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# **FINAL REPORT**

## **Bullying, Sexual, and Dating Violence Trajectories From Early to Late Adolescence**

**April 21, 2014**

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## Abstract

Youth aggression and bullying, sexual harassment and dating violence are widespread public health concerns that create negative consequences for victims. The present study included a longitudinal examination of the impact of family abuse and conflict, self-reported delinquency, and peer delinquency on the development of bullying perpetration, sexual harassment perpetration, and teen dating violence perpetration among a large sample of early adolescents. While a few studies have examined the co-occurrence of bullying, sexual harassment, and/or dating violence among high school students, there are no studies to date to simultaneously consider all three forms of violence using a comprehensive, developmentally-sensitive design. Quantitative self-report survey data were collected from 1162 high school students who were part of the University of Illinois Study of Bullying and Sexual Violence Study funded by the Centers for Disease Control (1U49CE001268-01; 2007-2010). Participants included in the results presented here were from four Midwestern middle schools (grades 5 – 7; three cohorts) who were followed into three high schools; 49% female; 58% African American, and 26% White. At Wave 1, students ranged in age from 10 to 15 years of age ( $M = 11.81$ ;  $SD = 1.09$ ). Sixty-percent of the sample was eligible for free/reduced lunch. Participants were in middle school (waves 1 - 4) during the initial Bullying and Sexual Violence Study. At waves 6 and 7, youth were in high school; and sexual harassment and teen dating violence measures were added to the survey packet.

Boys reported more bully perpetration during middle school, whereas girls reported more family conflict and sibling aggression than boys. In high school, sexual harassment perpetration was higher for boys than girls. Verbal emotional abuse and physical teen dating violence perpetration was higher for girls than boys, but boys reported greater levels of sexual teen dating violence perpetration in high school. Boys reported a greater mean scale score than girls on self-reported sexual harassment perpetration during middle school. In high school, 68% of girls reported having at least one sexual harassment victimization experience compared to 55% of boys. Verbal emotional dating abuse was the most common experience for these youth, 73% of girls versus 66% of boys reported any verbal emotional abuse victimization. In addition, 64% of girls reported perpetrating verbal emotional abuse with a dating partner compared to 45% of boys. Physical teen dating violence behaviors were reported by fewer youth, but still at a high rate (35-36%). Sexual coercion victimization was reported by 23-25% girls and 13-14% of boys.

Longitudinal path analyses were modeled separately for girls and boys. Consistent with the proposed theoretical model, family conflict, sibling aggression, and delinquent friends were significant predictors of bullying perpetration during middle school for girls. In high school, bully perpetration predicted sexual harassment/violence perpetration, verbal emotional abuse teen dating violence perpetration, and sexual coercive teen dating violence perpetration. Consistent with the proposed model, sibling aggression predicted bullying perpetration for boys, like the girls model; however family conflict did not emerge as a significant predictor of bullying perpetration or delinquency. In contrast to the girls' model, sibling aggression and self-reported delinquency also predicted sexually coercive teen dating violence perpetration and verbal emotional abuse perpetration. Also, bully perpetration predicted sexual harassment/violence perpetration, verbal emotional abuse and physical teen dating violence perpetration.

Thus, interventions should address exposure to family violence and include opportunities to learn healthy relationships and conflict management skills. Prevention efforts should consider developmental timing of aggression and violence. Given that bullying declines in high school, it

may be necessary to shift the focus to aggression and violence as they manifest in dating and romantic relationships. Finally, there needs to be increased research attention given to sexual coercion in dating relationships in high school, especially when considering the experience of girls.

## **Acknowledgments**

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Also, we would like to thank Mr. John Elliott, Project Coordinator on both the CDC and NIJ studies. This work is also possible because of many graduate students that have worked on these projects over the years, including Lisa De La Rue, Sarah Mebane, Gabriel Merrin, Mrinalini Rao, Tyrone Rivers, Chad Rose, and Mike Wang, along with hundreds of graduate research assistants. We also would like to thank the school district administrators and principals who took the risk to do this work and allowed us to survey their youth over this five year study.

## **Bullying, Sexual, and Dating Violence Trajectories From Early to Late Adolescence**

### **EXECUTIVE SUMMARY**

#### **I. PROJECT OVERVIEW**

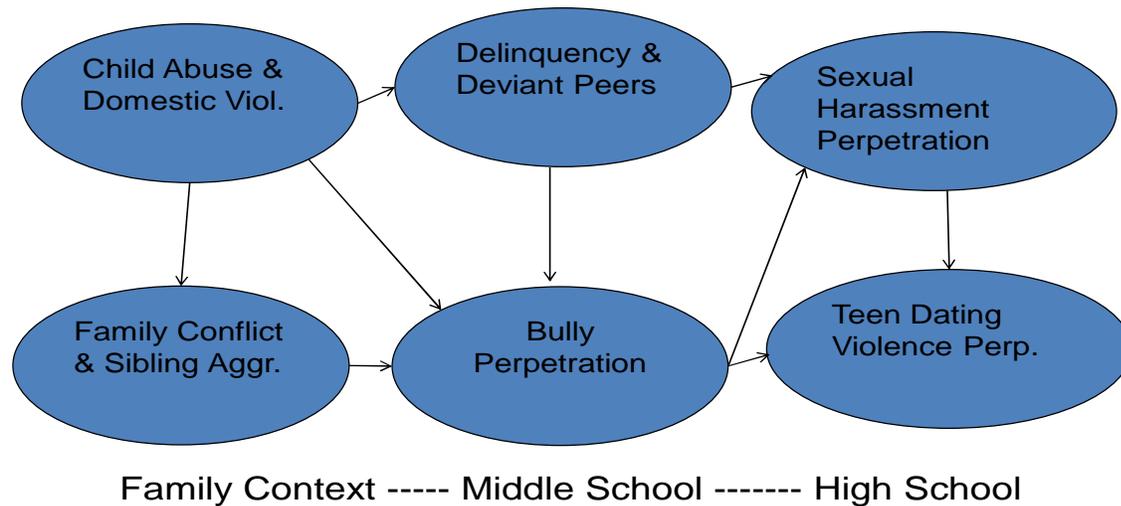
The present study included a longitudinal examination of the impact of family abuse and conflict, self-reported delinquency, and peer delinquency on the development of bullying perpetration, sexual harassment perpetration, and teen dating violence perpetration among a large sample of early adolescents. While a few studies have examined the co-occurrence of bullying, sexual harassment, and/or dating violence among high school students, there are no studies to date to simultaneously consider all three forms of violence using a comprehensive, developmentally-sensitive design. As a result, the field has made modest progress in identifying factors that determine resemblance, divergence or desistance in pathways between early risk factors and these outcomes.

In order to address this aim, the proposed project extended an ongoing comprehensive examination of the association among bullying experiences, and sexual and dating violence during early adolescence. The present study follows a developmental model and focuses on understanding how family abuse and conflict, and delinquency are associated with bully, sexual harassment, and teen dating violence perpetration across early adolescence. In the current analysis and report, we had two major research objectives. First, we examined rates of bullying in middle school and rates of sexual harassment, dating violence perpetration and victimization in high school. Second, we tested a model in which familial abuse and conflict as well as delinquency involvement during the middle school years predicted later bullying, sexual harassment, and teen dating violence perpetration as youth transitioned to high school.

#### **II. BACKGROUND AND RESEARCH HYPOTHESIS**

In this study, we test a developmental model of bullying, sexual harassment, and teen dating violence perpetration (See Figure 1 below). Although there are several plausible theories that help explain the complex motives to engage in bullying, sexual harassment, and teen dating violence, variables included in the current study were largely drawn from social learning theory.

- According to social learning theory and social interaction learning theory in particular, one can assert that maladaptive and aggressive social interactions with peers originates in impaired and conflictual family dynamics (Patterson, 1982; Patterson, Dishion & Bank, 1984). Much research in the general aggression literature has supported social interaction learning theory (SIL), proposing that impaired social interactions and escalation of child dysfunction lead to more reciprocal, aversive conflict and violence (in the home) that becomes a training ground for problematic relationships outside the family (Reid, Patterson, & Snyder, 2002; Slomkowski, Rende, Conger, Simons, & Conger, 2001).



**Figure ES1. Developmental model of bullying, sexual harassment and dating violence**

- In a recent longitudinal study of the sample that was followed for this study, there was strong evidence linking family conflict and sibling aggression to bully perpetration, thus, we hypothesized that child abuse, exposure to domestic violence, and family conflict/sibling aggression would significantly predict bully perpetration in this larger longitudinal path analysis (Espelage, Low, Rao, & Little, 2013).
- A number of theoretical perspectives and longitudinal research findings substantiates that youth living in a home where family conflict and violence are prevalent (Ehrensaft, 2008; Fergusson & Horwood, 1999; Herrenkohl, Huang, Tajima, & Whitney, 2003; Tyler, Hoyt, Whitbeck, & Cauce, 2003; Margolin & Gordis, 2000) are at a heightened risk of associating with deviant peers who endorse the use of violence as a way of dealing with interpersonal conflicts. Further, sibling violence was correlated with dating violence especially for high school boys (Rothman, Johnson, Azrael, Hall, & Weinberg, 2010). Thus, we hypothesized that family abuse/conflict, including sibling aggression and violence would be associated with both delinquency (self-report & peers) and bully perpetration.
- In a recent study of middle school students, Miller and colleagues (2013) demonstrate how dating violence, bullying, and sexual harassment often co-occur, highlighting the need to recognize the interrelatedness of these behaviors. A latent class analysis was conducted with approximately 800 7<sup>th</sup> grade students and the interrelatedness between dating violence, bullying, and sexual harassment, and revealed five classes of behaviors. In fact, none of the five classes identified in their study consisted solely of dating violence, with three of the five classes including multiple behaviors. Thus, we hypothesized that bully perpetration would be associated with greater sexual harassment and teen dating violence perpetration.

- Notable gender differences have emerged in the bully perpetration, sexual harassment, and teen dating violence literature, both in prevalence (Centers for Disease Control and Prevention, 2012; Espelage, Basile, & Hamburger, 2012; Rothman et al., 2010) and differential associations among risk and protective factors of each phenomena in longitudinal studies (Espelage, Basile, et al., 2012; Espelage, Low, Rao, & Little, 2013; Miller et al., 2013). Thus, we hypothesized that boys would report greater bully perpetration and more sexual coercion perpetration in dating relationships. We hypothesized that there would be no gender differences in sexual harassment perpetration or verbal and physical teen dating violence perpetration. Further, given the dearth of the literature examining bullying, sexual harassment, and teen dating violence perpetration simultaneously, we tested our developmental model for boys and girls separately.

### III. METHODOLOGY

#### *Sample Description*

Quantitative data were collected from 1162 high school students who were part of the University of Illinois Study of Bullying and Sexual Violence Study funded by the Centers for Disease Control (1U49CE001268-01; 2007-2010). Participants included in the results presented here were from four Midwestern middle schools (grades 5 – 7; three cohorts) who were followed into three high schools; 49% female; 58% African American, and 26% White. At Wave 1, students ranged in age from 10 to 15 years of age ( $M = 11.81$ ;  $SD = 1.09$ ). Sixty-percent of the sample was eligible for free/reduced lunch. Participants were in middle school (waves 1 -4) during the initial Bullying and Sexual Violence Study. At waves 6 and 7, youth were in high school; and sexual harassment and teen dating violence measures were added. Students completed surveys once in Spring 2008 (Wave 1), Fall 2008 (Wave 2), Spring 2009 (Wave 3), Fall 2009 (Wave 4), Spring 2010 (Wave 5; used for missing data imputation only), Spring 2012 (Wave 6), and Spring 2013 (Wave 7).

#### *Study Measures*

Measures of aggression perpetration, including bullying (waves 1-4, 6, 7), sexual harassment and dating violence perpetration (waves 6 & 7) were administered. In addition, measures of familial abuse and exposure to domestic violence, family violence, sibling aggression, self-reported victimization experiences, delinquency, and delinquent peers association were also collected.

- The nine-item *Illinois Bully Scale* (Espelage & Holt, 2001) assessed the frequency of bullying at school. Students are asked how often in the past 30 days they did the following to other students at school: teased other students, upset other students for the fun of it, excluded others from their group of friends, helped harass other students, and threatened to hit or hurt another student. Concurrent validity of this scale was established with significant correlations with peer nominations of bullying (Espelage, Holt, & Henkel, 2003). More specifically, students who reported the highest level of bully perpetration on the scale received significantly more bullying nominations ( $M = 3.50$ ,  $SD = 6.50$ ) from their peers than students who did not self-report high levels of bullying perpetration ( $M = .98$ ;  $SD = 1.10$ ; Espelage et al., 2003).

- Three items from the *Student Health and Safety Survey* (CDC, 2004) were used to

measure past abuse in the family. Students were presented with the following stem “Before you were 9 years old, did you ever...” followed by three items to assess domestic violence exposure and history of childhood maltreatment: (1) see or hear one of your parents or guardians being hit, slapped, punched, shoved, kicked or otherwise physically hurt by their spouse or partner?; (2) have injuries, such as bruises, cuts, or broken bones, as a result of being spanked, struck, or shoved by your parents or guardians or their partners?; and (3) did someone ever force you to have sex or to do something sexual that you did not want to?

- *The Family Conflict and Hostility Scale* (Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003) was used to measure the level of perceived conflict and hostility in the family environment. The scale contains three items from a larger survey, which was designed for the Rochester Youth Development Study. The three items were: How often is there yelling, quarreling, or arguing in your household? How often do family members lose their temper or blow up for no good reason? How often are there physical fights in the household, like people hitting, shoving, or throwing things? A sibling aggression scale was created for the original CDC study and included five items that assessed aggression between siblings (Espelage, Low, Rao, & Little, 2013): I upset my brother or sister for the fun of it; I got into a physical fight with my brother or sister; I started arguments with my brother or sister; I hit back when a sibling hit me first; and I teased my siblings for the fun of it.

- Jessor and Jessor’s (1977) *General Deviant Behavior Scale* asks students to report how many behaviors listed on the measure they took part in during the last year or since the last survey administration. The scale consists of items such as, “Skipped school”, and “Damaged school or other property that did not belong to you.” *The Friend’s Delinquent Behavior-Denver Youth Survey* is a 7-item scale (Institute of Behavioral Science, 1987), which asks participants to report how many of their friends, in the past year or since the last survey administration engaged in delinquent behaviors, such as “Hit or threatened to hit someone”, “Purposely damaged or destroyed property that did not belong to them”, and “Used alcohol.”

- A modified version of the *American Association of University Women (AAUW) Sexual Harassment Survey* was used to assess sexual harassment/violence perpetration (Espelage et al., 2012). Participants were presented with six items to assess both unwanted verbal sexual harassment and groping (e.g., sexual comments, sexual rumor spreading, showed sexual pictures) and forced sexual contact (e.g., touched in sexual way, physically intimated in a sexual way, forced to do something sexual).

- Dating violence was assessed with 28 items for the *Conflict in Adolescent Dating Relationships* (CADRI; Wolfe et al., 2001) approved by the UIUC Institutional Research Board (IRB). Four perpetration scales emerged in factor analysis: physical/threatening behaviors, verbal emotional abuse, relationally aggressive behaviors, and sexual coercion. Students were presented with the following stem prior to completing the CADRI measure: “The next questions ask about “dating.” By “dating,” we mean spending time with someone you are seeing or going out with. Examples of this might include hanging out at the mall, in the neighborhood, or at home or going somewhere together like the movies, a game, or a party. It doesn't have to be a formal

date or something you planned in advance and it may be with a small group. The term "date" includes both one-time dates and time together as part of long-term relationships.

