations to Violence in 8,145 Families*. New Brunswick, NJ: Transaction Publishers.
- Thoits, Peggy A. 2010. "Stress and Health: Major Findings and Policy Implications." *Journal of Health and Social Behavior* 51:S41-S53.
- Tjaden, Patricia and Thoennes, Nancy. 2000. "Prevalence and Consequences of Male-to-Female and Female-to-Male Intimate Partner Violence as Measured by the National Violence Against Women Survey." *Violence Against Women* 6:142-161.
- Turner, Heather A., David Finkelhor, and Richard Ormrod. 2010. "The Effects of Adolescent Victimization on Self-Concept and Depressive Symptoms." *Child Maltreatment* 15:76-90.
- Turner, R. Jay, Blair Wheaton, and Donald A. Lloyd. 1995. "The Epidemiology of Social Stress." *American Sociological Review* 60:104-125.
- Whitaker, Daniel J., Tadesse Haileyesus, Monica Swahn and Linda S. Saltzman. 2007. "Differences in Frequency of Violence and Reported Injury Between Relationships With Reciprocal and Nonreciprocal Intimate Partner Violence." *American Journal of Public Health* 97: 941-947.
- Wickrama, K.A.S., Rand D. Conger, Frederick O. Lorenz, and Tony Jung. 2008. "Family Antecedents and Consequences of Trajectories of Depressive Symptoms from Adolescence to Young Adulthood: A Life Course Investigation." *Journal of Health and Social Behavior* 49:468-483.
- Wickrama, K.A.S., Leslie Gordon Simons, and Diana Baltimore. 2012. "The Influence of Ethnicity and Adverse Life Experiences During Adolescence on Young Adult Socioeconomic Attainment: The Moderating Role of Education." *Journal of Youth and Adolescence*. DOI 10.1007/s10964-012-9764-9.

Wickrama, Thulitha, Michael J. Merten, and K.A.S. Wickrama. 2012. "Early Community Influence on Young Adult Physical Health: Race/Ethnicity and Gender Differences." *Advances in Life Course Research* 17:25-33.

Wong, Frank Y., Julia DiGangi, Darwin Young, Z. Jennifer Huang, Brian D. Smith, and Don John. 2011. "Intimate Partner Violence, Depression, and Alcohol Use among a Sample of Foreign-Born Southeast Asian Women in an Urban Setting in the United States." *Journal of Interpersonal Violence* 26:211-229.

Table 1. Distribution of Depressive Symptoms by Age and Gender

	13	14	15	16	17	18	19	20	21	22	23
Total	0.70	0.71	0.75	0.80	0.77	0.78	0.78	0.76	0.78	0.76	0.80
Male	0.68	0.63	0.68	0.73	0.71	0.74	0.76	0.72	0.76	0.79	0.74
Female	0.73	0.80	0.82	0.86	0.82	0.81	0.81	0.79	0.80	0.73	0.87
White	0.70	0.73	0.73	0.81	0.76	0.76	0.77	0.72	0.72	0.73	0.74
Black	0.68	0.66	0.81	0.78	0.80	0.82	0.82	0.86	0.85	0.89	0.89
Hispanic	0.81	0.74	0.71	0.80	0.77	0.83	0.76	0.73	0.92	0.70	0.85
Total N	291	344	441	567	569	753	373	470	224	251	101
Male N	138	172	222	281	267	360	192	217	107	107	54
Female N	153	172	219	286	302	393	181	253	117	144	47
White N	203	214	270	363	364	493	229	316	132	173	58
Black N	61	93	110	141	141	175	102	106	58	52	33
Hispanic N	27	37	61	63	64	85	42	48	34	26	10

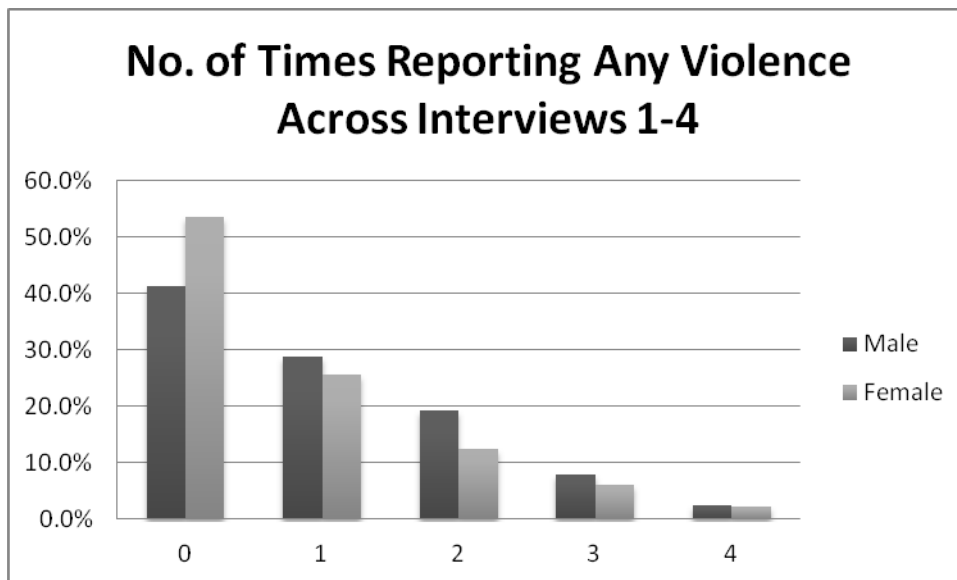


Figure 1

Table 2. Maximum Likelihood Coefficient Estimates for Linear Mixed Effects Models of the Log of Depressive Symptoms (W1-W4)

Predictor	Model 1		Model 2		Model 3		Model 4	
	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>
Intercept	0.742***	0.015	0.682***	0.024	0.664***	0.025	1.057***	0.063
Female			0.128***	0.030	0.136***	0.030	0.108***	0.027
Black			-0.027	0.035	-0.037	0.035	-0.048	0.032
Hispanic			0.008	0.048	0.008	0.048	-0.004	0.044
IPV					0.125***	0.031	0.090**	0.030
Time (Age)	0.005	0.003	0.003	0.004	0.001	0.005	0.015**	0.005
Female			-0.008	0.005	-0.008	0.005	-0.004	0.005
Black			0.019**	0.006	0.019**	0.006	0.014*	0.006
Hispanic			0.006	0.009	0.004	0.009	-0.001	0.008
IPV					-0.004	0.006	-0.003	0.005
Self-esteem							-0.156***	0.011
Coercive Parenting							0.107***	0.007
Peer Support							-0.006	0.011
Disadvantage							0.037*	0.015
Not in School							0.056***	0.016
Employed							-0.051**	0.016
Live Away from Home							-0.045*	0.019
AIC	4833.00		4805.40		4757.10		4233.70	
BIC	4863.90		4867.30		4829.30		4342.10	
Chi-Square	870.53***		26.11***		32.11***		247.50***	
<i>df</i>	3		6		2		7	
Comparison Model	UnMs		Model 1		Model 2		Model 3	

Source: Toledo Adolescent Relationships Study

* $p < .05$. ** $p < .01$. *** $p < .001$.

Note: Age is centered at 13 years.