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ASSOCIATIONS BETWEEN SUBSTANCE USE AND TEEN DATING VIOLENCE  
PERPETRATION IN ADOLESCENTS

BY

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DISSERTATION

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## ABSTRACT

This study uses a short-term longitudinal design to examine the association between substance use and teen dating violence perpetration over time. This research also examines conflict resolution style to assess for any buffering effects that could occur. The models are analyzed across gender to determine if any differences exist between boys and girls in the sample. These relations are examined using longitudinal data collected at two time points over a period of a year in a diverse (51.2% female, 68.7% Nonwhite, 31.3% White) high school sample of 1,621 adolescents. Multiple regression analyses did yield a significant association between substance use (i.e., alcohol use, binge alcohol use, and addictive drug use reported in the last 30 days) and physical/threatening, verbal, and relational teen dating violence perpetration for both males and females. A Wald chi-square test is posited for these associations to determine if the effects of the various substance use variables on each form of TDV perpetration are significantly different for males and females; data is then examined using multiple group analysis varied by gender. Results show that the effects of alcohol and binge drinking on physical/threatening TDV perpetration are significantly higher for males than females, whereas the effects of addictive substance use on physical/threatening TDV perpetration are significantly higher for females than males. Results also show that the effects of alcohol, binge drinking, and addictive substance use on verbal TDV perpetration are significantly higher for females than for males. Problem solving interaction style was added into the model to test any buffering effects on the relationship between substance use and TDV perpetration. Results indicate that problem solving conflict resolution style did not significantly change the association found between reported substance

use and the amount of TDV perpetration reported. The implications of these findings and potential future directions for prevention are discussed.

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## CHAPTER 1: INTRODUCTION

Adolescence is a developmental period that often marks the initiation of dating behavior. In this stage, youth may also be at higher risk for experiencing dating abuse and violence (Hickman, Jaycox, & Aronoff, 2004). For example, dating violence is a widespread public health concern that has pervasive negative impacts on those victimized. The Centers for Disease Control and Prevention defines dating violence as “the physical, sexual, psychological, or emotional violence within a dating relationship, including stalking” (Centers for Disease Control and Prevention, 2015). Dating violence can occur in person or electronically and between former partners (CDC, 2015). The literature on dating violence has been widely focused on adult and college-aged populations. However, there is evidence that dating violence is emerging in youth relationships (Harned, 2002). In fact, prevalence studies have shown that approximately 10-25% of adolescents report experiencing physical teen dating violence (TDV; Eaton et al., 2006; Silverman, Raj, Mucci, & Hathaway, 2001), and as many as 46% of adolescents are reporting being victimized by a dating partner (e.g., Haynie et al., 2013; Hickman et al., 2004).

As stated, dating violence can occur psychologically, physically, or sexually. The literature on TDV shows that youth being victimized in dating relationships are experiencing physical and psychological forms of TDV (Parker, Debnam, Pas, & Bradshaw, 2016). According to the Division of Violence Prevention in the National Center for Injury Prevention and Control (2014), physical TDV can include “pinching, hitting, shoving, slapping, punching or kicking” by a boyfriend or girlfriend, whereas

psychological victimization can include “being sworn at, insulted or threatened.” One study conducted analyses on 7500 youth from the National Longitudinal Study of Adolescent Health and found that 12% of American youth were reporting being victims of physical TDV, while close to 30% were reporting being victims of psychological TDV (Halpern, Oslak, Young, Martin, & Kupper, 2001).

Teen dating violence increases substantially during high school as adolescents develop romantic relationships (Connolly, Pepler, Craig & Taradash, 2000). The literature shows that TDV victimization is associated with negative mental health consequences, similar to those seen in the literature examining adult intimate partner violence (IPV), including lower life satisfaction, eating disorders, externalizing problems (i.e., substance use or risky sexual behaviors), depression, anxiety, suicidal ideation, and poor educational outcomes or early dropout (Acknard & Neumark-Sztainer, 2002; Alleyne et al., 2011; Banyard & Cross, 2008; CDC, 2015; Coker et al., 2000; Deater-Deckard, Dodge, Bates, & Petit, 1998; Temple & Freeman, 2011). For the purpose of preventing the prevalence of partner violence from occurring in adult-aged populations, it is imperative to examine and address dating violence among youth. However, much of the literature focuses efforts on factors that put youth more at-risk for TDV victimization and the outcomes associated with those experiences. For the purpose of preventing the advent of TDV, it is valuable to spend resources on identifying factors that put youth at risk for perpetration and how to address these factors.

While there is not as much literature on TDV perpetration, the research that does exist has identified factors that put youth at higher risk for both teen dating violence perpetration and victimization, including adherence to dismissive or justifying attitudes

about violence (O’Keefe, 1997), mental health issues (i.e., depression; Wolitzky-Taylor et al., 2008), and childhood exposure to violence (Wolfe et al., 2001). It is possible that additional factors put youth at risk, such as substance use, which lower inhibitions. Teenagers are more likely to engage in substance use behaviors as the introduction and experimentation of alcohol and other addictive substance emerge during this time (Ellickson, Tucker, Klein, & Saner, 2004). There may be an additional dynamic at play in which youth then use substances to cope with the negative consequences of violence.

Despite the documented development of these two experiences, there are relatively few studies examining the association between the use of alcohol and other addictive substances and various forms of teen dating violence (TDV) perpetration among adolescents, including verbal, physical, and relational. Additionally, an individual’s conflict resolution style may put them less at risk for using violence when differences inevitably arise in their nascent dating relationships. However, to the best of our knowledge, there is currently no research examining the context of a positive conflict resolution style as a potential buffer for the association between substance use and TDV perpetration. Understanding these associations would help identify potential empirically supported points of intervention for both dating violence and substance use in adolescence.

Thus, the current study examined a link between recent alcohol and other addictive substance use and TDV perpetration as well as the influence of positive conflict resolution style. More specifically, the present study includes a short-term longitudinal examination of the association between substance use and teen dating violence perpetration, as well as how a positive conflict resolution style may be a potential source

of protection from this association among a large sample of high school students. In this paper, I present a brief review of the literature, then a description of analytical methods and results, followed by a discussion of the interpretation of the findings and suggested future directions.

## CHAPTER 2: BRIEF REVIEW OF THE LITERATURE

Increasingly, studies are revealing mid-adolescence to be a developmental period that places all youth at-risk for dating violence. (e.g., Hickman, Jaycox, & Aronoff, 2004; Liu & Kaplan, 2004; Widom & Maxfield, 2001). This can be due to a number of reasons related to the specific experiences youth are facing at this developmental stage. For example, adolescents increasingly spend more time alone or unsupervised with friends than younger individuals (Larson & Richards, 1991). Furthermore, establishing romantic relationships commonly begins in adolescence, as social networks grow to include potential dating partners (Connolly, Furman, & Konarski, 2000). Also, early adolescence is a developmental stage that is characterized by biological changes, including hormonal changes that increase sexual urges (Dumas & Wolfe, 2012). Thereby, adolescents frequently turn to their peers or the media to gain information about relationships and sex (Larson & Richards, 1991). However, these messages can reinforce maladaptive ways for youth to deal with conflict in the form of aggression or violence within relationships.

General exposure to violence in adolescence has been shown to subsequently increase the risk of both later violence and maladaptive behavior, which can further permeate into adulthood (Liu & Kaplan, 2004; Widom & Maxfield, 2001). Furthermore, given the developmental shifts and increase in likelihood of engaging in violence within this population (Rubin et al. 1995; Russell, Nurius, Herting, Walsh & Thompson, 2010; Scholte, Engels, Overbeek, de Kemp, & Haselager, 2007), distinguishing the various characteristics, both similar and dissimilar, of at-risk youth will allow for a more tailored approach to prevention programming for adolescence, specifically. Thus, it is crucial to

prioritize prevention efforts specifically targeting youth who have elevated risk factors for the perpetration of violence.

In general, there is a lack of longitudinal data related to partner violence collected on teen samples. In fact, even most theoretical frameworks describing types of partner violence are not necessarily specific to the developmental period of adolescence (Espelage, 2011; Shorey, Cornelius, & Bell, 2008), as most of them are based on assessments of adult-aged populations. However, there is a need to assess for the dynamics of partner violence in adolescence because of the significant processes occurring specific to youth at that time.

### **Teen Dating Violence**

The limited literature focused on TDV demonstrates that it is in fact occurring extensively prior to young adulthood. In fact, one recent nationally representative survey ( $n = 1,060$ ) reported that 35% of teens aged 13 to 17 years have experienced some form of teen dating violence victimization within a romantic relationship, either currently or in the past (Lenhart, Smith, & Anderson, 2015). Another recent study reported that approximately 10% of high school students reported physical victimization from a dating partner in the last 12 months (Kann et al., 2014). Furthermore, a study examining dating violence from a sample of 7,500 youth who were in heterosexual romantic relationships found that one third of the adolescents surveyed were reporting being victims of psychological TDV (Halpern, Oslak, Young, Martin, & Kupper, 2001). Finally, in one study surveying 5,414 public high schools, 7% of female students reported being “beaten up” by a boyfriend in the last 12 months (Coker et al., 2000). These statistics highlight

the need for researchers to focus on how to prevent victimization from occurring at earlier ages such as adolescence.