### *Missing Data Imputation*

To address concerns with missing data, a multiple imputation procedure was used to ensure parameters estimates were unbiased and valid inferences from the statistical analysis could be made. The imputation resulted in 30 data sets. Using the imputed data sets a series of path models were fit to the data to examine the trajectory of adolescent engagement in dating violence and sexual harassment perpetration across adolescence. For the purpose of the present analysis, only those students who had started dating in high school were included. This criterion excluded 9% (or 51) of the girls and 8% (or 48) of the boys from the analysis. The path analyses were run separately by gender.

### *Data Analysis Plan*

Descriptive data were calculated for all study variables. Prevalence rates of sexual harassment perpetration and teen dating violence perpetration were calculated for the entire sample and then by gender. Correlations among teen dating violence perpetration and victimization were calculated in order to show the interdependence of perpetration and victimization. Using the 30 imputed data sets, a series of path models were fit to the data to examine the trajectory of adolescent engagement in dating violence and sexual harassment across adolescence. For the purpose of the present analysis, only those students who had started dating in high school were included. This criterion excluded 9% (or 51) of the girls and 8% (or 48) of the boys from the analysis.

## **IV. KEY RESEARCH FINDINGS**

### *Means of study variables over time by gender*

- As hypothesized, boys reported more bully perpetration. Girls reported more family conflict and sibling aggression than boys. Self-reported delinquency scale scores were higher for boys than girls at all waves. Self-reported affiliation with delinquent friends was higher for boys than girls in middle school. In high school, sexual harassment/violence perpetration was higher for boys than girls. Verbal emotional abuse and physical teen dating violence perpetration was higher for girls than boys, but boys reported greater levels of sexual teen dating violence perpetration.

### *Percentage of youth endorsing sexual harassment/violence involvement*

- Boys reported a greater mean scale score than girls on self-reported sexual harassment perpetration, 37% of boys versus 28% of girls reported perpetrating at least one form of sexual harassment/violence. In high school, 68% of girls reported having at least one sexual harassment victimization experience compared to 55% of boys.

### *Percentage of youth endorsing teen dating violence involvement in High School*

- In high school, verbal emotional dating abuse was the most common experience for these youth, with 73% of girls versus 66% of boys reported any verbal emotional abuse victimization.
- In addition, 64% of girls reported perpetrating verbal emotional abuse with a dating partner compared to 45% of boys.
- Physical teen dating violence behaviors were reported by fewer youth, but still at a high rate. Girls and boys reported being victimized at a similar rate to boys (35-36%).
- When turning to sexual coercion victimization in teen dating relationships, more girls reported having this experience (23-25%) than boys (13-14%). Perpetration of sexual coercion in teen dating relationships was reported more for boys (10-11%) than girls (4-7%).

#### *Correlations of teen dating violence victimization & perpetration within types*

- Physical teen dating violence perpetration was strongly correlated with reports of physical teen dating violence victimization for girls and boys ( $r_s = .65, p_s < .01$ ).
- Verbal emotional abuse perpetration and victimization were also highly correlated for girls and boys ( $r_s = .72, p_s < .01$ ). Relationally aggressive teen dating violence victimization and perpetration were less correlated for girls and boys ( $r_s = .43, .47, p_s < .01$ ).
- Sexual coercive teen dating violence perpetration and victimization were even less associated in comparison to other types for girls and boys ( $r_s = .16, .20, p_s < .01$ ).

#### *Path Analysis of Developmental Model – Girls*

- Exposure to domestic violence, and reports of physical and sexual abuse dropped out of the model. This could be due to the use of single items to measure these experiences.
- Relational forms of teen dating violence also dropped out of the path analyses.
- Consistent with the proposed theoretical model, family conflict, sibling aggression, and delinquent friends were significant predictors of bullying perpetration during middle school.
- As girls moved to high school, bully perpetration continued to significantly predict delinquency, which was still explained by sibling aggression.
- In high school, bully perpetration predicted sexual harassment/violence perpetration, verbal emotional abuse teen dating violence perpetration, and sexual coercive teen dating violence perpetration.

#### *Path Analysis of Developmental Model – Boys*

- Exposure to domestic violence, and reports of physical and sexual abuse dropped out of the model
- Again, relational forms of teen dating violence also dropped out of the path analyses.
- Consistent with the proposed model, sibling aggression predicted bullying perpetration for boys, like the girls model.
- In contrast to the girls model, family conflict did not emerge as a significant predictor of bullying perpetration or delinquency.
- Additionally, during middle school, current delinquent friends and self-reported delinquency were significant predictors of bullying perpetration.

- As boys moved to high school, bully perpetration continued to significantly predict delinquency, which was still explained by sibling aggression.
- In contrast to the girls' model, sibling aggression and self-reported delinquency also predicted sexually coercive teen dating violence perpetration and verbal emotional abuse perpetration.
- In high school, bully perpetration predicted sexual harassment/violence perpetration, verbal emotional abuse and physical teen dating violence perpetration.

## V. LIMITATIONS

Despite the strengths of this longitudinal study, there are also a few limitations. Foremost is the reliance on youth self-report rather than multiple reports, which could diminish the validity and reliability (i.e., sampling) of reported behavior. Second, our measure of bully perpetration did not assess for a power differential, however, the measure is distinct from a measure of pure aggression and has correlated with peer nominations of teasing and mean behavior directed at other students. Further, the sibling aggression items assumed that the student participants had either a sibling or a child in the home, but the survey did not ask how many siblings were in the home. Third, these data were collected in one community located in a midwestern urban setting and these findings need to be replicated in other communities to enhance the ecological validity of our findings. Fourth, we did not assess dating violence within dating couples, thus, there is no way to examine mutual violence, which is important aspect of understanding the mechanisms underlying teen dating violence (Giordano, Soto, Manning, & Longmore, 2010). Finally, we did not assess teen dating violence within in the context of social media or the use of technology, which is becoming increasingly a space where teens spend their time and engage one another in intimate relationships (Dank et al., 2013). These limitations aside, the dataset represents an important initial step in enhancing youth violence scholarship through theory-driven, longitudinal research.

## VI. PRACTICE AND RESEARCH RECOMMENDATIONS

### *Recommendation #1: Prevention of Youth Violence Should Address Exposure to Family Violence*

Our results suggest that bullying perpetration are important mechanisms linking family violence and sexual harassment/violence and teen dating violence perpetration. That is, bullying perpetration served as indirect mechanism between family conflict and sibling aggression and later sexual harassment/violence and teen dating violence perpetration for girls. For boys, bullying mediated the association between sibling aggression (not family conflict) and these later high school outcomes. The connection between familial violence/conflict and aggression at school is not a new finding and not even surprising, given the intergenerational transmission of aggression, the importance of the parent microsystem in the social-ecological model, and the social information learning framework of youth aggression (Reid et al., 2002; Slomkowski et al., 2001). Taken together, the findings from this study support the social information learning framework in understanding the relations among family violence, bullying, and delinquency during early adolescence. Youth need to have the opportunity to learn nonviolent ways of managing conflicts with peers and dating partners. In addition, family-level interventions should address corresponding and often overlapping forms of family conflict/aggression.

Teen dating violence prevention efforts should align with the recommendations of Tharp (2012), who argued that the next generation of prevention should target individual-level and relationship-level factors. Indeed, few dating violence programs explicitly address family violence. While some programs do work to help young people identify abusive behaviors across multiple domains (e.g. woman abuse, child abuse, sexual harassment, racism) (Wolfe, Wekerle, Scott, Straatman, Grasley, & Reitzel-Jaffe, 2003), few (if any) programs explicitly address violence young people may have experienced in their families and how this serves to influence behaviors. Some programs do acknowledge that dating violence is a multi-determined phenomenon (Avery-Leaf et al., 1997), and as such provide interventions that address multiple levels of influence (i.e. social and psychological); however, most programs do not address the influential role of families.

Some teen dating violence prevention programs focus on providing youth with the skills to promote healthy and happy marriages. For example, the *Love U2: Increasing Your Relationship Smarts (RS adapted)* (Adler-Baeder, Kerpelman, Schramm, Higginbotham & Paulk, 2007) focuses on understanding the practices associated with healthy marriages and learning to manage marriage conflict. Other programs address how the family of origin can impact a young person's relationships and marriage (Connections; Gardner & Boellaard, 2007). While these programs start to address the influence of families, they are not explicitly addressing the concerns associated with experiencing family violence.

*Recommendation #2: Prevention Efforts Should Consider Developmental Timing of Aggression/Violence – Bullying Declines In High School*

Bully perpetration showed relatively little change during middle school and declined at the two high school waves, which is consistent with many research studies that have shown that bullying peaks during middle school (Nansel et al., 2001; Robers, Zhang, & Truman, 2011). Thus, generic bully prevention programs in high schools are not likely salient for this age group and does not support the decreasing trend of bullying over time. Of note, a recent meta-analysis indicates that bully prevention programs appear to be most efficacious up until 7<sup>th</sup> grade, but efficacy in 8<sup>th</sup> grade drops to zero (Yeager, Fong, Lee, & Espelage, in press). Further, there was a seeming reversal in efficacy through the high school years, such that programs, if anything, cause harm. Yeager and colleagues caution against transporting programs developed with children and young adolescents to older adolescents until more thought is given to the unique ways in which violence prevention messages are received by adolescents who are emerging adults.

*Recommendation #3: Prevention Efforts Should Consider Developmental Timing of Aggression/Violence – Address Sexual Harassment/Violence Perpetration*

Sexual harassment perpetration was a common experience for youth in high school. Boys reported a greater mean scale score than girls on self-reported sexual harassment perpetration, 37% of boys versus 28% of girls reported perpetrating at least one form of sexual harassment/violence. Examination of victimization experiences, 68% of girls reported having at least one victimization experience compared to 55% of boys. These figures are problematic

given that youth were asked to report on unwanted experiences. Students were most likely to report sexual commentary, sexual rumors, and unwanted touching.

Links between sexual harassment and bullying suggest that youth who engage in one type of aggression (i.e., bullying) may be more likely to engage in the other (i.e., sexual harassment; Espelage et al., 2012), and that bullying perpetration may lead to sexual harassment perpetration (Miller et al., 2013). In the current study here, 50% of the youth reported being a victim or perpetrator of unwanted sexual commentary, which is likely to include homophobic teasing or references to gender nonconformity. In a longitudinal study of the middle school youth in this current sample, Espelage and colleagues (2012) found that bullying perpetration and homophobic teasing perpetration among a sample of 5<sup>th</sup> – 7<sup>th</sup> graders were related to perpetration of sexual harassment six months later (Espelage et al., 2012). Taken together, it is important to address gender-based language early in middle school in order to prevent sexual harassment prior to the onset of dating (Miller, 2012).

*Recommendation #4: Assess & Address Multiple Forms of Teen Dating Violence Victimization & Perpetration*

Verbal emotional abuse was the most common experience for these youth, with 2/3rds of girls and boys reporting at least one experience of verbal emotional abuse in a dating relationship. Over 50% of boys and girls reported perpetrating verbal emotional abuse in a dating relationship. In contrast, physical teen dating violence victimization was reported by 1/3 of boys and girls, but perpetration of physical teen dating violence was reported more by girls than boys. The greater prevalence of verbal emotional abuse among adolescents is consistent with recent research on multiple forms of teen dating violence (Kernsmith & Tolman, 2011; Temple et al., 2013). Our finding that girls perpetrate more physical teen dating violence than boys should be interpreted with caution given that we did not assess fear or injury. In a national representative sample, girls reported injurious violence in 36% of physically violent victimization act, whereas boys reported injury following a physical violent victimization rate of 12.9% (Hamby & Turner, 2012). It is imperative to assess and address all forms of teen dating violence both in the content of teen dating violence prevention programs and the evaluations of such programs. Indeed, the majority of teen dating violence programs do cover multiple forms of dating aggression. However, many of the evaluations of these programs do not include measures that span all forms of teen dating violence perpetration (for meta-analysis see De La Rue, Polanin, Espelage, & Pigott, 2013).

*Recommendation #5: Increase Research Attention to Sexual Coercion in Dating Relationships – Especially for girls*

Finally, our finding that girls reported more sexual coercion in dating relationships than boys is consistent with a recent international review of teen dating violence (Leen et al., 2013). Leen and colleagues reviewed articles from 2000-2011 from Europe and North America. In all of the US-based studies, girls reported greater sexual dating violence victimization than boys and the figures match our reported 20-23% of girls and 13-14% of boys having experienced sexual coercion in a dating relationship. Interestingly, the one exception was a 2002 paper by Ackard & Neumark-Sztainer. It is clear that there has been an increase in the number of youth

experiencing sexual coercion and perpetrating toward dating partners. Much more research needs to be conducted on this topic.

## **Summary**

Despite considerable growth in prevention programming, our ability to positively impact bullying, sexual and teen dating violence is negligible at best (for review De La Rue et al., 2013; Espelage & Horne, 2008; Yeager et al., in press). In addition, our ability to mount maximally efficacious, effective and efficient preventive interventions for teen dating violence is still limited in several ways, perhaps most importantly is a lack of developmentally-informed theory. Many of these interventions also produce long term economic benefits relative to their implementation costs (e.g., Karoly, Greenwood, et al., 1998), but should not substitute for a need to identify trajectories during a time when sexual and teen dating violence are being laid down and elaborated. The effects of these interventions are both inconsistent and trivial (for the most part), despite their relative complexity and expense. The development of relatively brief, flexible, well-titrated and optimally timed interventions are needed to use limited resources to efficiently address adolescent multi-problem behavior. An important next step in prevention science entails specification of how interventions can be applied to work at peak efficacy, effectiveness and efficiency; in other words - how they can be optimized. This study suggests that bully prevention should occur before and during middle school, and gender-based content and relationship skills should be incorporated before high school. Interventions should focus on multiple forms of aggression/violence, rather than continuing the inefficient approach of single prevention approaches for each form of aggression/violence (Hamby & Grych, 2013).

## FINAL TECHNICAL REPORT

### Introduction

Youth aggression and bullying, sexual harassment, and dating violence are widespread public health problems with negative consequences for victims (Basile, 2005; Basile et al., 2006; Nansel et al., 2001; Tjaden & Thoennes, 2006; Gruber & Fineran, 2008). Even though it is known that teen dating and sexual harassment starts early in life (Borowsky, Hogan, & Ireland, 1997), and that bullying also occurs and peaks in youth (Espelage, 2012), little research has examined the co-occurrence of and relationship among these three types of aggression. While some conceptual and empirical literature suggests that they may share some developmental correlates (Basile, Espelage, Rivers, McMahon, & Simon, 2009; DeSouza & Ribeiro, 2005; Pepler et al., 2006; Pellegrini, 2001), very few studies have examined the association among bullying, sexual harassment, and teen dating violence (for exception see Miller et al., 2013 discussed later).

Some progress has been made in explicating shared risk and protective factors of bullying perpetration, sexual and teen dating violence, when examined independently. However, there are few studies to simultaneously consider all three forms of violence using a comprehensive, developmentally-sensitive design. As a result, we have only made modest progress in identifying factors that determine resemblance, divergence, or desistance in pathways between early risk factors and these outcomes. In large part, this is reflective of significant gaps in the literature, mainly: 1) a lack of ecologically-driven studies that incorporate the strong influence of peers and familial factors, 2) a lack of social-developmental longitudinal investigations that allow us to consider the changing influence of key socializing agents across adolescence (e.g., romantic partners), and 3) a lack of longitudinal designs that can ascertain the antecedents, correlates, and sequel of bullying, sexual harassment, and teen dating violence. In order to ascertain related but distinguishable trajectories, we must specify developmentally-sensitive mediating variables within an ecological framework.