Furthermore, partner violence in youth that has been shown to have serious negative short-term and long-term effects. One especially adverse outcome has been the link between being victim to/perpetrating teen dating violence and being victim to/perpetrating later forms of intimate partner violence (Silverman, Raj, & Hathaway, 2001; Smith, White, & Holland, 2003). In fact, the 2011 National Intimate Partner and Sexual Violence Survey found that 23% of females and 14% of males who reported experiences of rape, physical violence, or stalking by an intimate partner, first experienced some form of partner violence between 11 and 17 years of age (CDC, 2015).

Other studies have called attention to the negative educational, physical, social, and mental health outcomes related to dating violence. For example, TDV has been associated with decreased rates of mental and physical health and life satisfaction as well as higher rates of eating disorders and suicidal ideation (Acknard & Neumark-Sztainer, 2002; Coker et al., 2000). Furthermore, teen dating violence has been linked to symptoms of depression and anxiety (CDC, 2015), risky sexual behaviors (Alleyne et al., 2011), dismissive or justifying ideology about violence (O'Keefe, 1997), conduct behavior problems and antisocial behaviors (CDC, 2015; Deater-Deckard, Dodge, Bates, & Petit, 1998), poor psychological health (Wolitzky-Taylor et al., 2008), and substance use concerns (Temple & Freeman, 2011).

The literature suggests that there are gender differences in relation to how dating violence affects youth. Studies have also shown that girls tend to report dating violence victimization at higher rates than boys do. Generally, the rate of violence directed at

females by intimate partners is 3-6 times that of intimate partner violence against males (Tjaden & Thoennes, 2000). In two independent representative surveys in Massachusetts public high schools, researchers found that about 1 in 5 adolescent girls reported being the victim of physical or sexual violence by a dating partner in their lifetime (Silverman et al., 2001). What is especially of concern is that the findings show that these adolescent girls were 4-6 times more likely than their non-abused peers to become pregnant, engage in unhealthy weight control, and seriously consider or attempt suicide (Silverman et al., 2001).

Thus, TDV can be a potential precursor to life-long health consequences and, therefore, a very worthwhile target for prevention research. However, most prevention studies focus on the risk factors associated with victimization. Fewer studies examine risk factors associated with perpetration, another point of intervention in TDV. Arguably, TDV is significantly more under the perpetrator's purview of control than the victim's potentially increasing the importance of this latter type of prevention. However, the literature that has studied TDV perpetration examines it in the context of youth who have been victimized, and little literature exists examining factors that contribute to or buffer TDV perpetration, specifically (Hanish & Guerra, 2004; Russell, Nurius, Herting, Walsh & Thompson, 2010). Thus, in order to combat dating violence victimization, it is essential to look more deeply at the dynamics of teen dating violence perpetration.

Moreover, studies point out that there are various forms of TDV being perpetrated at the high school level. While TDV has been linked to future IPV (Exner-Cortens, Eckenrode, & Rothman, 2013), the nature of partner violence that emerges in adolescence could be qualitatively different than the nature of partner violence that

emerges in adulthood. The literature also suggests that girls and boys are reporting different forms of teen dating violence perpetration (Langhinrichsen-Rohling, 2010). Whereas research has documented most adult intimate partner violence to be more commonly directed by men toward women (Campbell, Sharps, & Glass, 2001), studies of dating violence at the adolescent level suggest that both males and females perpetrate partner violence (Foshee et al., 2001; Spencer & Bryant, 2000).

In fact, some studies show females report higher levels of certain types of dating violence perpetration; one study by Cascardi, Avery-Leaf, O'Leary, and Smith Slep (1999) showed that 37.8% of adolescent females were reporting relational dating violence perpetration at some point over the entire length of their current relationship as compared to 22.5% of adolescent males. This is consistent with studies with college-aged samples that suggest females are more likely to engage in nonsexual forms of violence that may not result in physical injuries, but still have a negative impact on victims (Hamby, 2005; 2009). Additionally, one high school study found that girls reported greater levels of verbal emotional abuse and physical teen dating violence perpetration, but boys reported higher levels of sexual teen dating violence perpetration (Espelage, Low, Anderson, & De La Rue, 2014).

This could be reflective of the developmental period adolescents are in during high school. Often, early patterns of aggressive expression are less established on the basis of gender role conformity (Wolfe et al., 2001). Adolescence, which is a period associated with behavioral experimentation that can be influenced and changed, is a time in which boys and girls are still learning how to interact with peers and developing conflict resolution skills with dating partners. This research suggests that differences in

the form of TDV perpetration as well as gender differences that occur should be considered when examining the pervasiveness of dating violence in youth.

### **Adolescence & Substance Use**

Adolescence is marked as a time fraught with externalizing problem behaviors. One such problem behavior that has been consistently associated with this population is the increase of alcohol and other drug use as youth first start becoming exposed to addictive substances (Burke & Miczek, 2014; DeWit MacDonald, & Offord, 1999; Dube et al., 2006; Hoffmann, Cerbone, & Su, 2000; Kaltiala-Heino et al., 2000; Somaini et al., 2011; Sullivan, Farrell, & Kliewer, 2006; Tharp-Taylor, Haviland, & D'Amico, 2009; Topper et al., 2011). As with dating violence, substance misuse has become a major public health concern for the adolescent population, as well. This becomes especially concerning when considering the documented adverse effects substances can have on youth development. Subjecting youth to substances may result in the disruption of key processes of brain development that can put youth at risk for cognitive impairment and greater potential for escalated use (Substance Abuse and Mental Health Services Administration, 2002). Substance misuse in adolescence has remained a persistent public health concern that has consequences including substance dependence, dropping out of school, driving while intoxicated, and suicidality (Bailey et al., 1999; Chassin, Pitts, & Prost, 2002; Gerstein & Green, 1993, Zador, Krawchuk, & Voas, 2000). Furthermore, substance abuse in early adolescence has been linked to later drug involvement and higher potential for chronic substance abuse and dependence in adulthood (Gerstein & Green, 1993; Hawkins, Catalano, & Miller, 1992).

Adolescents have more exposure and initiation to addictive drug use than they did previously (D'Amico, Ellickson, Collins, Martino, & Klein, 2005). As recently as 2014, one study found that 23% of youth in a sample of approximately 50,000 adolescents reported consuming alcohol and 12% reported having been “drunk” at least once in the past 30 days (Johnston, Miech, O'Malley, Bachman, & Schulenberg, 2014). That same study found 14% of students reported using addictive substances (i.e., marijuana) in the past 30 days (Johnston et al., 2014). Furthermore, research has shown that alcohol and drug misuse in early adolescence is predictive of greater involvement with substance use and misuse in adulthood (Chassin, Pitts, & Prost, 2002; Gerstein, & Green, 1993; Hawkins, Catalano, & Miller, 1992).

### **Link between Substance Use & TDV**

In the context of youth aggression, the relation between alcohol, drugs and youth sexual violence has come to national attention in recent years, in part due to the widely accessible popular press coverage of cases like the Maryville Sexual Assault Case and the Steubenville High School rape case (Drehle, 2014; Opiel, 2013), both of which involved substance-facilitated sexual assaults. However, there is still a lack of literature assessing the nature of the relation between substance use and dating violence in youth. Examining this association becomes even more imperative given the extensive research that exists documenting the association of substance use and adult partner interpersonal violence or PIV (Coker et al., 2000; Foran & O'Leary, 2008; Leonard, 2002, 2005; Lipsey et al., 1997; Rothman, Reyes, Johnson, & LaValley, 2012; Shorey, Stuart, & Cornelius, 2011).

However, more recent literature has shown that adolescent alcohol and drug use have been linked to risky sexual activity and teen dating violence, as well (Bailey et al.,

1999; Brooks-Russell, Foshee & Ennet, 2013; Chassin, Pitts, & Prost, 2002; Gerstein & Green, 1993, Haynie et al., 2013; Temple & Freeman, 2011; Zador, Krawchuk, & Voas, 2000). For example, one study in Boston high schools found that students who reported higher levels of alcohol and drug use were more likely to report dating violence perpetration, regardless of gender (Rothman, Johnson, Azrael, Hall, & Weinberg, 2010). Another study conducted by Temple & Freeman (2011) found that alcohol use reported in the past 30 days was associated with TDV victimization among a sample of 1,565 high school youth. Yet another study determined that alcohol use and TDV victimization were concurrently associated, but were not associated over time (Rothman et al., 2012). Finally, Brooks-Russell et al. (2013) found that alcohol use among female adolescents was associated with physical TDV victimization, but not for males. Notably, many of these studies did not examine the relation between substance use and teen dating violence perpetration, but focus on the role substance use plays in TDV victimization. Moreover, most studies do not examine this association longitudinally.