In order to address this aim, the proposed project extended an ongoing comprehensive examination of the association among bullying experiences, and sexual and dating violence during early adolescence. 1,162 students who were part of the University of Illinois Study of Bullying and Sexual Violence Study (referred to as UI-BullySV in this document) funded by the Centers for Disease Control (1U49CE001268-01; 2007-2010) were assessed during Spring 2012 and Spring 2013 (Waves 6 & 7). The purpose of the current analysis reported here was to test a model of individual, familial, and peer variables which increase risk for sexual and teen dating violence based on bullying experiences in early adolescence. The resulting data provides the potential for better understanding of the developmental dynamics and the interactive contribution of individual, familial, and peer processes to those problems. In this study, the social learning framework was used to: (1) identify familial and peer risk factors of bullying perpetration, sexual harassment and dating violence perpetration; and (2) explore how these risk factors predict bullying, sexual harassment, and dating violence perpetration over five years from middle to high school.

Although the original study addresses the first two major gaps in the literature, it falls short of encompassing the developmental time-span necessary to fully test the impact of risk factors during early adolescence on bullying, sexual harassment, and dating violence into later adolescence, a time when these behaviors are at their greatest prevalence.

## **Literature Review**

### **Aggression and Bullying: Definitions & Prevalence**

Bullying has been conceptualized as repeated attempts of physical, verbal (e.g., threats, insults) relational (e.g., social exclusion), or cyber-aggression (e.g. email, texting), that involve abuse of power (Olweus, 1999). Since 2010, leading violence and victimization scholars have convened in several meetings hosted by the Department of Education and the Centers for Disease Control to develop a uniform *research* definition. This group defined...“Bullying is any unwanted aggressive behavior(s) by another youth or group of youths who are not siblings or current dating partners that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated. Bullying may inflict harm or distress on the targeted youth including physical, psychological, social, or educational harm.” (Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014, p. 7). These behaviors include verbal and physical aggression that ranges in severity from making threats, spreading rumors/exclusion-- to physically attacks causing injury and can occur face-to-face and/or through technology (e.g., cell phones, computers). Bullying perpetration in this study was assessed with a scale that does not provide the students with a definition and does not assess for a power differential. However, this scale correlates with peer nominations of frequent teasing and bullying and is distinct from pure aggression in confirmatory analyses (Espelage, Low, et al., 2013).

Bullying, in its many forms, may be the most prevalent type of school violence (Batsche & Porter, 2006). Worldwide incidence rates for bullying among school-age youth range from 10% to 30%, and there is a notable increase during the middle school years (see Cook et al., 2010 for review). Bullying is a serious problem that can harm students’ school performance in the form of school avoidance, lower levels of academic achievement, and more conflictual relations with teachers and students (Cook et al., 2010; Glew et al., 2005; Glew et al., 2008; Nansel, Haynie, & Simons-Morton, 2003). In addition to negative school consequences, victims, bullies, and bully-victims often report adverse psychological effects and poor school adjustment as a result of their involvement in bullying, which might also lead to subsequent victimization or perpetration (Juvonen, Nishina, & Graham, 2000 Nansel, Haynie, & Simons-Morton, 2003).

### **Sexual harassment: Definitions and Prevalence**

Sexual violence (SV) is nonconsensual completed or attempted penetration (vaginal, oral, or anal), unwanted touching (e.g., groping or fondling), or non-contact acts such as exposing oneself or verbal sexual harassment, committed by any perpetrator (Basile & Saltzman, 2002). Sexual harassment, a subset of the larger SV construct, is defined as unwanted sexual comments, sexual rumor spreading, or touching (Espelage et al., 2012). Moderate to high rates of SV against youth have been noted. The 2011 Youth Risk Behavior Survey, a national survey of students in grades 9-12, found a lifetime reported prevalence for unwanted physically forced

sexual intercourse of 11.8% for girls and 4.5% for boys (Centers for Disease Control and Prevention, 2012). In addition, physical or verbal sexual harassment is extremely common in schools among adolescents, with one national study reporting that 57% of boys and 50% of girls reported sexually harassing a peer. The same study found that 81% of students experienced some form of physical or non-physical sexual harassment at some point during their lives; the most common form experienced was sexual comments, jokes, gestures, or looks (66%), followed by being touched, grabbed, or pinched in a sexual way (49%) (AAUW, 2001). Most of the literature suggests that males are overwhelmingly the perpetrators of physically forced forms of sexual violence (e.g., rape, etc.) (Black, Basile, Breiding, Smith, et al., 2011; Tjaden & Thoennes, 2006). Males also report sexual harassment perpetration more often, even though girls engage in this behavior as well (AAUW, 2001; Fineran & Bennett, 1998).

### **Teen Dating Violence: Definitions & Prevalence**

Centers for Disease Control define dating violence as a type of intimate partner violence. It occurs between two people in a close relationship. The nature of dating violence can be physical, emotional, or sexual

([http://www.cdc.gov/ViolencePrevention/intimatepartnerviolence/teen\\_dating\\_violence.html](http://www.cdc.gov/ViolencePrevention/intimatepartnerviolence/teen_dating_violence.html))

Physical dating violence includes physically violent acts such as slapping or punching a partner and verbal dating violence includes name-calling and denigrating comments. Emotional and psychological abuse includes behaviors such as manipulation and verbal battering (e.g., swearing, derogatory comments). Dating violence affects numerous adolescents each year, with prevalence rates ranging from 9-62% based in part on variations in measurement approaches and samples (Arriaga & Foshee, 2004; Foshee et al., 1996; Gray & Foshee, 1997; Holt & Espelage, 2005; Howard & Wang, 2003; Katz, Kuffel, & Coblentz, 2002; Roscoe & Callahan, 1985). Youth involved in dating violence report more psychological distress (e.g., Holt & Espelage, 2005), encounter more academic difficulties (California Attorney General's Office & California Department of Education, 2004), and are also more likely to engage in other health-risk behaviors, such as physical fighting, and risky sexual activity (CDC, 2006; Silverman et al., 2001).

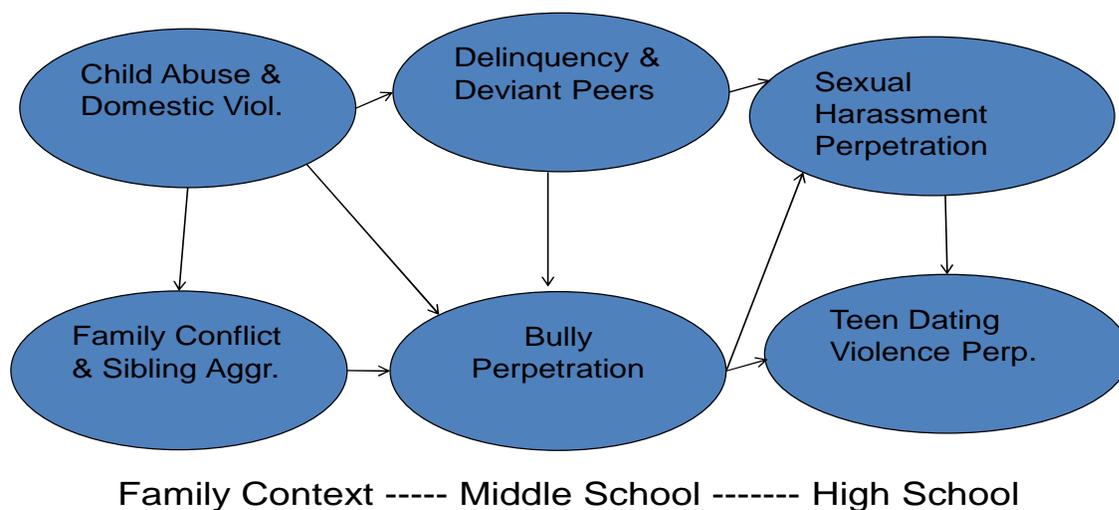
More recent research has addressed longer-term effects of dating violence victimization, with a study using a nationally-representative sample conducted by Exner-Cortens and colleagues (2013) finding differences in early adulthood (ages 18-25) between those who had and had not experienced dating violence victimization in adolescence (ages 12-18). Specifically, females with dating violence victimization histories reported more heavy episodic drinking, symptoms of depression, suicidal ideation, and smoking in early adulthood than their peers without past dating violence victimization. Similar patterns emerged for males, whereby dating violence victimization in adolescence was related to more suicidal ideation, marijuana use, and anti-social behavior in early adulthood. Further, longitudinal research indicates that teen dating violence increases risk for violence in adult relationships (Exner-Cortens et al., 2013; Magdol, Moffitt, Caspi, & Silva, 1998; Smith, 2003). These few longitudinal studies highlight the need for primary prevention that seeks to modify attitudes, behavioral patterns, and risk factors that are associated with dating violence.

## A Developmental Model of Bullying, Harassment and Dating Violence

Research has demonstrated that youth problem behaviors tend to be interrelated and share common risk and protective factors (Donovan, Jessor, & Costa, 1991; Jessor, 1991). The evidence indicates that this finding appears to hold true for adolescent dating violence as well (Howard et al., 2007). Dating violence has been consistently found to be associated with other forms of aggression and violence (Riggs & O’Leary, 1989). The belief that it is acceptable to use violence is strongly associated with inflicting violence against a dating partner (Malik et al., 1997; O’Keefe, 1997; Tontodonato & Crew, 1992). Involvement in other violent behaviors increases the odds of an adolescent becoming a victim of dating violence (Howard et al., 2007). Boys who are aggressive, involved in fights or carried guns are more likely to engage in sexual harassment (Pellegrini, 2001; Howard, Wang, & Yan, 2007). Violence against peers has been correlated with using sexual and physical violence against dates (Ozer et al., 2004). Early antisocial behavior and aggression have been shown to predict later use of violence against dating partners in three longitudinal studies (Capaldi & Clark, 1998; Lavoie et al., 2002; Simons et al., 1998) and a study by Brendgen et al (2001) showed aggression perpetrated by young adolescent boys was associated with dating violence perpetration at the age of 16 and 17 years.

Some research does suggest that efforts to address dating violence could be informed by the overlap among dating violence, bullying perpetration, and sexual harassment. However, very little is known regarding shared factors that determine resemblance, divergence or desistance in pathways between early risk factors and trajectories for dating violence through late adolescence. *Figure 1* shows the trimmed model that is being hypothesized in this current analysis.

*Figure 1. Developmental model of bullying, sexual harassment and dating violence*



*Family abuse & Conflict.* Coercive exchanges between parents and children in the home often co-occur with abusive and conflictual family dynamics, which have been linked to bullying. As demonstrated by several cross-sectional (see Espelage, Bosworth & Simon, 2000; Ortega & Espelage, under review) and a handful of longitudinal findings (see Voisin & Hong, 2012), direct and indirect exposure to family violence is linked to bullying behavior. More specifically, cross-sectional investigations in the US and other countries have found significant associations between exposure to physical violence in the home and bullying (Baldry, 2003; Espelage, Low, & De La Rue, 2012; Holt, Kantor, & Finkelhor, 2009; Moretti, Obsuth, Odgers, & Reebye, 2006; Mustanoja et al., 2011). For instance, Cluver, Bowes, and Gardner's (2010) research, which included a sample of 1,050 children in South Africa, documented that children who witnessed inter-parental violence were at an elevated risk of engaging in bullying. Further, several longitudinal studies have also established this association (Bauer et al., 2006; Bolger & Patterson, 2001; Bowes et al., 2009). To illustrate, Baldry (2003) found that Italian elementary and middle school children who were exposed to violence at home were involved in bullying, particularly girls. Girls who witnessed a father's violence against the mother or a mother's violence against the father were among the most likely to bully others, compared to girls who did not witness any forms of inter-parental violence. In sum, there is a growing consensus that family violence is a training ground for peer aggression (and in turn, associated risk behaviors). In a recent longitudinal study of the sample that was followed for this study, there was strong evidence linking family conflict and sibling aggression to bully perpetration, thus, we hypothesized these associations would emerge in this larger longitudinal path analysis (Espelage, Low, Rao, & Little, 2013).

*Delinquency Involvement.* The proposed model in Figure 1 includes longitudinal associations between family variables and delinquency involvement (self & peer), which will then be associated with bullying, sexual harassment/violence perpetration and teen dating violence perpetration. A number of theoretical perspectives and longitudinal research findings substantiates that youth living in a home where family conflict and violence are prevalent (Ehrensaft, 2008; Fergusson & Horwood, 1999; Herrenkohl, Huang, Tajima, & Whitney, 2003; Tyler, Hoyt, Whitbeck, & Cauce, 2003; Margolin & Gordis, 2000) are at a heightened risk of associating with deviant peers who endorse the use of violence as a way of dealing with interpersonal conflicts. Several theories can facilitate our understanding of why children's early experiences in family violence can impair their ability to form satisfying friendships and peer relationships (Dodge, Pettit, & Bates, 1994). Child development researchers (e.g., Cicchetti, Lynch, Shonk, & Manly, 1992) posit children who are exposed to or experience family violence in early life are unlikely to form secure attachment relationships with caregivers. As a consequence, these children will learn to behave in ways that increase their risk of developing relationships with peers who engage in deviant activities.

Social learning theorists (SIL) also argue that similar to bullying, children who are exposed to or experience family violence will have difficulty forming positive peer relationships, as they learn aggressive and coercive behaviors modeled by adults (Gelles & Straus, 1979). Schwartz and Protor (2000) also theorized that family violence-involved children have difficulties regulating their emotion, making it difficult to socialize with conventional peer groups. These youth become 'loners' or turn to deviant peer groups for social support (Bender,

2010). Moreover, they frequently run away from home where they are susceptible to deviant peer affiliation. Tyler and colleagues (2003) investigated the impact of child sexual abuse on later sexual victimization among 372 homeless youth in Seattle. The authors reported that sexually abused youth who run away from home end up turning to deviant peers. In addition, family violence-involved youth are frequently placed in a residential care or group home setting through the child welfare system, which increases their exposure to deviant peer influence (Bender, 2010; Dishion, McCord, & Poulin, 1999; Ryan, Marshall, Herz, & Hernandez, 2008).

Considering that youth increasingly turn to their friends and peer groups during adolescence, it is not surprising that “deviancy and antisocial training” within adolescent peer groups are found to be significant predictors for bullying and aggressive peer interactions (Dishion, Poulin, & Burraston, 2002; Haynie et al., 2001; Mouttapa et al., 2004; Poulin, Dishion, & Burraston, 2001; Weiss et al., 2005). Further, youth with similar levels of aggressive and deviant behaviors are likely to associate with one another (Espelage, Holt, & Henkel, 2003; McPherson, Smith-Lovin, & Cook, 2001) and model their behaviors after those of their deviant peers and find that their behavior is rewarded by social acceptance into their peer group (Akers, 1998). Nevertheless, according to an SIL model, deviant peer affiliation would serve as a candidate mechanism through which other aggressive and maladaptive behavior (e.g., bullying) would be normalized and potentially exacerbated.