The limited longitudinal data examining the link between substance use and TDV perpetration is inconsistent. For example, one recent study on a sample of two rural public high schools ( $n = 2,311$ ) found greater alcohol use was predictive of later dating violence perpetration over a two year period; however, the degree to which they were related reduced as the students continued through high school (Reyes, Foshee, Bauer, & Ennett, 2012). In another study, researchers found a strong relation between alcohol use and concurrent teen dating violence perpetration in a sample of 8<sup>th</sup> and 9<sup>th</sup> grade students, but longitudinally this association was significant only for adolescent girls (Foshee et al., 2001). Another recent short-term longitudinal study by Temple, Shorey, Fite, Stuart, and

Le (2013) with 1,042 9<sup>th</sup> and 10<sup>th</sup> grade high school students found that, while alcohol use and the use of addictive substances predicted physical partner violence one year later, marijuana use was not associated with subsequent dating violence perpetration. Yet another study with a sample of youth ( $n = 10,744$ ) from an emergency department found that heavy episodic marijuana and alcohol use were individually associated with dating violence perpetration over two years (Walton et al., 2009). Thus, the research for the substance use and teen dating violence perpetration link is inconclusive.

In order to determine what drives the link between substances and dating violence, other factors (i.e., relationship quality) need to be examined. In aiming to help understand the associations between substance use and TDV perpetration, the indirect effects model is considered, which posits that substance use has damaging effects on relationship quality, where longer exposure to substances can facilitate a setting where conflict and aggression are increased (Klosterman & Fals-Stewart, 2006). For example, persistent substance use during adolescence can be a risk factor for TDV perpetration because it puts individuals at higher risk of arguing or turning aggressive, which can lead to reduced relationship quality.

Additionally, the current study adds to the limited longitudinal research by examining substance use as a risk factor of dating violence perpetration *over time* specifically during adolescence. Furthermore, because alcohol has been identified to consistently be the most commonly used substance among adolescents (Eaton et al., 2006), it would be useful to determine differences in the effects of reported alcohol use versus other drug use as it relates to perpetration. Thus, substance use will be parsed out in this study into alcohol use specifically versus all other addictive drug use reported.

Also, as occasional drinking holds different meaning than “heavy” (i.e., binge) drinking, this study will also distinguish between one drink reported versus five or more drinks reported in the context of an alcohol use measure. Finally, both forms of substance use will be assessed for use within in the past 30 days. Thus, in this study, substance use is measured with three distinctions: reported alcohol use in the past 30 days, reported binge alcohol use in the past 30 days, and reported drug use in the past 30 days.

### **Conflict Resolution Style**

Concurrent with the increasing exposure to substances, there are biological and social shifts that are specifically related to the developmental period of adolescence (McMaster, Connolly, Pepler, & Craig, 2002). The biological pressures created by the onset of puberty tend to increase the possibility of romantic interest, behaviors, and expectations (Connolly et al., 2000). For example, the adolescent years can be a critical transitional period in which many youth are often exploring their attraction to others (Connolly, Pepler, Craig & Taradash, 2000). This creates the foundation for and the development of romantic connections; adolescence is often the first time many teenagers are facing the initiation of relationships.

Building an identity that is unique, developing skills to deal with others intimately, and accepting new sexual impulses and desires (Feldman & Gowen, 1998) can create challenges specific to this developmental stage that can come to fruition within dating relationships. Often, the onset of romantic relationships is a novel experience for most adolescents, which can be laced with many positive experiences like that of love and connection. However, romantic relationships can also foster negative experiences, including disagreements and conflict. Dating experiences at this stage can be the first

time youth are experimenting with new roles and expectations in romantic partnerships. With that may come the first time adolescents experience conflict within a romantic or intimate context. Thus, the advent of dating calls for adolescents to develop important relationship skills, which include how to handle novel experiences of conflict (Wolfe et al., 2003). Often, youth exhibit some conflict resolution behaviors in disagreements with parents (Laursen, Coy, & Collins, 1998); however, early and mid-adolescence is often fraught with increasing intensity and intimacy between dating partners (Foshee, Linder, MacDougall, & Bangdiwala, 2001; Wekerle & Wolfe, 1999).

While indirect effects model helps to better explain the association between substance use and TDV perpetration, it is important to consider how these effects may vary by contextual features in a relationship, like conflict resolution style. The theory of conflict resolution posits that a constructive conflict management process, which can include cooperative problem-solving style, will be resolved more effectively. On the other hand, this theory also suggests that a destructive conflict resolution style, which can have a competitive process, can exacerbate conflict in a relationship (Deutsch, Coleman, & Marcus, 2011). Thus, there is an increasing interest in focusing on the importance of positive conflict management style to determine if it can lessen or buffer the advent of TDV perpetration.

Managing interpersonal conflict entails the ability to balance one's own identity and needs with the ability to maintain an intimate relationship (Feldman & Gowen, 1998). Maladaptive strategies, like withdrawal, compliance, or aggression, can lead to negative outcomes, including violence, in a romantic relationship (Babcock, Waltz, Jacobson, & Gottman, 1993; Burman, Margolin, & John, 1993; Feldman & Gowen,

1998; Wekerle & Wolfe, 1999). Furthermore, some individuals have been shown to turn to substance use as a coping strategy to manage conflicts in intimate relationships. For example, when examining adolescent interpersonal conflict, one study found that adolescents who reported responding to general interpersonal conflict with verbal or psychological aggression also reported substance use (Unger, Sussman, & Dent, 2003). Another study by Colman and Wulfert (2002) did suggest that students who display externalizing behaviors in school, were more likely to engage in maladaptive conflict styles, which in turn was associated with negative externalizing behaviors in other contexts, including substance use ( $n = 31$ ).

For prevention programming, it is not only important to reduce addictive substance use that leads to violent behaviors, but also to improve the relationship dynamics that may be impacting and occasioning such behaviors. However, numerous gaps remain when it comes to understanding the dynamics of conflict resolution processes in adolescent relationships. In general, it seems like the link between substance use and maladaptive conflict resolution style could lead to more violent behaviors. Thus, resolving conflict seems to require constructive ways of maintaining one's identity without jeopardizing the relationship.

The use of more positive conflict negotiation strategies, like compromising, has been associated with positive mental health outcomes, like good sense of well-being and self-esteem (Petrosky & Birkimer, 1991; Rubenstein & Feldman, 1993). Furthermore, positive conflict resolution style has been negatively associated with internalizing and externalizing behaviors, like violence and overt anger (Feldman & Gowen, 1998). Yet, there is a dearth in the literature regarding how a positive conflict resolution style may

buffer the escalation of conflict to teen dating violence perpetration when teens are reporting substance use. Since adolescence is marked as a period where dealing with intimate relationships and addictive substances is a novelty, closer examination of the potential buffering effects of positive conflict resolution style on teen dating violence perpetration is warranted.

Furthermore, gender roles and socialization become more apparent in adolescence and have been linked to the differences in conflict reactivity exhibited by boys and girls (Davies & Lindsay, 2004). For example, boys' socialization is more expressive of individual assertiveness and well-being, whereas girls' socialization is more characteristic of interpersonal connectedness (Ruble & Martin, 1998). Boys' concerns for agency may lead them to focus on asserting their own needs in conflicts with partners and may view power assertive conflict styles as reasonable ways to obtain their goals (Dadds et al., 1999). On the other hand, they may view withdrawal during conflicts as more appealing so as to maintain goals of personal well-being (Kurdek, 1995; Markman, Silvern, Clements, & Kraft-Hanak, 1993). Alternatively, girls may be more focused on partner's needs due to concerns for interpersonal connectedness, which could lead to more compliant styles of conflict resolution that compromise their own needs in conflict resolution (Davies & Lindsay, 2004).

Studies have suggested that the differences in conflict reactivity lead to gender differences in how teens engage in maladaptive conflict resolution styles. For example, one study reported that boys tend to use more aggressive resolution strategies than girls ( $n = 2,594$ ) (Lindeman, Harakka, & Keltikangas-Jarvinen, 1997); however, another study indicated that boys and girls reported equal levels of overt aggressive conflict styles ( $n =$

591) (Owens, Daly, & Slee, 2005). Yet another study assessed maladaptive conflict styles in 869 high school students and found that girls reported higher levels of aggressive conflict styles than boys did (Feldman & Gowen, 1998). This literature presents disparate findings about gender differences regarding levels of aggressive coping styles in youth (Feldman & Gowen, 1998, Lindeman, Harakka, & Keltikangas-Jarvinen, 1997, Owens, Daly, & Slee, 2005).

However, while gender roles and socialization have been studied as they relate to maladaptive conflict resolution styles in adolescence, teen gender differences pertaining to engagement in positive conflict resolution styles have not been examined much in the literature. It can be helpful to identify any differences between how boys and girls participate in positive forms of conflict resolution so as to gain insight into how to better engage them in problem solving skills, like compromise, when experiencing conflict in relationships. Thus, this study aims to investigate if implementing more positive conflict management strategies can help lessen teen dating violence perpetration, when substance use is present within an adolescent sample over time. Furthermore, the results were analyzed across gender to see if there were any significant differences for what boys had reported from what girls had reported.

### **Current Study**

To summarize, the present study used multiple regression to examine the link between adolescents' recently reported substance use behaviors and nonsexual TDV perpetration. The first aim was to examine the association between youth's recent use of alcohol and TDV perpetration. This was done by looking at alcohol use reported in the last 30 days as well as binge alcohol use reported in the last 30 days. This study also

aimed to determine the association between adolescents' recent addictive drug use and TDV perpetration. It was hypothesized that adolescents reporting any of these three forms of substance use in the past 30 days would be more likely to also be reporting physical or threatening, verbal, or relational TDV perpetration. Given the potential significance of conflict management processes (Deutsch, Coleman, & Marcus, 2011), this study also examined the effect of positive conflict resolution style on this association. Specifically, it was hypothesized that a positive conflict resolution style would buffer the risk of reporting TDV perpetration among youth who reported recent substance use. Moreover, gender differences were hypothesized given the gender differences in how youth report substance use, conflict management, and TDV perpetration suggested in the literature. Specifically, it is hypothesized that boys will be more at-risk to report physical forms of TDV and girls will be more at-risk to report nonphysical forms of TDV. Collectively, the results of this study could contribute to the literature by providing information that helps identify adolescents who are more likely to report TDV perpetration, ascertain potential protective, and improve preventive interventions.

## CHAPTER 3: METHODS

The present investigation involves secondary data analysis of a subset of longitudinal data collected from three Midwestern high schools as part of a larger grant-funded study examining risk and protective factors for violence in schools.

### **Participants & Consent Procedures**

Participants included 1,621 9<sup>th</sup>-12<sup>th</sup> grade students from three Midwestern high schools. Students who do not identify as White comprise 68.7% ( $n = 1009$ ) of the sample.” Additionally, the sample is 51.2% Female ( $n = 830$ ) and 48.8% Male ( $n = 791$ ). The survey was administered at two time points: once in the Spring of 2012 and once in the Spring of 2013. IRB approval to use a waiver of active parental consent was obtained from the University of Illinois, and the Centers of Disease and Control granted a certificate of confidentiality for the data. Permission forms were sent to all students registered at the high schools prior to data collection, and parents were asked to sign and return the parent information letter only if they wished that their child would *not* participate in the study. Students were also read an assent script prior to data collection and could opt out of the survey. Students were told that their participation was strictly voluntary and they could stop responding at any point during the survey. Students were also told that their answers would remain confidential unless they indicated that they had intentions of harming themselves or that someone else was harming them. Finally, students were told that their names would be converted to numbers and removed from their survey answers before data entry. There was a 95% participation rate. Two

researchers were present to answer any questions the students may have had while taking the survey.

## **Measures**

*Demographic variables.* Self-reports of gender, age, race, and grade were considered to identify demographic characteristics.

*Teen Dating Violence Perpetration.* Dating violence was assessed with 28 items from the *Conflict in Adolescent Dating Relationships Inventory* (CADRI; Wolfe et al., 2001). 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.” Response options for each item were defined on a five-point scale ranging from “Never” at 1 through “Often” at 5. The CADRI has a strong internal consistency with a Cronbach’s alpha of .83, 2-week test-retest reliability ( $r = 0.68, p < .001$ ), and partner agreement ( $r = 0.64, p < .001$ ; CADRI; Wolfe et al., 2001). Sexual coercion was reported at very low levels in this population. Thus, for the purpose of these analyses, only physical/threatening behaviors, verbal emotional abuse and relationally aggressive behaviors were used to measure Teen Dating Violence Perpetration.

*Drug & Alcohol Use – Rand’s Project CHOICE.* This 6-item scale asks students to report their use of alcohol and/or drugs during the past month (30 days). The scale consists of items such as, “cigarettes,” “smokeless tobacco,” “alcohol and alcohol binging,” “marijuana,” and “other legal or illegal drugs or pills”. Responses are recorded on a 5-point Likert-type scale with options including “0 days,” “1 day,” “2 days,” “3-5 days,” “10-19 days,” and “20-30 days.” For the purpose of this study, we looked at addictive drug use separately from alcohol use. We also split alcohol use into two variables: alcohol use versus alcohol binging (i.e., five or more drinks reported in the past 30 days). These variables were treated as continuous variables, where anything greater than 0 days was considered as endorsement of the substance in question.

*Conflict Resolution Styles Inventory.* Conflict style was measured using the 16-item *Conflict Resolution Styles Inventory* (CRSI, Kurdek, 1994). Three conflict style scales emerged in factor analysis: explosive, complacent, and positive problem solving. For the purpose of this investigation, the positive problem solving scale was examined to assess how it impacts the relationship between substance use and teen dating violence. Students were presented with the following stem prior to completing the measure: “The following questions refer to times when you and the person you are dating have disagreements.” The student is then prompted to answer how often he/she has used certain conflict styles including “focusing on the problem at hand,” “sitting down and discussing differences constructively,” “finding alternatives that are acceptable to each of us,” negotiating and compromising,” etc. Responses are recorded on a 5-point Likert-type scale with options ranging from “Never” to “Always.” This scale has been used with

middle school students in the CDC Dating Matters Initiative and yielded adequate internal consistency (Niolon, personal communication, October 11, 2015).

### **Research Goals.**

This study aims to examine the association between youth's recent substance use and TDV perpetration. It is hypothesized that adolescents reporting any of these three forms of substance use in the past 30 days would be more likely to also be reporting physical or threatening, verbal, or relational TDV perpetration. This study also focuses on examining the effect of positive conflict resolution style on this association. It is hypothesized that having a positive conflict resolution style will buffer the risk of reporting TDV perpetration among youth who are reporting recent substance use. Finally, the data will be ran across gender groups to determine any differences between what boys and girls are reporting. It is hypothesized that boys will be more at-risk to report physical forms of TDV and girls will be more at-risk to report nonphysical forms of TDV.

## CHAPTER 4: RESULTS

Results are summarized in this section highlighting key information. Additional information from each analysis including the estimates, standard errors, and significance levels are presented in tables at the end of the document as well as in the figures presented throughout the text.

### **Data Analysis Procedure**

Descriptive analysis was conducted using SPSS (23.0). Multiple regression was the primary analytic technique used in this study and was conducted using Mplus V7.31 (Muthén & Muthén, 2015). For the purpose of this study, reported alcohol, alcohol binge, addictive drug use, teen dating violence perpetration, and positive problem solving conflict resolution style variables were all viewed as continuous variables. Groups analyses were also run varied by gender to examine differences in what males and females reported in this sample. Descriptive statistics were calculated to examine basic characteristics of the data and bivariate relations among observed variables. These statistics included subscale means, standard deviations, and bivariate correlations among scales (Table 1). Before proceeding with data analysis, it was important to ensure that all variables thought to be related through mediation had an indirect effect on each other that is significantly larger than zero. Significant bivariate correlations, as shown in Table 2, were sufficient to demonstrate significant indirect effects.

### **Link between Substance Use and Teen Dating Violence Perpetration**

To address how substance use and teen dating violence perpetration are related across high school years, a multiple regression model is posited to examine the initial relation between substance use (past 30 days) and teen dating violence perpetration.

Substance use was parsed out as three distinct variables: past 30 day reported alcohol use, past 30 day reported alcohol binge use, and past 30 day reported drug use. Each of these was modeled to determine the association between substance use with teen dating violence perpetration at time 2 as the outcome variable, while accounting for each individual's reported teen dating violence perpetration at time 1. Teen dating violence perpetration was also parsed out as physical or threatening teen dating violence, verbal teen dating violence, and relational teen dating violence.

Thus, within a model testing substance use (i.e., either alcohol, binge drinking, or addictive drug use) on teen dating violence perpetration, three separate paths were also tested (i.e., one for physical or threatening TDV, one for verbal TDV, and one for relational TDV). Next, to determine if the effects of the various substance use variables on each form of TDV perpetration is significantly different for males and females, a Wald chi-square test was posited. The chi-square test was significant, so the data was then examined using multiple group analysis varied by gender to report how the relationship between substance use and the various forms of TDV perpetration looked for males and females. The path analyses for each form of substance use reported are shown below in Figures 1, 2, and 3.

Results in Figure 1 show that alcohol use reported in the last 30 days is significantly associated to physical/threatening, verbal, and relational TDV perpetration for both males and females. A unit increase in alcohol use reported at wave 2 is associated with a 0.246 standard deviation increase in physical/threatening TDV perpetration for males and a 0.239 standard deviation increase for females. A unit increase in alcohol use reported at wave 2 is associated with a 0.177 standard deviation

increase in verbal TDV perpetration for males and a 0.247 standard deviation increase for females. A unit increase in alcohol use reported at wave 2 is associated with a 0.204 standard deviation increase in relational TDV perpetration for males and a 0.287 standard deviation increase for females.

Furthermore, while the chi-square test was not significant for the relational TDV perpetration pathway, it was significant for both the physical/threatening and the verbal pathways. Thus, while males and females were not reporting significant differences in relational TDV perpetration when reporting alcohol use in the last 30 days, there are significant differences in how they are reporting physical/threatening and verbal TDV perpetration when they also reported alcohol use in the last 30 days. More specifically, the effects of alcohol reported in the past 30 days on physical/threatening TDV perpetration (Wald chi-square = 4.570,  $df = 1$ ,  $p < .05$ ) are significantly higher for males than for females, whereas the effects on verbal TDV perpetration (Wald chi-square = 11.159,  $df = 1$ ,  $p < .001$ ) are significantly higher for females than for males.