*Bully Involvement & Sexual Harassment Perpetration.* Figure 2 below summarizes the shared and non-shared risk and protective factors for bullying and sexual harassment across

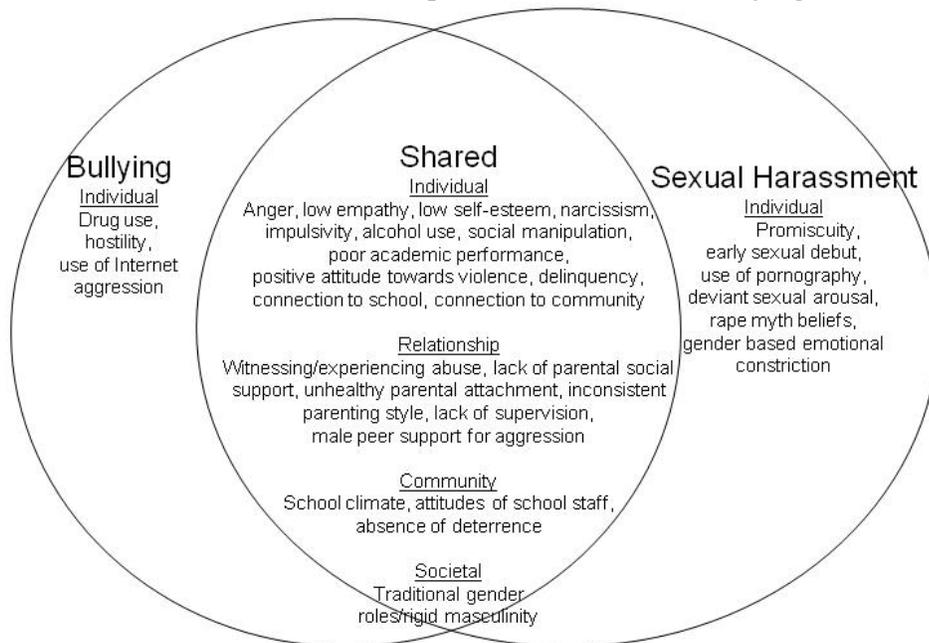


Figure 1. Venn Diagram of shared and non-shared risk/protective factors

different ecological contexts, primarily drawn from independent investigations (from Basile et al., 2009). Little research has explored associations between bullying and sexual harassment/violence. The few studies that have, however, suggest that students who sexually harass their peers often also bully their peers. For example, Pepler and colleagues (2002)

found that sexual harassment perpetration in students in Grades 5 through 8 was associated with increased rates of bullying. Similarly, Pellegrini (2001) found that boys who were aggressive were also likely to engage in sexual harassment. Similarly, students who reported experiencing sexual harassment victimization were more likely to report dating violence victimization than those students who had not experienced sexual harassment (Connolly, McMaster, Craig, &

Pepler, 1997). Pepler and colleagues (2006) found a positive association between sexual harassment perpetration and bullying perpetration among students. In this cross-sectional study of 961 elementary school (Grades 6 through 8) and 935 middle school students (Grades 9 through 12), sexual harassment perpetration was more prevalent among students who bullied others than those who did not. While these studies are an important first step, leading sexual harassment scholars have questioned the equating of sexual harassment and bullying without adequate empirical support (Rodkin & Fischer, 2003; Stein, 2003). Longitudinal studies spanning into late adolescence are needed in order to validate the temporal sequence of bullying, harassment and accompanying risk factors (i.e., precursors and concurrent). Thus, we hypothesize that bully perpetration in middle school will predict sexual harassment perpetration in high school.

*Bullying Involvement, Sexual Harassment Perpetration & Teen Dating Violence.* Some research does suggest that efforts to address dating violence could be informed by the overlap among dating violence, bullying perpetration, and sexual harassment. Students who reported bullying their peers also reported more violence in their dating relationships (both physical and social) than non-bullies (Connolly, Pepler, Craig, & Taradash, 2000). More recently, Miller and colleagues (2013) demonstrate how dating violence, bullying, and sexual harassment often co-occur, highlighting the need to recognize the interrelatedness of these behaviors. A latent class analysis was conducted with approximately 800 7<sup>th</sup> grade students and the interrelatedness between dating violence, bullying, and sexual harassment, and revealed five classes of behaviors. In fact, none of the five classes identified in their study consisted solely of dating violence, with three of the five classes including multiple behaviors. Two of the classes identified show distinct gender differences. There were considerably more boys in the class of students who reported bullying perpetration and victimization, and sexual harassment victimization (Miller et al., 2013). Alternatively more girls were in the class that reported both perpetration and victimization for both bullying and sexual harassment. Consistent with developmental literature, most of the students retained membership in a particular profile of behaviors over time, and when students did transition it was more often to a less problematic behavior profile (Miller et al., 2013). While girls tended to shift to less problematic behaviors over time, they were represented in a range of behavior profiles and were relatively equally represented within more problematic behaviors (Miller et al., 2013).

Miller and colleagues' study represents an important step to understand the overlap among bullying, sexual harassment, and teen dating violence, but research is still needed to understand the potential pathways from bullying in early adolescence to later sexual harassment and teen dating violence. Thus, this report presents results of longitudinal path analyses of 1,162 students who were followed for 5 years from middle to high school. In the current analysis and report, we had two major research questions: 1. What are the rates of bullying in middle school and rates of sexual harassment, dating violence perpetration and victimization in high school? How do these rates differ by gender? 2. Does family violence, delinquency predict bullying during the middle school years and do these variables predict later bullying, sexual harassment, and teen dating violence perpetration? We hypothesized support for our *Developmental model of bullying, sexual harassment and dating violence* presented in Figure 1.

## Methods

### *Design and Sample*

Participants were 1,162 students from four Midwestern middle schools (grades 5 – 7; three cohorts) who were followed into three high schools; 49% female; 58% African American, and 26% White. At Wave 1, students ranged in age from 10 to 15 years of age ( $M = 11.81$ ;  $SD = 1.09$ ). Sixty-percent of the sample were eligible for free/reduced lunch. Students completed a survey designed to collect information about the level of violence in their home with parents and siblings or other children, physical abuse, sexual abuse, exposure to domestic violence, frequency of bullying, self-reported delinquency, exposure to delinquent friends during the middle school years (Waves 1 - 5). Waves 6 and 7 were during high school and sexual harassment and teen dating violence measures were added. Students completed surveys once in Spring 2008 (Wave 1), Fall 2008 (Wave 2), Spring 2009 (Wave 3), Fall 2009 (Wave 4), Spring 2010 (Wave 5; abbreviated version used for imputation only), Spring 2012 (Wave 6), and Spring 2013 (Wave 7).

### *Procedure*

*Parental consent.* A waiver of active parental consent was approved by the institutional review board and school district administration. Parents of all students enrolled in the schools were sent letters informing them about the purpose of the study. Several meetings were held to inform parents of the study in each community. In the early spring of 2008, investigators attended Parent-Teacher conference meetings and staff meetings, and the study was announced in school newsletters and emails from the principals. Furthermore, parents were asked to sign the form and return it only if they were unwilling to have their child participate in the investigation. Parent information letters were sent home to all students in the participating schools with an option for them to withdraw their son/daughter from the study. At the beginning of each survey administration, teachers removed students from the room if they were not allowed to participate, and researchers also reminded students that they should not complete the survey if their parents had returned the form. A 95% participation rate was achieved. Students were asked to consent to participate in the study through an assent procedure included on the coversheet of the survey.

*Survey administration.* Six trained research assistants, the primary researcher, and a faculty member collected data. At least two of these individuals administered surveys to classes ranging in size from 10 to 25 students. Students were first informed about the general nature of the investigation. Next, researchers made certain that students were sitting far enough from one another to ensure confidentiality. Students were then given survey packets and the survey was read aloud to middle school students, but in high school students read on their own. It took students approximately 40 minutes on average to complete the survey.

### *Measures*

Each participant completed a questionnaire about exposure to family violence, history of abuse (sexual, physical), bullying, sexual harassment, and teen dating violence perpetration and victimization as well as a demographic questionnaire that included questions about his or her

gender age, grade, and race/ethnicity. For race, participants were given six options: African American (not Hispanic), Asian, White (not Hispanic), Hispanic, Native American, and other (with a space to write in the most appropriate racial descriptor).

### *Multiple Forms of Aggression Perpetration*

*Waves 1 – 4, 6, 7 bullying perpetration.* The nine-item *Illinois Bully Scale* (Espelage & Holt, 2001) assesses the frequency of bullying at school. Students are asked how often in the past 30 days they did the following to other students at school: teased other students, upset other students for the fun of it, excluded others from their group of friends, helped harass other students, and threatened to hit or hurt another student. Response options include “Never”, “1 or 2 times”, “3 or 4 times”, “5 or 6 times”, and “7 or more times.” The construct validity of this scale has been supported via exploratory and confirmatory factor analysis (Espelage & Holt, 2001). Factor loadings in the development sample for these items ranged from .52 to .75 and this factor accounted for 31% of the variance in the factor analysis (Espelage & Holt, 2001). Higher scores indicated more self-reported bullying behaviors. The scale correlated moderately with the Youth Self-Report Aggression Scale ( $r = .65$ ; Achenbach, 1991), suggesting that it was somewhat unique from general aggression. Concurrent validity of this scale was established with significant correlations with peer nominations of bullying (Espelage, Holt, & Henkel, 2003). More specifically, students who reported the highest level of bully perpetration on the scale received significantly more bullying nominations ( $M = 3.50$ ,  $SD = 6.50$ ) from their peers than students who did not self-report high levels of bullying perpetration ( $M = .98$ ;  $SD = 1.10$ ; Espelage et al., 2003). This scale was not significantly correlated with the Illinois Victimization Scale ( $r = .12$ ), and thus provided evidence of discriminant validity (Espelage et al., 2003). This scale is also distinct from pure aggression (Espelage, Low, et al., 2013). Cronbach’s alpha coefficients ranged from .86 to .89 for all waves of data collection in this study.

### *Waves 1-4 Familial Abuse & Exposure to Domestic Violence Items*

Three items from the Student Health and Safety Survey (CDC, 2004) were used to measure past abuse in the family. Students were presented with the following stem “Before you were 9 years old, did you ever...” followed by three items to assess domestic violence exposure and history of childhood maltreatment: (1) see or hear one of your parents or guardians being hit, slapped, punched, shoved, kicked or otherwise physically hurt by their spouse or partner?; (2) have injuries, such as bruises, cuts, or broken bones, as a result of being spanked, struck, or shoved by your parents or guardians or their partners?; and (3) did someone ever force you to have sex or to do something sexual that you did not want to? Response options are “yes” or “no.”

### *Family violence*

*Waves 1 – 4, 6, 7 Family conflict.* The *Family Conflict and Hostility Scale* (Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003) was used to measure the level of perceived conflict and hostility in the family environment. The scale contains three items from a larger survey, which was designed for the Rochester Youth Development Study. The three items were: How often is there yelling, quarreling, or arguing in your household? How often do family members lose their temper or blow up for no good reason? How often are there physical fights in the household, like

people hitting, shoving, or throwing things? Response options include “Never”, “Seldom”, “Sometimes”, “Often”, and “Always.” Cronbach’s alpha coefficients were .79 for Wave 1 and .81 for Waves 2-4 in this study.

*Waves 1 – 4 Sibling verbal/physical aggression.* A sibling aggression scale was created for the original CDC study and included five items that assessed aggression between siblings (Espelage, Low, Rao, & Little, 2013). Items were selected from the University of Illinois Bullying Scale in order to parallel that scale. Students were presented the following instructions “Now, we would like for you to think of your siblings or other children in your family. For each of the following questions, choose how many times you did this activity or how many times these things happened to you in the LAST 30 DAYS among your siblings and/or other children in your home.” Five items emerged as a scale in factor analysis, which includes the following: I upset my brother or sister for the fun of it; I got into a physical fight with my brother or sister; I started arguments with my brother or sister; I hit back when a sibling hit me first; and I teased my siblings for the fun of it. Response options include “Never”, “1 or 2 times”, “3 or 4 times”, “5 or 6 times”, and “7 or more times.” Cronbach alpha coefficient of .82 was found for each wave of data collection in this study.

*Waves 6 – 7 Sibling verbal/physical aggression.* A sibling aggression scale for Waves 6 and 7 were adapted from two other measures (Duncan, 1999; Espelage, Low, Rao, & Little, 2013). Items were selected from the University of Illinois Bullying Scale and Duncan sibling aggression measure to assess verbal/physical aggression. “Now, we would like for you to think of your siblings or other children in your family. For each of the following questions, choose how often these things happen in your home.” Seven items emerged as a scale in factor analysis, which includes the following items: My sister or brother calls me names; I call my sister or brother names; My sister or brother hits me and pushes me around; I hit and push around my sister or brother; I am scared that my sister or brother will hurt me badly some day; My brother or sister beats me up; and I beat up my brother or sister. Response options include “Never”, “Once in a while”, “About once a week”, “1 to 2 days a week”, “Most days”, and “Everyday.” Alpha coefficients of .82 emerged for Waves 6 and 7.

### *Self-Reported Victimization*

The four-item *University of Illinois Victimization Scale* (Espelage & Holt, 2001) assesses victimization from peers. Students are asked how often the following have happened to them in the past 30 days: “Other students called me names”; “Other students made fun of me”; “Other students picked on me”; and “I got hit and pushed by other students.” Responses options are “Never”, “1 or 2 times”, “3 or 4 times”, “5 or 6 times”, and “7 or more times.” The construct validity of this scale has been supported by exploratory and confirmatory factor analysis (Espelage & Holt, 2001). Scores have converged with peer nominations of victimization (Espelage & Holt, 2001). Alpha coefficients of .85 emerged for Waves 1 – 4. Higher scores indicate more self-reported victimization. This scale was used in the current analyses only in the data imputation models.

### *Delinquency*

*Self-report delinquency.* This 8-item scale is based on Jessor and Jessor's (1977) General Deviant Behavior Scale and asks students to report how many behaviors listed on the measure they took part in during the last year or since last survey administration. The scale consists of items such as, "Skipped school", and "Damaged school or other property that did not belong to you." Response options include "Never", "1 or 2 times", "3 or 5 times", "6 or 9 times", and "10 or more times." The original study by Jessor and Jessor utilized this scale in a longitudinal study of 432 largely white middle class students in 7<sup>th</sup> – 10<sup>th</sup> grades. A mean Cronbach's alpha coefficient of .76 was reported across the 3 year study (1977). Since its development, this scale has been used numerous times resulting in Cronbach's alpha coefficients ranging from .76 to .83 (Farrell, Kung, White, & Valois, 2000). Alpha coefficients of .90 emerged for all waves of data collection.

*Delinquent Peers. The Friend's Delinquent Behavior-Denver Youth Survey* is a 7-item scale (Institute of Behavioral Science, 1987), which asks participants to report how many of their friends, in the past year or since last survey administration engaged in delinquent behaviors, such as "Hit or threatened to hit someone", "Purposely damaged or destroyed property that did not belong to them", and "Used alcohol." Response options include "None", "Very Few", "Some of them", "Most of them", and "All of them." A Cronbach's alpha of .89 was found in the original study. Alpha coefficients of .88 emerged for all waves of data collection.

### *High School Sexual Harassment/Violence Perpetration*

*Waves 6 & 7 Sexual Harassment/Violence Perpetration.* A modified version of the American Association of University Women (AAUW) Sexual Harassment Survey was used to assess sexual harassment/violence perpetration (Espelage et al., 2012). Participants were presented with six items to assess both unwanted verbal sexual harassment and groping (e.g., sexual comments, sexual rumor spreading, showed sexual pictures) and forced sexual contact (e.g., touched in sexual way, physically intimated in a sexual way, forced to do something sexual). They were asked to think about whether they directed these behaviors toward other students at school during the last year. Response options were "Never", "1 or 2 times", "3 or 4 times", "5 or 6 times", and "7 or more times." Alpha coefficients of .79 emerged for waves 6 and 7 data. These same items were used to assess victimization as well. This sexual harassment victimization scale scores at Waves 6 and 7 were used in the multiple imputation only, but are not included in current analysis that focused on perpetration.

### *High School Teen Dating Violence Perpetration*

Dating violence was assessed with 28 items for the Conflict in Adolescent Dating Relationships (CADRI; Wolfe et al., 2001) approved by the UIUC Institutional Research Board (IRB). These items were subjected to an exploratory factor analysis, using the following criteria: eigen values greater than 1, % variance, scree plot, and theoretical framework drawn from original measure. Four scales fit these criteria and included physical/threatening behaviors, verbal emotional abuse, relationally aggressive behaviors, and sexual coercion. Students were presented with the following stem prior to completing the CADRI measure: "The next questions

ask about “dating.” By “dating,” we mean spending time with someone you are seeing or going out with. Examples of this might include hanging out at the mall, in the neighborhood, or at home or going somewhere together like the movies, a game, or a party. It doesn't have to be a formal date or something you planned in advance and it may be with a small group. The term “date” includes both one-time dates and time together as part of long-term relationships. Next, they were presented with an explanation of the response options; If you have started dating (even one date), fill in the bubble that is your best estimate of how often you did the following to anyone you were dating. As a guide, use the following scale: Never: this has never happened in your relationships; Seldom: this has happened only 1-2 times in your relationships; Sometimes: this has happened about 3-5 times in your relationships; Often: this has happened 6 times or more in your relationships.

*Physical Teen Dating Violence Perpetration.* Twelve items assessed physical violence and/or threatening behaviors. Example items were: I threatened to hit him/her; I slapped him/her; I scratched him/her; I choked him/her; I bit him/her. Alpha coefficients of this perpetration scale was .91 at Waves 6 and 7. The victimization scale was used only for imputation and yielded alpha coefficients of .89 for each wave.

*Verbal Emotional Abuse Violence Perpetration.* Nine items assessed verbal emotional abuse and one item measured tracking of dating partner. Example items were: I said things just to him/her angry; I blamed him/her for a problem; I spoke to him/her in a hostile/angry tone; I threatened to end the relationship; I kept track of where he/she went. Alpha coefficients of this perpetration scale was .88 at Waves 6 and 7. The victimization scale was used only for imputation and yielded alpha coefficients of .88 for each wave.

*Relationally Aggressive Dating Violence Perpetration.* Four items assessed behaviors that involved others outside of the relationship. Items were: I said things to his/her friends about him/her to them against her/him; I ridiculed or made fun of him/her in front of others; and I tried to turn his/her friends against him/her. Alpha coefficient of this perpetration scale was .66 at Waves 6 and 7. The victimization scale was used only for imputation and yielded alpha coefficients of .76 for each wave.

*Sexual Coercion Dating Violence Perpetration.* Four items assessed sexually coercive behaviors. Items were: I forced him/her to have sex when he/she didn't want to; I touched him/her sexually when he/she didn't want me to; I threatened him/her in an attempt to have sex with him/her; and I kissed him/her when he/she didn't want me to. Alpha coefficients of this perpetration scale was .61 at Waves 6 and 7. The victimization scale was used only for imputation and yielded alpha coefficients of .70 for each wave.

## **Major Research Questions**

1. What are the rates of bullying in middle school and rates of sexual harassment, dating violence perpetration and victimization in high school? How do these rates differ by gender?
2. Does family violence and delinquency predict bullying during the middle school years and do these variables predict later bullying, sexual harassment, and teen dating violence perpetration?

## Data Analysis

*Data Imputation.* To address concerns with missing data a multiple imputation procedure was used to ensure parameters estimates were unbiased and valid inferences from the statistical analysis could be made. Analysis of data with missing values involved three major steps. In the first step, a series of complete data sets were created in which missing values are replaced by random draws from a distribution of plausible values. Below we outline how this first step was accomplished with the present data. Thirty complete data sets were created because there was a large amount of missing data due both to the design (missing completely at random) and values missing at random. In the second step, path models were fit to each of the 30 imputed data sets. In the final step, parameter estimates, standard errors, and fit statistics from each of the 30 analyses were aggregated according to Rubin's rules (1987). For a detailed review of each step see van Buuren (2012) or Enders (2010).

An important component in multiple imputation (MI) is the creation of an imputation model, which is different from our analysis model (i.e., path model). All variables that will be used in the path model should be included in the imputation model, as well as auxiliary variables that are correlated to these target variables (van Buuren, 2012). The method used to perform the multiple imputation used fully conditionally specified (FCS) models (Enders, 2010; van Buuren, 2012). The variables identified in Table 1 were used in the MI. The FCS approach imputes data on a variable-by-variable basis by specifying a model per variable (van Buuren, 2012). When the imputed variable was a discrete/categorical variable, the logistic regression was used as a building block. The exception was when the MLE for logistic regression could not be achieved, in which case discriminant analysis was used and all scale/numerical variables were used as "predictors" in the imputation model. When scale/numerical data were imputed linear regression was used. The imputation starts from simple guess values, and under FCS iterations occur until all conditionally specified imputation models are done (van Burren, 2012).

In waves 1 – 4 the variables were assumed to be missing at random (MAR), and missing values in waves 5-7 were missing completely at random (MCAR) due to the design of the study. The MAR assumption is supported by the addition of auxiliary variables and complex imputation models. The MI started with variables that had the least amount of missing values and then progressed to variables that were missing the most. The number of burnins was set to 100, which is likely much more than was required (for most variable upward or downward trends in imputed values flattened out by around 50<sup>th</sup> burnin). As described above, under FCS separate imputation models were used for each variable. As stated above, given the large amount of missing data, 30 complete data sets were created yielding relative efficiencies of .97 through .99.

In all imputation models, the variables of gender and race/ethnicity were used. Also included were other variables of interest and auxiliary variables from the same wave (Table 1). In addition, the same variables as the one being imputed from other waves were also included. The auxiliary variables included other measures that were collected but were not pertinent to the questions addressed in the current analysis. For example, when imputing "bully" at wave 2, the imputation model included race, gender, other variables from wave 2, auxiliary variables from wave 2, and bully scores from waves 1, 3, 4, 6, and 7. On average, the imputation models

contained approximately 20 variables. Exceptions to this strategy were for teen dating violence variables where all available data in the imputation model were used (i.e., it was much more complex).

As described above, the analyses were carried out on each of the 30 complete data sets. Specifically the path analyses modeled were fit to the correlation matrices. For step 3, the results were combined using Rubin's rules (Rubin, 1987).

## Results

### *Descriptive Analyses*

Tables 2 through 8 present a series of descriptive analyses including means and standard deviations of study variables across all waves of data for the entire sample and then by gender. Next, the percentages of youth reporting any experience with sexual harassment or teen dating violence are presented for Waves 6 and 7. Correlations among the teen dating violence scales are presented to determine the overlap between forms of violence and the overlap of perpetration and victimization.

#### *Percentage of youth reporting history of abuse and exposure to domestic violence.*

Participants were presented with the following stem "Before you were 9 years old, did you ever..." followed by three items to assess domestic violence exposure and history of childhood maltreatment: (1) see or hear one of your parents or guardians being hit, slapped, punched, shoved, kicked or otherwise physically hurt by their spouse or partner?; (2) have injuries, such as bruises, cuts, or broken bones, as a result of being spanked, struck, or shoved by your parents or guardians or their partners?; and (3) did someone ever force you to have sex or to do something sexual that you did not want to? Boys and girls reported witnessing domestic violence at similar rates (19%, 18%). Further, slightly more girls reported being physically abused than boys (16%, 13%), and slightly more girls reported childhood sexual abuse than boys (5%, 3%).

*Means of study variables over time.* Table 2 includes means and standard deviations for the study variables included in the current analysis across all waves of data. The lower end of the scales is a score 1 (never). Although the path analyses will statistically evaluate the stability of these behaviors across time, it is important to get understand how things are changing in general. As shown in Table 2, bully perpetration showed relatively little change during middle school (Waves 1 – 4) and declined slightly at the two high school waves (Waves 6 – 7). Family conflict also decreased across the middle school years (Waves 1 – 4). Sibling aggression remained relatively stable across middle school and declined into high school. Delinquency remained stable during the middle school years, but showed an increase at Wave 6, the first year of high school, which was a similar pattern for delinquent friends. For sexual harassment/violence and teen dating violence perpetration, scale means were similar for Waves 6 and 7.

*Means of study variables over time by gender.* Table 3 includes means, standard deviations, and *t*-tests to evaluate gender differences on the study variables included in the path

analysis for the current analyses. For bullying perpetration, boys reported more bully perpetration at Waves 1, 2, 6 and 7. Girls reported more family conflict at Waves 1 through 4 than boys. Similarly, girls reported more aggression with siblings at home than boys at Waves 1 through 6, but no statistically significant difference at Wave 7. Self-reported delinquency scale scores were higher for boys than girls at all waves. Self-reported affiliation with delinquent friends was higher for boys than girls in middle school Waves 1 and 4, but girls reported high scales scores on delinquent friends in Waves 6 and 7. In high school, sexual harassment/violence perpetration was higher for boys than girls. Verbal emotional abuse and physical teen dating violence perpetration was higher for girls than boys, but boys reported greater levels of sexual teen dating violence perpetration in high school.

*Percentage of youth endorsing sexual harassment/violence involvement.* Table 4 includes the percentage of boys and girls who endorsed some involvement (greater than 1 = never) in school harassment/violence perpetration and victimization at Waves 6 and 7. This analyses compliment the means and standard deviations in Table 3 which indicates that many youth reported none or only one type of sexual harassment/violence experience. Consistent with Table 3, boys reported a greater mean scale score than girls on self-reported sexual harassment perpetration, 37% of boys versus 28% of girls reported perpetrating at least one form of sexual harassment/violence. These figures dropped at wave 7 to 25% for girls and 23% for boys. Examination of victimization experiences, 68% of girls at Wave 6 reported having at least one victimization experience compared to 55% of boys. At Wave 7, we see a similar pattern with 63% of girls and 51% of boys reporting at least one victimization experience.

*Percentage of youth endorsing teen dating violence involvement.* In Table 4, the percentage of youth experiencing any teen dating violence involvement as a perpetrator or victim are presented for verbal emotional abuse, physical behaviors, sexual coercion in dating relationships, and relationally aggressive teen dating violence. Verbal emotional abuse was the most common experience for these youth; 73% of girls at Wave 6 (74% at Wave 7) versus 66% of boys (63% at Wave 7) reported any verbal emotional abuse victimization. In addition, 64% of girls at Waves 6 and 7 reported perpetrating verbal emotional abuse with a dating partner compared to 45% and 49% of boys at Waves 6 and 7. Physical teen dating violence behaviors were reported by fewer youth, but still at a high rate. Girls reported being victimized at a similar rate to boys at Wave 6 (35% versus 36%), but 30% of girls reported this experience at Wave 7 compared to 23% of boys. When turning to sexual coercion victimization in teen dating relationships, more girls report having this experience at Waves 6 and 7 (23%, 25%) than boys (13%, 14%). Perpetration of sexual coercion in teen dating relationships was reported more for boys (10%, 11%) than girls (4%, 7%). Finally, being a victim of relationally focused violence (e.g., talking bad to friends) was similar across Waves 6 and 7 for girls (23%, 25%) and boys (20%, 25%), but perpetration rates were lower for both Waves 6 and 7 for girls (12%, 12%) and boys (8%, 10%).

*Correlations between types of teen dating violence perpetration.* Correlations between different types of teen dating violence perpetration for girls and boys for Waves 6 and 7 are presented in Tables 5 and 6. As shown, in Table 5, verbal emotional abuse and physical teen dating violence was the most highly correlated of the perpetration types for girls and boys ( $r_s = .59, .57, p_s < .01$ ). Relationally aggressive teen dating violence perpetration were also related to

verbal emotional abuse for girls and boys ( $r_s = .39, .43, p_s < .01$ ) and physical perpetration as well ( $r_s = .25, .29, p_s < .01$ ). Physical violence perpetration was significantly associated with sexual coercive perpetration for girls and boys ( $r_s = .36, .38, p_s < .01$ ) and verbal emotional abuse was significantly associated with sexual coercive perpetration for girls and boys ( $r_s = .37, .42, p_s < .01$ ), but slightly higher for boys. Similarly, relationally aggressive perpetration was slightly more correlated with sexual coercive perpetration for boys than girls ( $r_s = .24, .17, p_s < .01$ ). As shown in Table 6, the correlations for Wave 7 are generally larger than Wave 6, especially for correlations between physical teen dating violence perpetration and sexual teen dating violence perpetration for girls and boys ( $r_s = .76, .82, p_s < .01$ ) and sexual teen dating violence and relationally aggressive teen dating violence ( $r_s = .71, .70, p_s < .01$ ).

*Correlations between types of teen dating violence victimization.* Correlations between different types of teen dating violence victimization for girls and boys for Waves 6 and 7 are presented in Tables 5 and 6. As shown, in Table 5, verbal emotional abuse and physical teen dating violence victimization were the most highly correlated of the victimization types for girls and boys ( $r_s = .61, .63, p_s < .01$ ). Relationally aggressive teen dating violence victimization was also related to verbal emotional abuse for girls and boys ( $r_s = .55, .57, p_s < .01$ ) and physical victimization as well ( $r_s = .44, p_s < .01$ ). Physical violence victimization was significantly associated with sexual coercive victimization for girls and boys ( $r_s = .34, .35, p_s < .01$ ) and verbal emotional abuse was significantly associated with sexual coercive victimization for girls and boys ( $r_s = .38, .37, p_s < .01$ ). Similarly, relationally aggressive victimization was correlated with sexual coercive victimization for girls than boys ( $r_s = .36, .32, p_s < .01$ ). As shown in Table 6, the correlations for Wave 7 are generally larger than Wave 6, especially for correlations between physical teen dating violence victimization and sexual teen dating violence victimization for girls and boys ( $r_s = .72, .76, p_s < .01$ ) and sexual teen dating violence and relationally aggressive teen dating violence victimization ( $r_s = .64, .65, p_s < .01$ ).

*Correlations of teen dating violence victimization & perpetration within types.* Correlations between teen dating violence perpetration and victimization for girls and boys for Waves 6 and 7 are also presented in Tables 5 and 6. At Wave 6, physical teen dating violence perpetration was strongly correlated with reports of physical teen dating violence victimization for girls and boys ( $r_s = .65, p_s < .01$ ). Verbal emotional abuse perpetration and victimization were also highly correlated for girls and boys ( $r_s = .72, p_s < .01$ ). Relationally aggressive teen dating violence victimization and perpetration were less correlated for girls and boys ( $r_s = .43, .47, p_s < .01$ ). Sexual coercive teen dating violence perpetration and victimization were even less associated in comparison to other types for girls and boys ( $r_s = .16, .20, p_s < .01$ ). At Wave 7 (Table 6), the pattern was similar except that the correlations between sexual coercive teen dating perpetration and victimization were much higher for girls and boys ( $r_s = .58, .62, p_s < .01$ ).