Next, results in Figure 2 show that binge alcohol use reported in the last 30 days is significantly associated to physical/threatening, verbal, and relational TDV perpetration for both males and females. A unit increase in binge alcohol use reported at wave 2 is associated with a 0.244 standard deviation increase in physical/threatening TDV perpetration for males and a 0.240 standard deviation increase for females. A unit increase in binge alcohol use reported at wave 2 is associated with a 0.134 standard deviation increase in verbal TDV perpetration for males and a 0.194 standard deviation increase for females. A unit increase in binge alcohol use reported at wave 2 is associated

with a 0.211 standard deviation increase in relational TDV perpetration for males and a 0.276 standard deviation increase for females.

Similar to alcohol use, while the chi-square test for binge alcohol use was not significant for the relational TDV perpetration pathway, it was significant for both the physical/threatening and the verbal pathways. Thus, while males and females were not reporting significant differences in relational TDV perpetration when reporting binge alcohol use in the last 30 days, there are significant differences in how they are reporting physical/threatening and verbal TDV perpetration when they also reported alcohol use in the last 30 days. More specifically, the effects of binge alcohol use reported in the past 30 days on physical/threatening TDV perpetration (Wald chi-square = 7.868,  $df = 1$ ,  $p < .01$ ) are significantly higher for males than for females, whereas on the effects on verbal TDV perpetration (Wald chi-square = 9.383,  $df = 1$ ,  $p < .01$ ) are significantly higher for females than for males.

Finally, results in Figure 3 show that addictive drug use reported in the last 30 days is significantly associated to physical/threatening, verbal, and relational TDV perpetration for both males and females. A unit increase in addictive drug use reported at wave 2 is associated with a 0.170 standard deviation increase in physical/threatening TDV perpetration for males and a 0.198 standard deviation increase for females. A unit increase in addictive drug use reported at wave 2 is associated with a 0.089 standard deviation increase in verbal TDV perpetration for males and a 0.216 standard deviation increase for females. A unit increase in addictive drug use reported at wave 2 is associated with a 0.131 standard deviation increase in relational TDV perpetration for males and a 0.225 standard deviation increase for females.

Consistent with alcohol and binge alcohol use, while the chi-square test for addictive drug use was not significant for the relational TDV perpetration pathway, it was significant for both the physical/threatening and the verbal pathways. Thus, while males and females were not reporting significant differences in relational TDV perpetration when reporting addictive drug use in the last 30 days, there are significant differences in how they are reporting physical/threatening and verbal TDV perpetration when they also reported addictive drug use in the last 30 days. More specifically, the effects of addictive drug use reported in the past 30 days on physical/threatening TDV perpetration (Wald chi-square = 4.473,  $df = 1$ ,  $p < .05$ ) and on verbal TDV perpetration (Wald chi-square = 13.609,  $df = 1$ ,  $p < .001$ ) are significantly higher for females than for males. Interestingly, whereas using or binging on alcohol increase the risk of males reporting of physical or threatening behavior, females are more at risk to report physical or threatening TDV perpetration when reporting addictive drug use. Furthermore, females are more at-risk to report verbal TDV perpetration in association to all three forms of substance use reported (i.e., alcohol, binge alcohol, or addictive drug use).

### **Interaction Effects**

To determine if having a problem solving interaction style buffers the relationship between substance use and TDV perpetration, problem solving was added into the model as an interaction variable with the three forms of substance use examined. First, the main effects of the problem solving resolution style on the three forms of TDV perpetration (i.e., physical/threatening, verbal, and relational) were looked at. Next, the effects of the interaction variables were tested by examining how the three forms of TDV perpetration looked at were affected by the interaction of problem solving style with alcohol use,

binge use, and addictive substance use, respectively. Additionally, these analyses were examined across gender.

Results in Tables 5, 6, and 7 show that none of the interaction variables significantly impacted the relationship between substance use and TDV perpetration. Moreover, these results did not significantly differ by gender. For example, Table 7 shows that when a participant (i.e., male or female) reported alcohol consumption, but simultaneously reported having a problem solving conflict resolution style, the amount they reported any of the three forms of TDV perpetration examined did not significantly change. The same was true for binge alcohol use reported (Table 6) and for addictive substance use reported (Table 7). Interestingly, the main effects of having a problem solving conflict resolution style were significantly correlated with some forms of perpetration. Specifically, students who were reporting having a problem solving conflict resolution style were also reporting higher levels of verbal TDV perpetration.

## CHAPTER 5: DISCUSSION

### **Study Conclusions and Implications**

The current study examined the relation of substance use and TDV perpetration with attention to gender differences and the buffering effects of a problem solving conflict resolution style. Study findings suggest that indeed the analyses offer strong support for the link between alcohol and drug use and teen dating violence perpetration in high school. All three forms of substance use reported in the past 30 days (i.e., alcohol use, binge alcohol use, and addictive drug use) emerged as precursors to all three forms teen dating violence perpetration examined (physical/threatening, verbal, and relational). These results are consistent with literature indicating that adolescents who report substance use are at greater risk of perpetrating relationship violence than those who refrain from substances (e.g., Foshee et al., 2001, Temple, et al., 2013; Walton et al., 2009).

The emergence of substance use as a precursor to teen dating violence perpetration was not surprising with both autonomy and access to substances increasing in adolescence. However, the systems underlying this connection have yet to be definitively identified. To help understand these associations, we draw on the indirect effects model, which would suggest that substance use has destructive effects on relationship quality, and thus, longer exposure to substances can facilitate a setting where conflict and aggression are increased (Klosterman & Fals-Stewart, 2006). To better explain the link found between substance use and relationship violence, the indirect effects model can also be taken together with the lifestyle theories that maintain engaging

in substances is in itself a risky act (i.e., substances can lower inhibitions and decrease information processing skills), and puts adolescents in more vulnerable positions to increase their risk for perpetration (Weiner, Sussman, Sun, & Dent, 2005). These theories suggest that individuals engaging in behaviors like illicit substance use are implicitly more at-risk for risks for violence. The lifestyle theories would also suggest that adolescents who are drinking or using drugs are more likely to associate with peers engaged in socially deviant behavior, which might influence and increase their risk for aggression or violence. Taken with the indirect effects model, it may be that persistent substance use during adolescence can be a risk factor for TDV perpetration because it puts individuals at higher risk of arguing or turning aggressive, which can damage the relationship quality.

However, the literature suggests there could be various mechanisms underlying the association between substance use and TDV perpetration in youth. For instance, two studies suggest that certain adolescents may exhibit behavioral patterns that may include TDV perpetration and substance use as well as other precarious behaviors, like risky sexual behavior (Dryfoos, 1990; Jessor, 1991). Thus, the link between substance use and TDV perpetration in adolescence supports the concept that there could be a combination of risky behaviors that places youth at higher risk for socially deviant behaviors. Due to the high prevalence of substance use in adolescence, there is a need for additional research to focus on identifying the various factors involved within the relationship between substance use and TDV perpetration in adolescence so as to offer direction to multifaceted intervention approaches for reducing risk in youth.

With regard to gender, certain associations significantly varied for males and females. For example, the effects of alcohol or binge alcohol use reported in the past 30 days on physical or threatening TDV perpetration are significantly higher for males than for females. However, the effects of addictive drug use reported in the past 30 days on physical or threatening TDV perpetration are significantly higher for females than for males. Interestingly, whereas using or bingeing on alcohol increase the risk of males reporting of physical or threatening behavior, females are more at risk to report physical or threatening TDV perpetration when reporting addictive drug use. Furthermore, females are more at-risk than males to report verbal TDV perpetration in association to all three forms of substance use reported (i.e., alcohol, binge alcohol, or addictive drug use). While the effects of all three substance use forms examined are significantly associated with relational TDV perpetration, these associations did not significantly vary by gender.

Therefore, the findings suggest that males are more likely to report physical or threatening TDV perpetration when reporting alcohol or binge alcohol use, whereas females are more likely to report verbal TDV perpetration when reporting alcohol or binge drinking. These findings are consistent with literature that suggests men tend to report more physical forms of aggression whereas females tend to report more verbal forms of aggression (e.g., Björkqvist, 1994). However, the findings in the current study show that alcohol and binge drinking play a role in facilitating this aggression within a dating relationship. Perhaps the psychopharmacological effects of alcohol and binge drinking, which impact cognitive functioning (i.e., lowered inhibitions, exacerbated emotions, decreased information processing), lead to reduced ability to read cues appropriately, that could cause youth to react for aggressively (Phil & Hoaken, 2002).

Consistent with the findings from alcohol and binge alcohol use, the analyses also suggest females who reported addictive substance use were more likely to report verbal TDV perpetration than males. However, the analyses also showed that females who reported addictive substance use were more likely to report physical or threatening TDV perpetration than males. The limited literature that examines differences in reasons for using physical aggression for males and females among high school students suggests that adolescent females are more likely to use physical violence for self-defensive purposes (Foshee, 1996). This seems supported by a study that showed the 70% of high school female students who report physical aggression toward dating partners denied initiating violence (Molidar & Tolman, 1998).

Yet, the findings of the current study specifically identify addictive drug use as a facilitating factor for physical/threatening violence in adolescent females. This could be due to neurological differences that addictive drugs may impact females differently than males (Becker & Hsu, 2008). However, given that multiple substances with differing properties and effects were accounted for when defining addictive drug use in our study, further research needs to be conducted to properly ascertain how one substance in isolation of the others relates to the motivation behind this phenomenon. Although it is impossible to determine why such discrepancies were found in the present study, future research should attempt to address this issue in more detail to develop tailored programming for gender-specific prevention and intervention strategies.