### *Path Analysis*

*Path Analysis Analytic Strategy.* Using the imputed data sets (as described previously) a series of path models were fit to the data to examine the trajectory of adolescent engagement in dating violence and sexual harassment across adolescence. For the purpose of the present

analysis, only those students who had started dating in high school were included. This criterion excluded 9% (or 51) of the girls and 8% (or 48) of the boys from the analysis.

A number of different path models were fit to each of the correlation matrices from the 30 imputed data sets. The results were then averaged over the 30 models using Rubin's (1987) rules. The covariances were estimated for all variables, and the models were run separately for boys and girls. Those paths that had non-significant parameter estimates were deleted from the model. Of note, the familial abuse items (physical, sexual, and exposure to domestic violence) did not correlate with bully perpetration and relational perpetration was not significantly to any variables, thus were deleted. Additionally, we assessed the goodness-of-fit of the model using a number of different criteria. Given the large sample size we did not rely on chi-square statistics to assess goodness-of-fit because it is highly dependent on the sample size. As such, we used the root mean square error of approximation (RMSEA), the absolute mean residual, and the off-diagonal mean residual. Additionally, we examined the distribution of standardized residuals for each of the 30 data sets and the  $R^2$  for each of the variables. The fit indices are presented in Table 7, with the indices for girls' model presented in the top half, and those for the model containing boys in the bottom portion. According to Loehlin (2004) practical experience has found support that a RMSEA value of about .05 or less would indicate a close fit of the model in relation to the degrees of freedom. Loehlin (2004) further states that a RMSEA value of .08 or less would indicate a reasonable error of approximation, and that a model with a RMSEA greater than .1 should not be employed.

*Results of Girls Model.* There were 532 girls included in the analysis. The smallest relative efficiency for a parameter equaled .976 and most were .98 or above. See Tables 8 and 10 for coefficients and Figures 3 and 4 for the significant paths plotted.

Consistent with the proposed theoretical model (Figure 1), during middle school the previous wave of bully perpetration scores and current sibling aggression predicted bullying behavior for girls (Figure 3). Additionally during middle school (waves 2-4), current delinquent friends and family conflict were significant predictors of bullying behaviors. However, family conflict did not predict bullying perpetration at Wave 4. As girls moved to high school, bully perpetration continued to significantly predict delinquency, which was still explained by sibling aggression (Figure 4). However, in high school (waves 6 and 7) having a delinquent friend was no longer a significant predictor of bullying or delinquency. However, bully perpetration continued to predict self-reported delinquency, but now also predicted sexual harassment/violence perpetration, verbal emotional abuse teen dating violence perpetration, and sexual coercive teen dating violence perpetration at Wave 6. Bully perpetration at Wave 6 predicted bully perpetration at Wave 7 which was then associated with sexual harassment/violence perpetration, which in turn predicted physical and sexually coercive teen dating violence perpetration. Bully perpetration at Wave 7 also directly predicted delinquency, physical teen dating violence, and sexual teen dating violence perpetration.

*Boys Analysis.* There were 539 boys included in the analysis. The smallest relative efficiency for a parameter equaled .976 and most were .98 or above. See Tables 8 and 10 for coefficients and Figures 3 and 4 for the significant paths plotted.

Consistent with the proposed model (Figure 1), during middle school the previous wave of bully perpetration scores and current sibling aggression predicted bullying behavior for boys (Figure 5), like the girls model. However, family conflict did not emerge as a significant predictor of bullying perpetration or delinquency. Additionally, during middle school (waves 2-4), current delinquent friends and self-reported delinquency were significant predictors of bullying behaviors. As boys moved to high school, bully perpetration continued to significantly predict delinquency, which was still explained by sibling aggression (Figure 4). In contrast to the girls' model, sibling aggression and self-reported delinquency also predicted sexually coercive teen dating violence perpetration at Waves 6 and 7 and verbal emotional abuse perpetration at Wave 7. For boys, like girls, in high school (waves 6 and 7) having a delinquent friend was no longer a significant predictor of bullying or delinquency. However, bully perpetration continued to predict self-reported delinquency, but now also predicted sexual harassment/violence perpetration, verbal emotional abuse and physical teen dating violence perpetration at Wave 6. Bully perpetration at Wave 6 predicted bully perpetration at Wave 7 which was then associated with sexual harassment/violence perpetration, which in turn predicted physical and sexually coercive teen dating violence perpetration. Bully perpetration at Wave 7 also directly predicted delinquency at Wave 7, which was also associated with all forms of verbal, physical, and sexual teen dating violence perpetration.

### **Strengths & Data Limitations**

The current study has several strengths, including a large sample, and multiple waves of data collected over a 5-year period. The over-reliance on cross-sectional data in the literature has prevented the field from understanding how bullying may mediate associations between family violence and teen dating violence. This study was also unique given the comprehensive assessment of family violence. Students reported on the general level of conflict in their family, but also reflected upon aggression among children in the family. Teen dating violence was also measured with an assessment that yielded multiple forms of violence, including verbal, physical, relational, and sexual coercion victimization and perpetration. Finally, this sample included students in middle school through high school, a time when engagement in other antisocial behavior more generally increases.

Despite these strengths, there are also a few limitations. Foremost is the reliance on youth self-report rather than multiple reports, which could diminish the validity and reliability (i.e., sampling) of reported behavior. Second, our measure of family violence does not distinguish between direct and indirect violence exposure, which could lead to underestimation of relations among observed variables. Further, the sibling aggression items assumed that the student participants had either a sibling or a child in the home, but the survey did not ask how many siblings were in the home. Third, these data were collected in one community located in a midwestern urban setting and these findings need to be replicated in other communities to enhance the ecological validity of our findings. Fourth, we did not assess dating violence within dating couples, thus, there is no way to examine mutual violence, which is important aspect of understanding the mechanisms underlying teen dating violence (Giordano, Soto, Manning, & Longmore, 2010). Finally, we did not assess teen dating violence within in the context of social media or the use of technology, which is becoming increasingly a space with teens spend their time and engage one another in intimate relationships (Dank et al., 2013). These limitations

aside, the dataset represents an important initial step in enhancing youth violence scholarship through theory-driven, longitudinal research.

## Conclusions and Recommendations

### *Recommendation #1: Prevention of Youth Violence Should Address Exposure to Family Violence*

Our results suggest that bullying perpetration are important mechanisms linking family violence and sexual harassment/violence and teen dating violence perpetration. That is, bullying perpetration served as indirect mechanism between family conflict and sibling aggression and later sexual harassment/violence and teen dating violence perpetration for girls. For boys, bullying mediated the association between sibling aggression (not family conflict) and these later high school outcomes. The connection between familial violence/conflict and aggression at school is not a new finding and not even surprising, given the intergenerational transmission of aggression, the importance of the parent microsystem in the social-ecological model, and the social information learning framework of youth aggression (Reid et al., 2002; Slomkowski et al., 2001). Taken together, the findings from this study support the social information learning framework in understanding the relations among family violence, bullying, and delinquency during early adolescence. Youth need to have the opportunity to learn nonviolent ways of managing conflicts with peers and dating partners. In addition, family-level interventions should address corresponding and often overlapping forms of family conflict/aggression

Teen dating violence prevention efforts should align with the recommendations of Tharp (2012), who argued that the next generation of prevention should target individual-level and relationship-level factors. Indeed, few dating violence programs explicitly address family violence. While some programs do work to help young people identify abusive behaviors across multiple domains (e.g. woman abuse, child abuse, sexual harassment, racism) (Wolfe, Wekerle, Scott, Straatman, Grasley, & Reitzel-Jaffe, 2003), few (if any) programs explicitly address violence young people may have experienced in their families and how this serves to influence behaviors. Some programs do acknowledge that dating violence is a multi-determined phenomenon (Avery-Leaf et al., 1997), and as such provide interventions that address multiple levels of influence (i.e. social and psychological); however, most programs do not address the influential role of families.

Some teen dating violence prevention programs focus on providing youth with the skills to promote healthy and happy marriages. For example, the *Love U2: Increasing Your Relationship Smarts (RS adapted)* (Adler-Baeder, Kerpelman, Schramm, Higginbotham & Paulk, 2007) focuses on understanding the practices associated with healthy marriages and learning to manage marriage conflict. Other programs address how the family of origin can impact a young person's relationships and marriage (Connections; Gardner & Boellaard, 2007). While these programs start to address the influence of families, they are not explicitly addressing the concerns associated with experiencing family violence.

*Recommendation #2: Prevention Efforts Should Consider Developmental Timing of Aggression/Violence – Bullying Declines In High School*

Bully perpetration showed relatively little change during middle school and declined at the two high school waves, which is consistent with many research studies that have shown that bullying peaks during middle school (Nansel et al., 2001; Robers, Zhang, & Truman, 2011). Thus, generic bully prevention programs in high schools are not likely salient for this age group and does not support the decreasing trend of bullying over time. Of note, a recent meta-analysis indicates that bully prevention programs appear to be most efficacious up until 7<sup>th</sup> grade, but efficacy in 8<sup>th</sup> grade drops to zero (Yeager, Fong, Lee, & Espelage, in press). Further, there was a seeming reversal in efficacy through the high school years, such that programs, if anything, cause harm. Yeager and colleagues caution against transporting programs developed with children and young adolescents to older adolescents until more thought is given to the unique ways in which violence prevention messages are received by adolescents who are emerging adults.

*Recommendation #3: Prevention Efforts Should Consider Developmental Timing of Aggression/Violence – Address Sexual Harassment/Violence Perpetration*

Sexual harassment perpetration was a common experience for youth in high school. Boys reported a greater mean scale score than girls on self-reported sexual harassment perpetration, 37% of boys versus 28% of girls reported perpetrating at least one form of sexual harassment/violence. Examination of victimization experiences, 68% of girls reported having at least one victimization experience compared to 55% of boys. These figures are problematic given that youth were asked to report on unwanted experiences. Students were most likely to report sexual commentary, sexual rumors, and unwanted touching.

Links between sexual harassment and bullying suggest that youth who engage in one type of aggression (i.e., bullying) may be more likely to engage in the other (i.e., sexual harassment; Espelage et al., 2012), and that bullying perpetration may lead to sexual harassment perpetration (Miller et al., 2013). In the current study here, 50% of the youth reported being a victim or perpetrator of unwanted sexual commentary, which is likely to include homophobic teasing or references to gender nonconformity. In a longitudinal study of the middle school youth in this current sample, Espelage and colleagues (2012) found that bullying perpetration and homophobic teasing perpetration among a sample of 5<sup>th</sup> – 7<sup>th</sup> graders were related to perpetration of sexual harassment six months later (Espelage et al., 2012). Taken together, it is important to address gender-based language early in middle school in order to prevent sexual harassment prior to the onset of dating (Miller, 2012).

*Recommendation #4: Assess & Address Multiple Forms of Teen Dating Violence Victimization & Perpetration*

Verbal emotional abuse was the most common experience for these youth, with 2/3rds of girls and boys reporting at least one experience of verbal emotional abuse in a dating relationship. Over 50% of boys and girls reported perpetrating verbal emotional abuse in a dating relationship. In contrast, physical teen dating violence victimization was reported by 1/3

of boys and girls, but perpetration of physical teen dating violence was reported more by girls than boys. The greater prevalence of verbal emotional abuse among adolescents is consistent with recent research on multiple forms of teen dating violence (Kernsmith & Tolman, 2011; Temple et al., 2013). Our finding that girls perpetrate more physical teen dating violence than boys should be interpreted with caution given that we did not assess fear or injury. In a national representative sample, girls reported injurious violence in 36% of physically violent victimization act, whereas boys reported injury following a physical violent victimization rate of 12.9% (Hamby & Turner, 2012). It is imperative to assess and address all forms of teen dating violence both in the content of teen dating violence prevention programs and the evaluations of such programs. Indeed, the majority of teen dating violence programs do cover multiple forms of dating aggression. However, many of the evaluations of these programs do not include measures that span all forms of teen dating violence perpetration (for meta-analysis see De La Rue, Polanin, Espelage, & Pigott, 2013).

*Recommendation #5: Increase Research Attention to Sexual Coercion in Dating Relationships – Especially for girls*

Finally, our finding that girls reported more sexual coercion in dating relationships than boys is consistent with a recent international review of teen dating violence (Leen et al., 2013). Leen and colleagues reviewed articles from 2000-2011 from Europe and North America. In all of the US-based studies, girls reported greater sexual dating violence victimization than boys and the figures match our reported 20-23% of girls and 13-14% of boys having experienced sexual coercion in a dating relationship. Interestingly, the one exception was a 2002 paper by Ackard & Neumark-Sztainer. It is clear that there has been an increase in the number of youth experiencing sexual coercion and perpetrating toward dating partners. Much more research needs to be conducted on this topic.

## **Summary**

Despite considerable growth in prevention programming, our ability to positively impact bullying, sexual and teen dating violence is negligible at best (for review De La Rue et al., 2013; Espelage & Horne, 2008; Yeager et al., in press). In addition, our ability to mount maximally efficacious, effective and efficient preventive interventions for teen dating violence is still limited in several ways, perhaps most importantly is a lack of developmentally-informed theory. Previous research has primarily relied on randomized control trial designs to establish that preventive interventions have demonstrable effects on proximal risk and protective processes as well as on short- and long-term outcomes in childhood, adolescence, and young adulthood. Many of these interventions also produce long term economic benefits relative to their implementation costs (e.g., Karoly, Greenwood, et al., 1998), but should not substitute for a need to identify trajectories during a time when sexual and teen dating violence are being laid down and elaborated. The effects of these interventions are both inconsistent and trivial (for the most part), despite their relative complexity and expense. The development of relatively brief, flexible, well-titrated and optimally timed interventions are needed to use limited resources to efficiently address adolescent multi-problem behavior. An important next step in prevention science entails specification of how interventions can be applied to work at peak efficacy, effectiveness and efficiency; in other words - how they can be optimized. This study suggests that bully prevention

should occur before and during middle school, and gender-based content and relationship skills should be incorporated before high school. Interventions should focus on multiple forms of aggression/violence, rather than continuing the inefficient approach of single prevention approaches for each form of aggression/violence (Hamby & Grych, 2013).

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*Table 1. Variables included in Multiple Imputation Procedure*

<i>Variable</i>	<i>Missing</i>		<i>Variable Type</i>
	<i>Number</i>	<i>Percent</i>	
Gender Wave 6	4	0.7%	Dichotomous
Age Wave 6	6	1.05%	Ordinal (logistic)
Allowed To Date?	8	1.4%	Dichotomous
Race Wave 6	49	3.5%	Multicategory/Nominal (discrim)
Longest Dating Relationship	75	13.2%	Ordinal (logistic)
Physical TDV victimization	75	13.2%	Scale/Numerical
Physical TDV perpetration	77	13.5%	Scale/Numerical
Verbal TDV perpetration	77	13.5%	Scale/Numerical
Verbal TDV victimization	78	13.7%	Scale/Numerical
Relational TDV perpetration	87	15.3%	Scale/Numerical
Relational TDV victimization	92	16.2%	Scale/Numerical
<i>More than 20% missing</i>			
Sibling Aggress perpetration Wave 2	139	24.4%	Scale/Numerical
Bully Perpetration Wave 2	140	24.6%	Scale/Numerical
Bully victimization Wave 2	140	24.6%	Scale/Numerical
Family Conflict Wave 2	148	26.1%	Scale/Numerical
Physical Abuse Wave 2	152	26.7%	Dichotomous
Domestic Violence Exposure Wave 2	153	26.9%	Dichotomous
Childhood Sexual Abuse Wave 2	155	27.2%	Dichotomous
Sibling Aggress Perpetration Wave 3	163	28.6%	Scale/Numerical
Bully Wave 3	165	29.0%	Scale/Numerical
Bully Victim Wave 3	166	29.2%	Scale/Numerical
<i>More than 30% missing</i>			
Family Conflict Wave 3	176	30.9%	Scale/Numerical
Physical Abuse Wave 3	178	31.3%	Dichotomous
Domestic Violence Exposure Wave 3	179	31.5%	Dichotomous

<i>Table 1 Continued</i>			
Childhood Sexual Abuse Wave 3	182	32.0%	Dichotomous
<b>More than 50% missing</b>			
Childhood Sexual Abuse Wave 1	290	51.0%	Dichotomous
Bully Perpetration Wave 1	286	50.3%	Scale/Numerical
Bully Victimization Wave 1	287	50.4%	Scale/Numerical
Sibling Aggress Perpetration Wave 1	287	50.4%	Scale/Numerical
Bully Victimization Wave 4	288	50.6%	Scale/Numerical
Bully Perpetration Wave 4	288	50.6%	Scale/Numerical
Domestic Violence Exposure Wave 1	288	50.6%	Dichotomous
Physical Abuse Wave 1	288	50.6%	Dichotomous
Family Conflict Wave 1	288	50.6%	Scale/Numerical
Family Conflict Wave 4	298	52.4%	Scale/Numerical
Sibling Aggression Perpetration Wave 4	291	51.1%	Scale/Numerical
Physical Abuse Wave 4	299	53.0%	Dichotomous
Childhood Sexual Abuse Wave 4	299	53.0%	Dichotomous
Domestic Violence Exposure Wave 4	300	52.7%	Dichotomous
Bully Perpetration Wave 5	335	58.9%	Scale/Numerical
Bully Victimization Wave 5	335	58.9%	Scale/Numerical

*Table 2. Means and Standard Deviations of Study Variables*

<i>Variable</i>	<i>Mean</i>	<i>Std. Deviation</i>
Bullying Perpetration Scale Wave 1 spring 2008	1.45	.65
Bullying Perpetration Scale Wave 2 fall 2008	1.47	.68
Bullying Perpetration Scale Wave 3 spring 2009	1.48	.73
Bullying Perpetration Scale Wave 4 fall 2009	1.42	.61
Bullying Perpetration Scale Wave 6 spring 2012	1.41	.66
Bullying Perpetration Scale Wave 7 spring 2013	1.29	.59
Family Conflict Wave 1 spring 2008	2.30	1.14
Family Conflict Wave 2 fall 2008	2.16	1.10
Family Conflict Wave 3 spring 2009	2.13	1.14
Family Conflict Wave 4 fall 2009	1.95	1.02
Sibling Aggression Wave 1 spring 2008	1.78	.91
Sibling Aggression Wave 2 fall 2008	1.82	1.00
Sibling Aggression Wave 3 spring 2009	1.79	1.04
Sibling Aggression Wave 4 fall 2009	1.75	.97
Sibling Aggression Wave 6 spring 2012	1.67	.94
Sibling Aggression Wave 7 spring 2013	1.55	.89
Delinquent Behavior Wave 1 spring 2008	1.33	.47
Delinquent Behavior Wave 2 fall 2008	1.33	.55
Delinquent Behavior Wave 3 spring 2009	1.35	.57
Delinquent Behavior Wave 4 fall 2009	1.32	.52
Delinquent Behavior Wave 6 spring 2012	1.44	.59
Delinquent Behavior Wave 7 spring 2013	1.32	.55
Delinquent Friends Wave 1 spring 2008	1.69	.72
Delinquent Friends Wave 2 fall 2008	1.65	.80
Delinquent Friends Wave 3 spring 2009	1.67	.86
Delinquent Friends Wave 4 fall 2009	1.63	.81
Delinquent Friends Wave 6 spring 2012	1.82	.88
Delinquent Friends Wave 7 spring 2013	1.55	.83
School Sexual Harassment Wave 6 spring 2012	1.15	.36
School Sexual Harassment Wave 7 spring 2013	1.20	.55
Verbal TDV Perpetration Wave 6 spring 2012	1.33	.57
Verbal TDV Perpetration Wave 7 spring 2013	1.31	.58
Physical TDV Perpetration Wave 6 spring 2012	1.10	.32
Physical TDV Perpetration Wave 7 spring 2013	1.08	.28
Sexual TDV Perpetration Wave 6 spring 2012	1.03	.14
Sexual TDV Perpetration Wave 7 spring 2013	1.05	.24

*Table 3. Means and Standard Deviations of Study Variables by Gender*

<i>Variable</i>	<i>Girls</i>		<i>Boys</i>		<i>t</i>	<i>p</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>		
Bullying Perpetration Scale Wave 1 spring 2008	1.44	0.63	1.48	0.67	5.42	.00
Bullying Perpetration Scale Wave 2 fall 2008	1.46	0.63	1.48	0.71	3.46	.00
Bullying Perpetration Scale Wave 3 spring 2009	1.49	0.69	1.47	0.76	2.08	.04
Bullying Perpetration Scale Wave 4 fall 2009	1.43	0.59	1.42	0.62	1.96	.05
Bullying Perpetration Scale Wave 6 spring 2012	1.37	0.60	1.44	0.72	8.55	.00
Bullying Perpetration Scale Wave 7 spring 2013	1.25	0.53	1.33	0.65	12.52	.00
Sibling Aggression Wave 1 spring 2008	1.83	0.92	1.73	0.90	10.33	.00
Sibling Aggression Wave 2 fall 2008	1.88	0.99	1.76	1.00	11.78	.00
Sibling Aggression Wave 3 spring 2009	1.88	1.02	1.71	1.04	15.37	.00
Sibling Aggression Wave 4 fall 2009	1.88	0.97	1.62	0.96	25.52	.00
Sibling Aggression Wave 6 spring 2012	1.71	0.92	1.62	0.96	8.57	.00
Sibling Aggression Wave 7 spring 2013	1.58	0.87	1.53	0.91	5.04	.00
Family Conflict Wave 1 spring 2008	2.40	1.15	2.21	1.13	15.59	.00
Family Conflict Wave 2 fall 2008	2.28	1.12	2.05	1.07	19.81	.00
Family Conflict Wave 3 spring 2009	2.24	1.17	2.02	1.10	18.08	.00
Family Conflict Wave 4 fall 2009	2.14	1.04	1.78	0.97	33.49	.00
Delinquent Behavior Wave 1 spring 2008	1.28	0.43	1.39	0.51	21.78	.00
Delinquent Behavior Wave 2 fall 2008	1.28	0.49	1.38	0.60	17.78	.00
Delinquent Behavior Wave 3 spring 2009	1.31	0.52	1.39	0.62	12.84	.00
Delinquent Behavior Wave 4 fall 2009	1.28	0.49	1.36	0.55	13.97	.00
Delinquent Behavior Wave 6 spring 2012	1.43	0.57	1.46	0.61	4.73	.00
Delinquent Behavior Wave 7 spring 2013	1.33	0.52	1.31	0.59	2.82	.00
Delinquent Friends Wave 1 spring 2008	1.68	0.71	1.72	0.73	5.52	.00
Delinquent Friends Wave 2 fall 2008	1.66	0.77	1.64	0.82	1.64	.10
Delinquent Friends Wave 3 spring 2009	1.67	0.83	1.68	0.89	1.73	.08
Delinquent Friends Wave 4 fall 2009	1.62	0.78	1.63	0.83	1.50	.14
Delinquent Friends Wave 6 spring 2012	1.91	0.89	1.73	0.85	18.50	.00
Delinquent Friends Wave 7 spring 2013	1.59	0.84	1.51	0.82	8.71	.00
School Sexual Harassment Wave 6 spring 2012	1.13	0.32	1.17	0.40	9.44	.00
School Sexual Harassment Wave 7 spring 2013	1.18	0.51	1.21	0.58	5.11	.00
Verbal TDV Perpetration Wave 6 spring 2012	1.44	0.58	1.22	0.53	36.25	.00
Verbal TDV Perpetration Wave 7 spring 2013	1.40	0.58	1.22	0.56	30.03	.00
Physical TDV Perpetration Wave 6 spring 2012	1.16	0.34	1.04	0.28	35.66	.00
Physical TDV Perpetration Wave 7 spring 2013	1.11	0.27	1.06	0.29	15.35	.00
Sexual TDV Perpetration Wave 6 spring 2012	1.03	0.13	1.04	0.15	8.20	.00
Sexual TDV Perpetration Wave 7 spring 2013	1.04	0.21	1.05	0.27	4.31	.00
Relational TDV Perpetration Wave 6 spring 2012	1.04	0.16	1.03	0.17	5.10	.00
Relational TDV Perpetration Wave 7 spring 2013	1.05	0.22	1.05	0.27	1.39	.17

*Table 4. Percentage of Girls & Boys Endorsing at least 1 SV or 1 TDV – Waves 6 & 7*

<i>Scale</i>	<i>Girls</i>		<i>Boys</i>	
	<i>Wave 6</i>	<i>Wave 7</i>	<i>Wave 6</i>	<i>Wave 7</i>
School Sexual Harassment Victimization	68%	63%	55%	51%
School Sexual Harassment Perpetration	28%	25%	37%	23%
Verbal TDV Victimization Wave 6	73%	74%	66%	63%
Verbal TDV Perpetration Wave 7	64%	64%	45%	49%
Physical TDV Victimization Wave 6	35%	30%	36%	23%
Physical TDV Perpetration Wave 7	34%	28%	17%	16%
Sexual TDV Victimization Wave 6	20%	23%	13%	14%
Sexual TDV Perpetration Wave 7	4%	7%	10%	11%
Relational TDV Victimization Wave 6	23%	25%	20%	25%
Relational TDV Perpetration Wave 7	12%	12%	8%	10%

Table 5. Wave 6 Correlations among Teen Dating Violence Perpetration & Victimization Scales (Girls top right & Boys left bottom)

	<i>Physical TDV Victim.</i>	<i>Verbal TDV Victim.</i>	<i>Relational TDV Victim.</i>	<i>Sexual TDV Victim.</i>	<i>Physical TDV Perp.</i>	<i>Verbal TDV Perp.</i>	<i>Relational TDV Perp.</i>	<i>Sexual TDV Perp.</i>
<i>Physical TDV Victimization</i>	-----	.590**	.426**	.353**	.633**	.480**	.329**	.242**
<i>Verbal TDV Victimization</i>	.604**	-----	.542**	.391**	.390**	.717**	.385**	.179**
<i>Relational TDV Victimization</i>	.434**	.557**	-----	.353**	.264**	.373**	.408**	.045**
<i>Sexual TDV Victimization</i>	.342**	.340**	.307**	-----	.287**	.263**	.223**	.201**
<i>Physical TDV Perpetration</i>	.594**	.355**	.254**	.280**	-----	.570**	.239**	.411**
<i>Verbal TDV Perpetration</i>	.474**	.702**	.372**	.226**	.532**	-----	.384**	.341**
<i>Relational TDV Perpetration</i>	.389**	.383**	.442**	.169**	.283**	.400**	-----	.165**
<i>Sexual TDV Perpetration</i>	.231**	.185**	.085**	.188**	.405**	.386**	.223**	-----

Table 6. Wave 7 Correlations among Teen Dating Violence Perpetration & Victimization Scales (Girls top right & Boys left bottom)

	<i>Physical TDV Victim.</i>	<i>Verbal TDV Victim.</i>	<i>Relational TDV Victim.</i>	<i>Sexual TDV Victim.</i>	<i>Physical TDV Perp.</i>	<i>Verbal TDV Perp.</i>	<i>Relational TDV Perp.</i>	<i>Sexual TDV Perp.</i>
<i>Physical TDV Victimization</i>	-----	.632**	.570**	.689**	.632**	.464**	.444**	.566**
<i>Verbal TDV Victimization</i>	.646**	-----	.630**	.470**	.380**	.724**	.387**	.304**
<i>Relational TDV Victimization</i>	.635**	.675**	-----	.614**	.317**	.371**	.454**	.385**
<i>Sexual TDV Victimization</i>	.746**	.511**	.645**	-----	.479**	.347**	.431**	.533**
<i>Physical TDV Perpetration</i>	.684**	.420**	.446**	.542**	-----	.536**	.587**	.762**
<i>Verbal TDV Perpetration</i>	.527**	.728**	.461**	.419**	.586**	-----	.427**	.388**
<i>Relational TDV Perpetration</i>	.574**	.481**	.581**	.522**	.699**	.522**	-----	.691**
<i>Sexual TDV Perpetration</i>	.654**	.393**	.494**	.609**	.824**	.502**	.767**	-----

Table 7. Fit indices for Full Model by Gender

<i>Fit Statistic</i>	<i>Mean</i>	<i>Std.</i>	<i>Min</i>	<i>Max</i>
<i>Girls Model</i>				
RMSEA	0.07	0.00	0.06	0.08
Abs. mean Residual	0.05	0.00	0.04	0.05
Off-diagonal mean residual	0.04	0.00	0.04	0.06
<i>Boys Model</i>				
RMSEA	0.07	0.00	0.06	0.08
Abs. mean Residual	0.05	0.00	0.04	0.06
Off-diagonal mean residual	0.05	0.00	0.05	0.06

Table 8. Coefficients for Path Analysis Model for Girls (By Wave)

<i>Parameter</i>	<i>Estimate Std. Error</i>	<i>p</i>
<b>Bullying Wave 2</b>		
Family Conflict wave 2	0.12	0.0061
Sibling Aggression wave 2	0.38	<.0001
Bully wave 1	0.25	<.0001
Delinquent Friends wave 2	0.23	<.0001
<b>Delinquency Wave 2</b>		
Bully wave 2	0.39	<.0001
Delinquency wave 1	0.28	<.0001
Delinquent Friends wave 2	0.27	<.0001
<b>Bullying Wave 3</b>		
Bully wave 2	0.42	<.0001
Family Conflict wave 3	0.10	0.0076
Sibling Aggression wave 3	0.34	<.0001
Delinquent Friends wave 3	0.14	0.0004
<b>Delinquency Wave 3</b>		
Delinquency wave 2	0.47	<.0001
Bully wave 3	0.18	0.0002
Delinquent Friends wave 3	0.28	<.0001
<b>Bullying Wave 4</b>		
Bully wave 3	0.35	<.0001
Sibling Aggression wave 4	0.27	<.0001
Delinquent Friends wave 4	0.20	0.0005
<b>Delinquency Wave 4</b>		
Delinquency wave 3	0.49	<.0001
Bully wave 4	0.14	0.0051
Delinquent Friends wave 4	0.24	<.0001
<b>High School</b>		
<b>Bullying Wave 6</b>		
Bully wave 4	0.46	<. 0001
Sibling Aggression wave 6	0.31	<.0001

*Table 8 Continued***Delinquency Wave 6**

Delinquency wave 4	0.28	<.0001
Bully wave 6	0.44	<.0001

**Verbal TDV Wave 6**

Bully wave 6	0.20	0.0052
Delinquency wave 6	0.18	0.0225

**Physical TDV Wave 6**

Sibling Aggression wave 6	0.23	0.0003
Verbal TDV wave 6	0.51	<.0001

**Sexual TDV Wave 6**

Bully wave 6	0.27	0.0007
Verbal TDV wave 6	0.26	0.0002

**Sexual Harassment Wave 6**

Bully wave 6	0.50	<.0001
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**Bullying Wave 7**