Next, problem solving conflict resolution style was examined to determine if it buffers the link between substance use and teen dating violence perpetration. Findings in this study suggest that problem solving conflict resolution style does not seem to

significantly impact the relationship between substance use and teen dating violence perpetration over time. Moreover, these results did not significantly differ by gender. Thus, youth that reported having a problem solving conflict resolution style did not significantly buffer or change TDV perpetration reported. This came as a surprise when considering developmental theories of conflict resolution, which suggest that difficulties with communication and maladaptive conflict resolution style could lead to destructive processes that can increase conflict in a relationship. On the other hand, this theory also suggests that problem solving conflict resolution style can lead to cooperation and adaptive communication skills that could decrease conflict in interpersonal relationships (Deutsch, Coleman, & Marcus, 2011). Yet, the findings from the current study suggest that perhaps youth who are reporting cooperative conflict management style are not able to access these problem-solving skills when substance use is present. The same psychopharmacological effects from substances stated above may play a role in hindering adolescents' abilities to utilize problem-solving skills when conflicts arise.

The results found in this study could also be due to the nature of the subset of students who were examined. It is important to acknowledge that the students who completed the conflict resolution style portion of the survey were those who had identified recently dating or were currently in relationships at the time of reporting. Perhaps the students who had reported dating in the past, but who were not in recent or current relationships, might still have contributed valuable information. The students' reports of conflict management and experiences of dating violence perpetration or substance use could have provided meaningful insights that help differentiate their experiences, making them an important group to assess.

Additionally, this study also found that the main effects of having a problem solving conflict resolution style were significantly correlated with verbal TDV perpetration for both males and females. Specifically, students who were reporting having a problem solving conflict resolution style were also reporting higher levels of verbal TDV perpetration, even when substance use was not considered. This finding was unexpected, as theories suggest problem solving conflict management would lead to adaptive communication, which would presumably lessen the likelihood of any violence (Deutsch, Coleman, & Marcus, 2011). However, as this study only examined TDV perpetration, perhaps the perception of the individuals who endorsed problem solving conflict resolution is biased. It would be helpful in future studies to determine how their partners identify the individuals' conflict resolution style to determine differences in perception. For instance, while someone may believe they have a problem solving conflict resolution style attributed to adaptive communication, his/her partner may identify that person's style as more aggressive and maladaptive. As this is the first study that looked at conflict style in relationship to TDV perpetration, more studies need to be conducted before any absolute conclusions are drawn.

### **Study Limitations and Future Directions**

While the major strength of this study is the use of longitudinal data and analysis, findings should be interpreted in light of several limitations. Researchers are able to identify changes when examining the relationships between variables over time. However, this study uses a short-term longitudinal design and would be strengthened by examining the sample of students over a longer period of time. For example, substance use and relationships are often novel experiences for students in high school. It could be

worth examining how students change their reports of managing these experiences over time beyond the mid-adolescent years into college so as to provide more insight into the social correlates of dating violence and substance use.

Although examining the interaction of substance use, teen dating violence perpetration, and a specific conflict style in a model may be considered basic, the lack of research examining protective factors between substance use and dating violence perpetration in the context of adolescence made this undertaking an important initial move. The longitudinal statistical analyses used in this study allow for inferences about directionality of these relationships. However, these results prompt questions that call for the need to examine more risk and protective factors that may impact the link between adolescent substance use and teen dating violence perpetration. For example, while teen dating violence perpetration was examined in this study, it could be interesting to also differentiate between the experiences of adolescents who are only perpetrating and who both perpetrate and receive victimization. Furthermore, while alcohol use was parsed out within the substance use variable, it could also be interesting to look specifically at marijuana use, as this substance has been shown to be more commonly used among high school samples (Gruber & Pope, 2002).

Another strength in this study is the large sample size made up of a racially and economically diverse population. However, while gender differences were examined, it would be interesting to also explore racial and age differences to have a richer interpretation of the unique experiences of these study participants. Further research examining demographic differences within population samples could provide more valuable results with greater capability for tailored application of research findings for

prevention purposes. It could also have been interesting to have included students who reported dating in the past but not recent or currently within the conflict style measure, so as to explore differences in their experiences versus those adolescents who reported maintaining current or recent relationships.

Finally, the findings in this study are limited by the reliance on self-report data, although this is the most common approach used to assess TDV and substance use among adolescent populations. Additionally, it is uncertain how these results generalize to other samples of youth (i.e., those in elementary or middle school) or in other regions of the country.

### **Conclusion and Implications**

Findings from the current study suggest that intervention and prevention efforts can address potential risk of TDV perpetration by focusing efforts on adolescent substance use. Preventive efforts may also benefit from focusing on specific forms of TDV perpetration, given that males and females have different vulnerabilities to the various forms of TDV perpetration presented in this study. While problem solving conflict resolution style was not found to be a significant protective factor within this relationship, it may be useful to study this factor when substance use is not a factor. Additionally, it may be useful to examine other potential protective factors. These results call for a need for future research efforts to examine the complex mechanisms underlying the association between substance use and TDV perpetration so as to better determine risk and protective variables that can be targeted in preventative interventions.

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## APPENDIX: FIGURES & TABLES