Bully wave 6	0.68	<.0001
Sibling Aggression wave 7	0.18	<.0001

**Delinquency Wave 7**

Bully wave 7	0.46	<.0001
Delinquency wave 6	0.37	<.0001

**Verbal TDV Wave 7**

Delinquency wave 7	0.27	<.0001
Physical TDV wave 6	0.49	<.0001

**Physical TDV Wave 7**

Bully wave 7	0.19	0.0061
Physical TDV wave 6	0.26	<.0001
Sexual Harassment wave 7	0.17	0.0065
Verbal TDV wave 7	0.35	<.0001

**Sexual TDV Wave 7**

Bully wave 7	0.22	0.0033
Physical TDV wave 6	0.26	0.0003
Sexual Harassment wave 7	0.25	<.0001
Verbal TDV wave 7	0.17	0.0112

*Table 8 Continued*

**Sexual Harassment Wave 7**

Bully wave 7	0.35	<.0001
Delinquency wave 7	0.28	0.0003

Table 9. Coefficients for Path Analysis Model for Boys (wave)

<i>Parameter</i>	<i>Estimate Std. Error</i>	<i>p</i>
<b>Bullying Wave 2</b>		
Bully wave 1	0.36	<.0001
Sibling Aggression wave 2	0.35	<.0001
Delinquent Friends wave 2	0.27	<.0001
<b>Delinquency Wave 2</b>		
Bully wave 2	0.33	<.0001
Delinquency wave 1	0.33	<.0001
Delinquent Friends wave 2	0.31	<.0001
<b>Bullying Wave 3</b>		
Bully wave 2	0.52	<.0001
Sibling Aggression wave 3	0.20	<.0001
Delinquent Friends wave 3	0.23	<.0001
<b>Delinquency Wave 3</b>		
Bully wave 3	0.25	<.0001
Delinquency wave 2	0.30	<.0001
Delinquent Friends wave 3	0.42	<.0001
<b>Bullying Wave 4</b>		
Bully wave 3	0.37	<.0001
Sibling Aggression wave 4	0.34	<.0001
Delinquent Friends wave 4	0.19	0.0004
<b>Delinquency Wave 4</b>		
Bully wave 4	0.21	<.0001
Delinquency wave 3	0.43	<.0001
Delinquent Friends wave 4	0.28	<.0001
<b>High School</b>		
<b>Bullying Wave 6</b>		
Bully wave 4	0.54	<.0001
Sibling Aggression wave 6	0.25	<.0001
<b>Delinquency Wave 6</b>		
Bully wave 6	0.49	<.0001
Delinquency wave 4	0.22	0.0001

*Table 9 Continued***Verbal TDV Wave 6**

Bully wave 6	0.26	0.0002
Delinquency wave 6	0.25	0.0063

**Physical TDV Wave 6**

Bully wave 6	0.22	0.0017
Verbal TDV wave 6	0.49	<.0001

**Sexual TDV Wave 6**

Delinquency wave 6	0.16	0.0105
Sibling Aggression wave 6	0.20	0.0012
Verbal TDV wave 6	0.30	<.0001
Sexual Harassment wave 6	0.34	<.0001

**Sexual Harassment Wave 6**

Bully wave 6	0.52	<.0001
Verbal TDV wave 6	0.16	0.0279

**Bullying Wave 7**

Bully wave 6	0.65	<.0001
Sibling Aggression wave 7	0.24	<.0001

**Delinquency Wave 7**

Sibling Aggression wave 7	0.11	0.0454
Bully wave 7	0.34	<.0001
Delinquency wave 6	0.46	<.0001

**Verbal TDV Wave 7**

Sibling Aggression wave 7	0.13	0.0091
Delinquency wave 7	0.18	0.0090
Verbal TDV wave 6	0.50	<.0001

**Physical TDV Wave 7**

Delinquency wave 7	0.14	0.0142
Physical TDV wave 6	0.24	<.0001
Verbal TDV wave 7	0.34	<.0001
Sexual Harassment wave 7	0.30	<.0001

**Sexual TDV Wave 7**

Delinquency wave 7	0.19	0.0039
Verbal TDV wave 7	0.21	0.0014

*Table 9 Continued*

Sexual Harassment wave 7	0.32	<.0001
Sexual TDV wave 6	0.28	<.0001
<b>Sexual Harassment Wave 7</b>		
Bully wave 7	0.37	<.0001
Delinquency wave 7	0.31	<.0001
Verbal TDV wave 7	0.11	0.0275

Table 10. Coefficients for Path Analysis Model for Girls (Behavior)

<i>Parameter</i>	<i>Estimate Std. Error</i>	<i>p</i>
<b>Bullying Wave 2</b>		
Family Conflict wave 2	0.12	0.0061
Sibling Aggression wave 2	0.38	<.0001
Bully wave 1	0.25	<.0001
Delinquent Friends wave 2	0.23	<.0001
<b>Bullying Wave 3</b>		
Bully wave 2	0.42	<.0001
Family Conflict wave 3	0.10	0.0076
Sibling Aggression wave 3	0.34	<.0001
Delinquent Friends wave 3	0.14	0.0004
<b>Bullying Wave 4</b>		
Bully wave 3	0.35	<.0001
Sibling Aggression wave 4	0.27	<.0001
Delinquent Friends wave 4	0.20	0.0005
<b>Bullying Wave 6</b>		
Bully wave 4	0.46	<. 0001
Sibling Aggression wave 6	0.31	<.0001
<b>Bullying Wave 7</b>		
Bully wave 6	0.68	<.0001
Sibling Aggression wave 7	0.18	<.0001
<b>Delinquency Wave 2</b>		
Bully wave 2	0.39	<.0001
Delinquency wave 1	0.28	<.0001
Delinquent Friends wave 2	0.27	<.0001
<b>Delinquency Wave 3</b>		
Delinquency wave 2	0.47	<.0001
Bully wave 3	0.18	0.0002
Delinquent Friends wave 3	0.28	<.0001
<b>Delinquency Wave 4</b>		
Delinquency wave 3	0.49	<.0001
Bully wave 4	0.14	0.0051

*Table 10 continued*

Delinquent Friends wave 4	0.24	<.0001
<b>Delinquency Wave 6</b>		
Delinquency wave 4	0.28	<.0001
Bully wave 6	0.44	<.0001
<b>Delinquency Wave 7</b>		
Bully wave 7	0.46	<.0001
Delinquency wave 6	0.37	<.0001
<b>Verbal TDV Wave 6</b>		
Bully wave 6	0.20	0.0052
Delinquency wave 6	0.18	0.0225
<b>Verbal TDV Wave 7</b>		
Delinquency wave 7	0.27	<.0001
Physical TDV wave 6	0.49	<.0001
<b>Physical TDV Wave 6</b>		
Sibling Aggression wave 6	0.23	0.0003
Verbal TDV wave 6	0.51	<.0001
<b>Physical TDV Wave 7</b>		
Bully wave 7	0.19	0.0061
Physical TDV wave 6	0.26	<.0001
Sexual Harassment wave 7	0.17	0.0065
Verbal TDV wave 7	0.35	<.0001
<b>Sexual TDV Wave 6</b>		
Bully wave 6	0.27	0.0007
Verbal TDV wave 6	0.26	0.0002
<b>Sexual TDV Wave 7</b>		
Bully wave 7	0.22	0.0033
Physical TDV wave 6	0.26	0.0003
Sexual Harassment wave 7	0.25	<.0001
Verbal TDV wave 7	0.17	0.0112
<b>Sexual Harassment Wave 6</b>		
Bully wave 6	0.50	<.0001
<b>Sexual Harassment Wave 7</b>		
Bully wave 7	0.35	<.0001

*Table 10 continued*

Delinquency wave 7

0.28

0.0003

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Table 11. Coefficients for Path Analysis Model for Boys (Behavior)

<i>Parameter</i>	<i>Estimate Std. Error</i>	<i>P-value</i>
<b>Bullying Wave 2</b>		
Bully wave 1	0.36	<.0001
Sibling Aggression wave 2	0.35	<.0001
Delinquent Friends wave 2	0.27	<.0001
<b>Bullying Wave 3</b>		
Bully wave 2	0.52	<.0001
Sibling Aggression wave 3	0.20	<.0001
Delinquent Friends wave 3	0.23	<.0001
<b>Bullying Wave 4</b>		
Bully wave 3	0.37	<.0001
Sibling Aggression wave 4	0.34	<.0001
Delinquent Friends wave 4	0.19	0.0004
<b>Bullying Wave 6</b>		
Bully wave 4	0.54	<.0001
Sibling Aggression wave 6	0.25	<.0001
<b>Bullying Wave 7</b>		
Bully wave 6	0.65	<.0001
Sibling Aggression wave 7	0.24	<.0001
<b>Delinquency Wave 2</b>		
Bully wave 2	0.33	<.0001
Delinquency wave 1	0.33	<.0001
Delinquent Friends wave 2	0.31	<.0001
<b>Delinquency Wave 3</b>		
Bully wave 3	0.25	<.0001
Delinquency wave 2	0.30	<.0001
Delinquent Friends wave 3	0.42	<.0001
<b>Delinquency Wave 4</b>		
Bully wave 4	0.21	<.0001
Delinquency wave 3	0.43	<.0001
Delinquent Friends wave 4	0.28	<.0001
<b>Delinquency Wave 6</b>		

*Table 11 continued*

Bully wave 6	0.49	<.0001
Delinquency wave 4	0.22	0.0001
<b>Delinquency Wave 7</b>		
Sibling Aggression wave 7	0.11	0.0454
Bully wave 7	0.34	<.0001
Delinquency wave 6	0.46	<.0001
<b>Verbal TDV Wave 6</b>		
Bully wave 6	0.26	0.0002
Delinquency wave 6	0.25	0.0063
<b>Verbal TDV Wave 7</b>		
Sibling Aggression wave 7	0.13	0.0091
Delinquency wave 7	0.18	0.0090
Verbal TDV wave 6	0.50	<.0001
<b>Physical TDV Wave 6</b>		
Bully wave 6	0.22	0.0017
Verbal TDV wave 6	0.49	<.0001
<b>Physical TDV Wave 7</b>		
Delinquency wave 7	0.14	0.0142
Physical TDV wave 6	0.24	<.0001
Verbal TDV wave 7	0.34	<.0001
Sexual Harassment wave 7	0.30	<.0001
<b>Sexual TDV Wave 6</b>		
Delinquency wave 6	0.16	0.0105
Sibling Aggression wave 6	0.20	0.0012
Verbal TDV wave 6	0.30	<.0001
Sexual Harassment wave 6	0.34	<.0001
<b>Sexual TDV Wave 7</b>		
Delinquency wave 7	0.19	0.0039
Verbal TDV wave 7	0.21	0.0014
Sexual Harassment wave 7	0.32	<.0001
Sexual TDV wave 6	0.28	<.0001
<b>Sexual Harassment Wave 6</b>		
Bully wave 6	0.52	<.0001

*Table 11 continued*

Verbal TDV wave 6	0.16	0.0279
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**Sexual Harassment Wave 7**

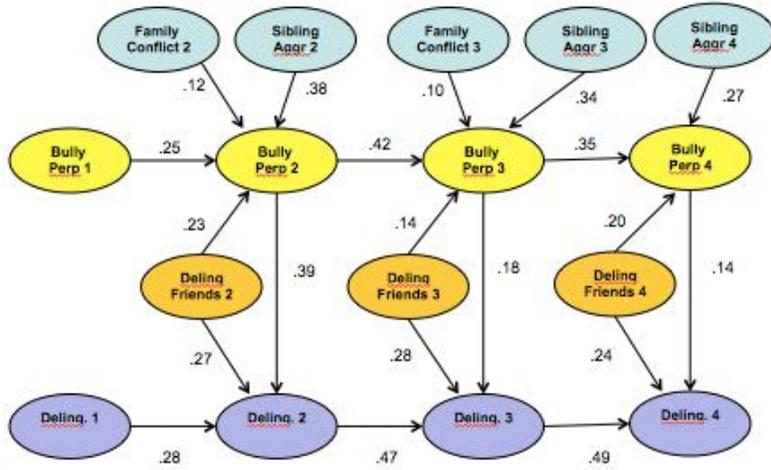
Bully wave 7	0.37	<.0001
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Delinquency wave 7	0.31	<.0001
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Verbal TDV wave 7	0.11	0.0275
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**Figure 3. Middle School Family Conflict, Delinquency, Bully Perpetration (Girls)**  
**Girls – Middle School (sign. paths)**



**Figure 4. High School Family Conflict, Delinquency, Bully Perpetration, Sexual Harassment & TDV (Girls)**

**Girls – High School (sign. paths)**

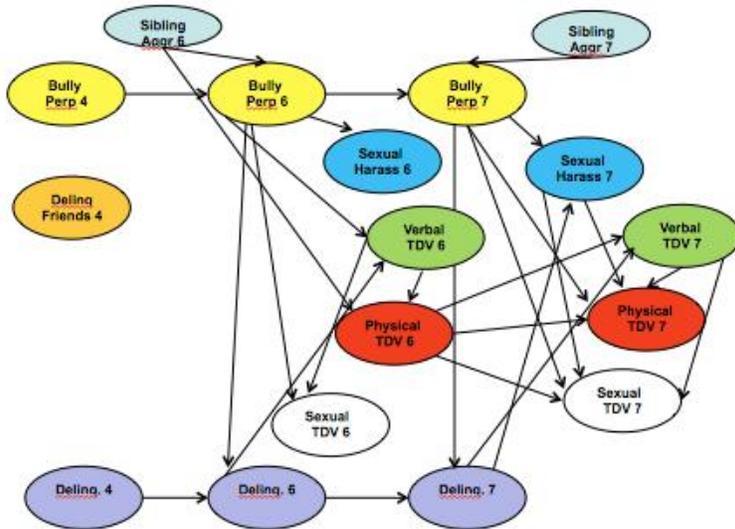
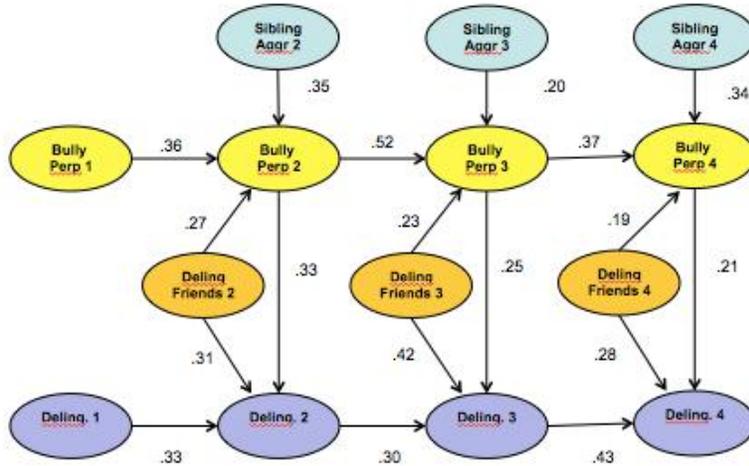


Figure 5. Middle School Family Conflict, Delinquency, Bully Perpetration (Boys)

Boys – Middle School (sign. paths)



**Figure 6. High School Family Conflict, Delinquency, Bully Perpetration, Sexual Harassment & TDV (Boys)**

### Boys – High School (sign. paths)