Figure 1. Effect of Alcohol Use on TDV for Males and Females

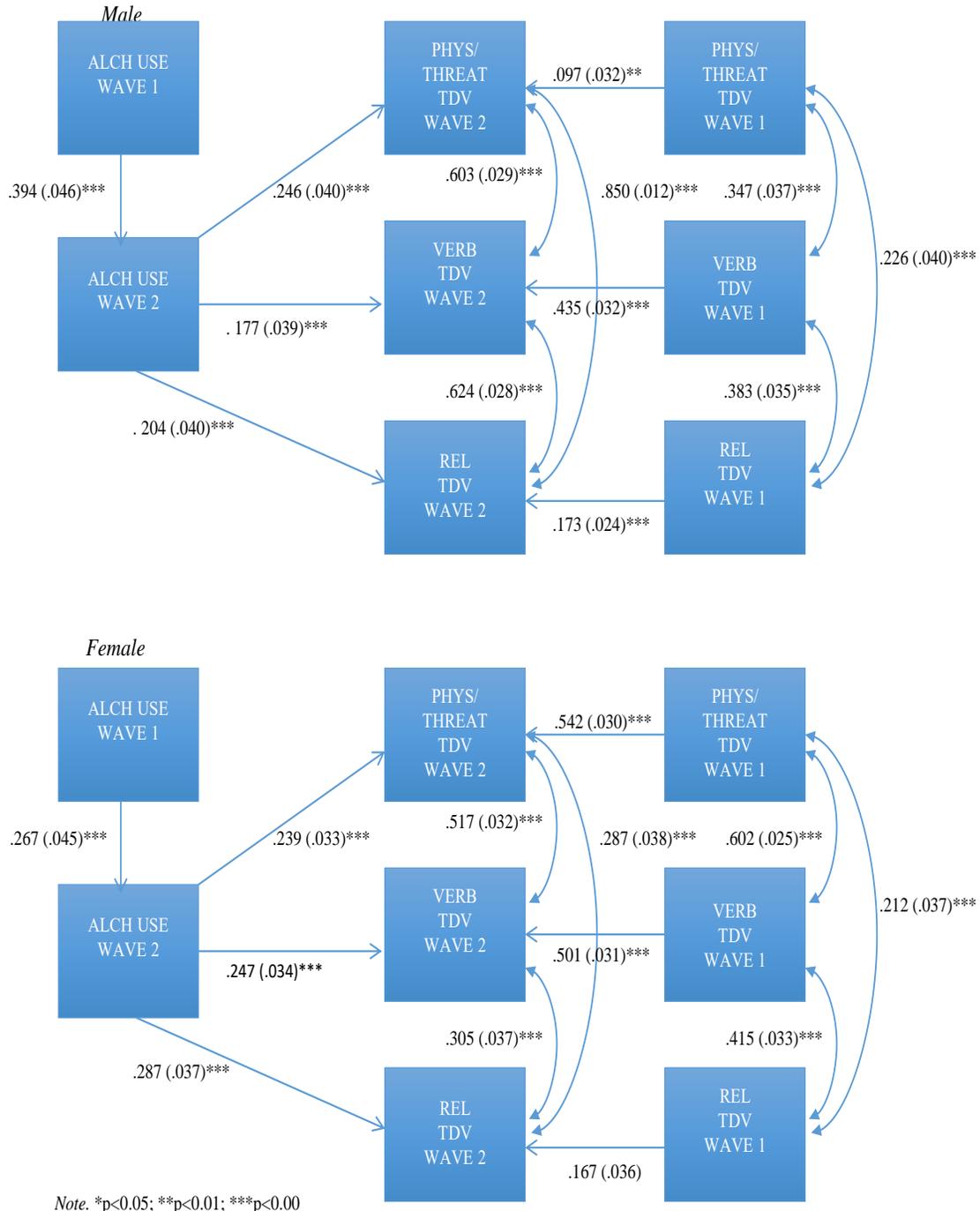


Figure 2. Effect of Binge Alcohol Use on TDV for Males and Females

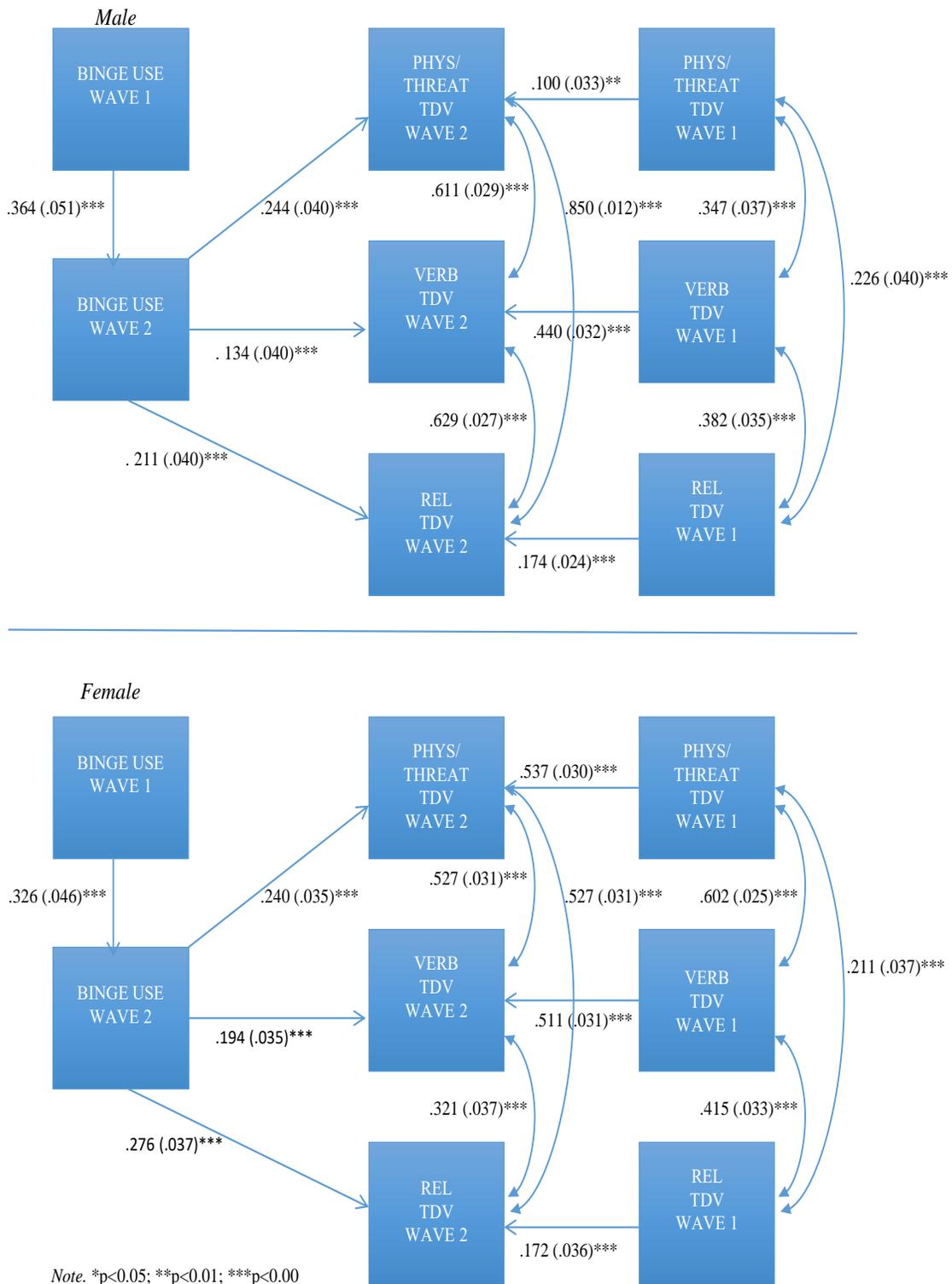


Figure 3. Effect of Illicit Drug Use on TDV for Males and Females

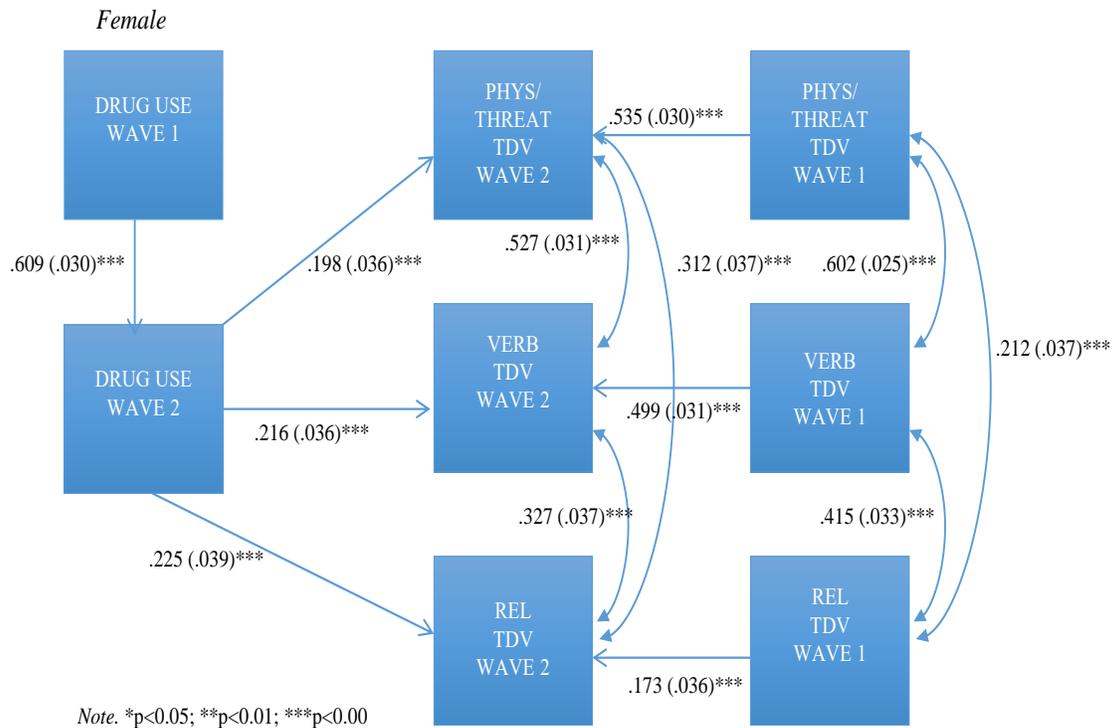
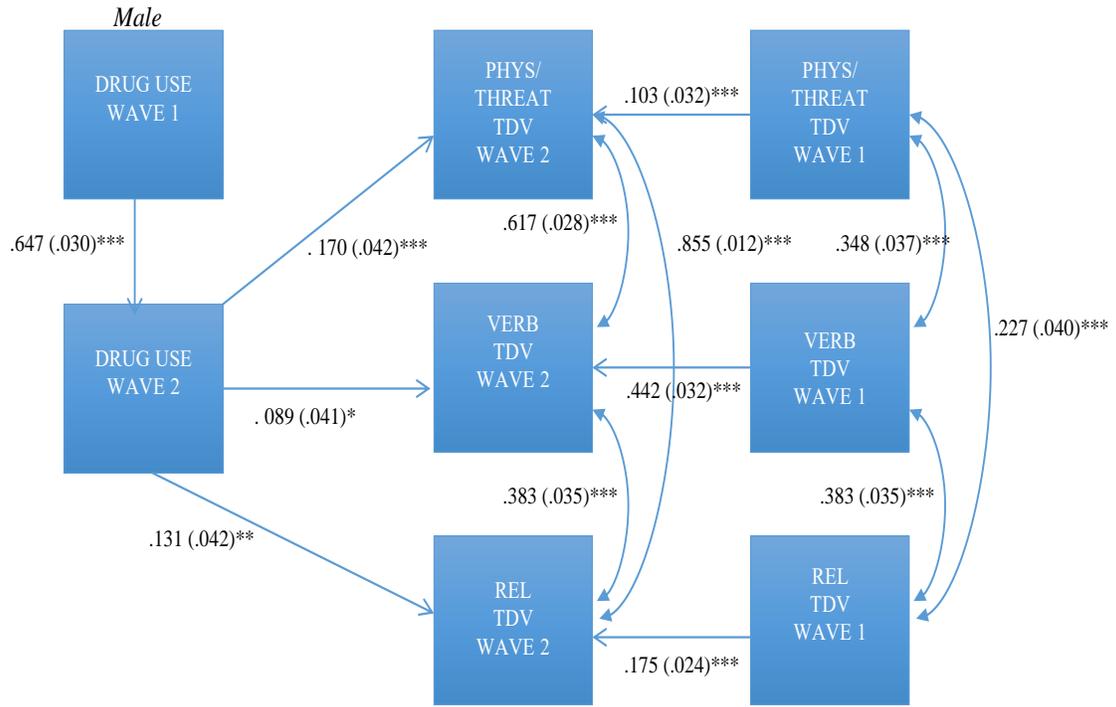


Table 1. Descriptive Statistics.

	Mean	Standard Deviation	N
Physical/Threatening Perpetration	.531	1.360	1206
Verbal Perpetration	4.050	4.880	1207
Relational Perpetration	.160	.628	1205
Alch Wave 2	.560	1.193	1255
Binge Wave 2	.300	.958	1253
Drug Wave 2	.557	1.121	1267

*Note.* Alch Wave 2 = alcohol use reported in past 30 days in wave 2; Binge Wave 2 = binge alcohol use reported in past 30 days in wave 2; Drug Wave 2 = addictive drug use reported in past 30 days in wave 2

Table 2. Correlations.

		Physical/Threatening Perpetration	Verbal Perpetration	Relational Perpetration	Alch Wave 2	Binge Wave 2	Drug Wave 2
Physical/Threatening Perpetration	Pearson Correlation	1	.565**	.213**	.168**	.146**	.160**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	1206	1206	1204	1180	1179	1193
Verbal Perpetration	Pearson Correlation	.565**	1	.403**	.166**	.130**	.169**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	1206	1207	1205	1181	1180	1194
Relational Perpetration	Pearson Correlation	.213**	.403**	1	.070*	.030	.057*
	Sig. (2-tailed)	.000	.000		.016	.299	.047
	N	1204	1205	1205	1179	1179	1192
Alch Wave 2	Pearson Correlation	.168**	.166**	.070*	1	.731**	.533**
	Sig. (2-tailed)	.000	.000	.016		.000	.000
	N	1180	1181	1179	1255	1236	1250
Binge Wave 2	Pearson Correlation	.146**	.130**	.030	.731**	1	.474**
	Sig. (2-tailed)	.000	.000	.299	.000		.000
	N	1179	1180	1179	1236	1253	1247
Drug Wave 2	Pearson Correlation	.160**	.169**	.057*	.533**	.474**	1
	Sig. (2-tailed)	.000	.000	.047	.000	.000	
	N	1193	1194	1192	1250	1247	1267

Note. Alch Wave 2 = alcohol use reported in past 30 days in wave 2; Binge Wave 2 = binge alcohol use reported in past 30 days in wave 2; Drug Wave 2 = addictive drug use reported in past 30 days in wave 2

Table 3. Multiple Regression Results for Intrapersonal/Relationship Quality and Substance Use Behaviors for Males. Parameter Estimate (Standard Error).

Fixed Effects	Model:		
	Physical/Threatening Perpetration	Verbal Perpetration	Relational Perpetration
<i>Alcohol</i>			
Intercept	.090 (.046)*	.279 (.050)***	.075 (.046)
Alch Wave 2	.246 (.040)***	.177 (.039)***	.204 (.040)***
<i>Binge</i>			
Intercept	.116 (.045)*	.310 (.049)***	.094 (.044)*
Binge Wave 2	.244 (.040)***	.134 (.040)***	.211 (.040)***
<i>Addictive</i>			
Intercept	.110 (.049)*	.309 (.052)***	.098 (.049)*
Drug Wave 2	.170 (.042)***	.089 (.041)*	.131 (.042)**

*Note.* Alch Wave 2 = alcohol use reported in past 30 days in wave 2; Binge Wave 2 = binge alcohol use reported in past 30 days in wave 2; Drug Wave 2 = addictive drug use reported in past 30 days in wave 2; \*p<0.05; \*\*p<0.01; \*\*\*p<0.00

Table 4. Multiple Regression Results for Intrapersonal/Relationship Quality and Substance Use Behaviors for Females.  
Parameter Estimate (Standard Error).

Fixed Effects	Model: Teen Dating Violence Perpetration		
	Physical/Threatening Perpetration	Verbal Perpetration	Relational Perpetration
<i>Alcohol</i>			
Intercept	.055 (.040)	.282 (.052)***	.034 (.043)
Alch Wave 2	.239 (.033)***	.247 (.034)***	.287 (.037)***
<i>Binge</i>			
Intercept	.092 (.039)*	.323 (.052)***	.079 (.042)
Binge Wave 2	.240 (.035)***	.194 (.035)***	.276 (.037)***
<i>Addictive</i>			
Intercept	.076 (.041)	.292 (.052)***	.062 (.045)
Drug Wave 2	.198 (.036)***	.216 (.036)***	.225 (.039)***

*Note.* Alch Wave 2 = alcohol use reported in past 30 days in wave 2; Binge Wave 2 = binge alcohol use reported in past 30 days in wave 2; Drug Wave 2 = addictive drug use reported in past 30 days in wave 2; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 5. Multiple Regression Results: Effect of Problem Solving Style on TDV when Alcohol Use Reported. Parameter Estimate (Standard Error).

Fixed Effects	Model: Teen Dating Violence Perpetration		
	Physical/Threatening Perpetration	Verbal Perpetration	Relational Perpetration
<i>Problem Solving (PRB) Style</i>			
Intercept	.004 (.054)	.071 (.202)	-.018 (.036)
PRB Wave 2	.051 (.008)	.173 (.029)***	.058 (.005)
<i>Interaction PRBXALCH</i>			
Intercept	.028 (.059)	.096 (.205)*	.015 (.045)
PRB Wave 2	.026 (.010)	.154 (.032)***	.022 (.009)
PRBxALCH Wave 2	.081 (.013)	.044 (.035)	.119 (.012)
<i>Interaction PRBXALCH by Gender</i>			
<i>Male:</i>			
Intercept	.383 (.105)	.130 (.325)	.083 (.104)
PRB Wave 2	-.002 (.021)	.143 (.061)*	-.016 (.021)
PRBxALCH Wave 2	.247 (.024)	.134 (.061)	.239 (.022)
<i>Female:</i>			
Intercept	.049 (.085)	.114 (.353)	.007 (.028)
PRB Wave 2	.007 (.011)	.132 (.045)***	.020 (.003)
PRBxALCH Wave 2	-.014 (.015)	.001 (.052)	-.014 (.005)

Note. PRBxALCH Wave 2 =problem solving style and alcohol use reported in past 30 days interaction in wave 2; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 6. Multiple Regression Results: Effect of Problem Solving Style on TDV when Binge Alcohol Use Reported. Parameter Estimate (Standard Error).

Fixed Effects	Model: Teen Dating Violence Perpetration		
	Physical/Threatening Perpetration	Verbal Perpetration	Relational Perpetration
<i>Problem Solving (PRB) Style</i>			
Intercept	.024 (.053)	.099 (.199)*	.001 (.034)
PRB Wave 2	.058 (.008)*	.178 (.030)***	.065 (.005)*
<i>Interaction PRXBINGE</i>			
Intercept	.054 (.053)	.124 (.199)**	.040 (.037)
PRB Wave 2	.031 (.008)	.157 (.031)***	.033 (.007)
PRBxBINGE Wave 2	.094 (.017)	.069 (.044)	.093 (.012)
<i>Interaction PRBxBINGE by Gender</i>			
<i>Male:</i>			
Intercept	.030 (.100)	.456 (.308)	.006 (.096)
PRB Wave 2	.019 (.021)	.172 (.060)**	.015 (.020)
PRBxBINGE Wave 2	.022 (.028)	.044 (.071)	.012 (.027)
<i>Female:</i>			
Intercept	.096 (.083)	.741 (.349)*	.033 (.026)
PRB Wave 2	.008 (.010)	.176 (.045)***	.003 (.003)
PRBxBINGE Wave 2	-.020 (.030)	-.003 (.082)	.001 (.009)

Note. PRBxBINGE Wave 2 =problem solving style and binge alcohol use reported in past 30 days interaction in wave 2; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 7. Multiple Regression Results: Effect of Problem Solving Style on TDV when Addictive Drug Use Reported. Parameter Estimate (Standard Error).

Fixed Effects	Model: Teen Dating Violence Perpetration		
	Physical/Threatening Perpetration	Verbal Perpetration	Relational Perpetration
<i>Problem Solving (PRB) Style</i>			
Intercept	.049 (.053)	.111 (.195)**	.033 (.036)
PRB Wave 2	.064 (.008)*	.183 (.030)***	.073 (.005)*
<i>Interaction PRBxDRUG</i>			
Intercept	.069 (.053)	.116 (.192)**	.055 (.032)
PRB Wave 2	.047 (.008)	.178 (.030)***	.043 (.005)
PRBxDRUG Wave 2	.092 (.035)	-.006 (.100)	.150 (.030)
<i>Interaction PRBxDRUG by Gender</i>			
<i>Male:</i>			
Intercept	.057 (.077)	.117 (.255)*	.035 (.069)
PRB Wave 2	.085 (.016)	.206 (.049)***	.078 (.015)
PRBxDRUG Wave 2	.121 (.051)	.023 (.118)	.120 (.046)
<i>Female:</i>			
Intercept	.105 (.089)	.139 (.344)*	.077 (.025)*
PRB Wave 2	.022 (.011)	.159 (.045)***	.020 (.003)
PRBxDRUG Wave 2	.065 (.085)	.013 (.200)	.222 (.036)

Note. PRBxDRUG Wave 2 =problem solving style and addictive drug use reported in past 30 days interaction in wave 2; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001