

Understanding the Influence of Romantic Relationship Seriousness on
Adolescent Binge Drinking and Drinking Consequences

by

Colleen Carr

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Approved August 2015 by the
Graduate Supervisory Committee:

Sharlene Wolchik, Co-Chair
Laurie Chassin, Co-Chair
Jenn-Yun Tein
Thomas Dishion

ARIZONA STATE UNIVERSITY

August 2016

ABSTRACT

Although substantial research has examined individual, family, and peer factors that contribute to predicting adolescent alcohol use, limited attention has been devoted to the unique role of romantic partners and little consideration has been given to the potential importance of romantic relationship seriousness. Data from Waves I and II of the National Longitudinal Study of Adolescent Health (Add Health) were used to assess the relation between romantic relationship seriousness and binge drinking and drinking consequences one year later among 14-18 year-olds (n= 928 adolescents; 54.1% female). Main effects of relationship seriousness and moderating effects of adolescent age, partner age, adolescent age by partner age, parental alcoholism, and gender were examined separately for each drinking outcome using zero-inflated Poisson regression (ZIP) models. Relationship seriousness and study covariate interactions were also examined. ZIP models estimate (a) a logistic regression that distinguishes between individuals whose values can only be zero on the outcome (i.e., a structural zero class) and individuals with count values ranging from zero to any other positive integer (i.e., a non-structural zero class), and (b) a Poisson regression predicting count values among the non-structural zero class. Results showed trends towards significance for relations between relationship seriousness and binge drinking and drinking consequences among non-structural zero classes. As hypothesized, increased relationship seriousness predicted less frequent binge drinking and fewer drinking consequences. The relation between relationship seriousness and binge drinking was moderated by peer alcohol use; the negative relation between relationship seriousness and binge drinking frequency was significant among adolescents who reported 0-2, but not 3, close friends who drink. The relation between relationship seriousness and number of drinking consequences was moderated by gender, adolescent delinquency (covariate), peer alcohol use (covariate), and Wave I drinking consequences (control variable). Specifically, a significant relation between relationship seriousness and number of drinking consequences was revealed only for females and only for adolescents who reported high consequences at Wave I, and was significant among adolescents who reported 0-2 close friends who drink and low delinquency. Results indicate that

relationship seriousness can protect adolescents in terms of drinking outcomes, which could have implications for prevention efforts.

ACKNOWLEDGMENTS

I would first like to thank my research mentor and dissertation co-chair, Dr. Sharlene Wolchik, for consistently supporting my development as both a researcher and clinician and for teaching me the art of merging science and practice. I would also like to thank my dissertation co-chair Dr. Laurie Chassin for welcoming me to the field of alcohol research, for being consistently available and responsive, and for contributing insightful questions and feedback throughout this project. I am also extremely appreciative of committee member Dr. Jenn-Yun Tein, who provided me with important training in statistical analyses and kindly answered my many questions, both big and small. I am also very grateful to committee member Dr. Thomas Dishion, whose enthusiasm for my research and thoughtful questions encouraged me to think about my project in new and different ways.

I would also like to express my deep appreciation for my fellow graduate students, who have promoted both my professional and personal growth. Their great friendship during the past five years has been invaluable. A special thank you to Michaeline Jensen and Frances Wang for their availability and support throughout the dissertation process.

Finally, I would like to thank my parents, Larry and Kris Carr, for their constant encouragement and support throughout graduate school and always.

TABLE OF CONTENTS

	Page
LIST OF FIGURES	ix
CHAPTER	
1 INTRODUCTION	1
Understanding Adolescent Alcohol Use	3
The Nature of Adolescent Romantic Relationships.....	8
Prior Research on the Relation between Adolescent Romantic Relationship Seriousness and Drinking Outcomes.....	13
Adolescent Age as a Moderator.....	14
Partner Age as a Moderator	16
Gender as a Moderator	17
COA Status as a Moderator	19
Contributions of the Current Study.....	21
2 METHOD	23
Participants	23
Procedure.....	26
Measures	26
Data Analytic Plan	31
3 RESULTS	35
Preliminary Analyses	35
Primary Analyses.....	39
4 DISCUSSION	44
Relationship Seriousness and Binge Drinking.....	45
Relationship Seriousness and Drinking Consequences	48
Limitations and Future Directions.....	50
Conclusions	53

	Page
REFERENCES.....	61
APPENDIX	
A TABLES.....	78
B RELATIONSHIP SERIOUSNESS: ORIGINAL SCALE	102
C RELATIONSHIP SERIOUSNESS: MODIFIED SCALE	104
D DELINQUENCY	106
E DRINKING CONSEQUENCES	108

LIST OF FIGURES

Figure		Page
1.	Main Effect of Relationship Seriousness on Wave II Binge Drinking.....	53
2.	Interaction of Relationship Seriousness and Peer Alcohol Use on Wave II Binge Drinking.....	54
3.	Main Effect of Relationship Seriousness on Wave II Drinking Consequences.....	55
4.	Interaction of Relationship Seriousness and Delinquency on Wave II Drinking Consequences.....	56
5.	Interaction of Relationship Seriousness and Peer Alcohol Use on Wave II Drinking Consequences.....	57
6.	Interaction of Relationship Seriousness and Wave I Drinking Consequences on Wave II Drinking Consequences.....	58
7.	Interaction of Relationship Seriousness and Gender on Wave II Drinking Consequences.....	59

CHAPTER 1

INTRODUCTION

Experimentation with alcohol in adolescence is normative, with individuals commonly initiating use between ages 13 and 15 (Johnston, O'Malley, & Bachman, 2007). A sizeable number of adolescents engage in risky alcohol use patterns, including binge drinking (four or five drinks on a single occasion for females and males, respectively; Chartier, Hesselbrock, & Hesselbrock, 2010; Johnston, O'Malley, Bachman, & Schulenberg, 2005). Adolescents report various negative consequences of alcohol consumption with 52% of reporters engaging in behavior they later regretted, 30% experiencing difficulty thinking clearly, 12% passing out after drinking, and 15% unable to complete studying and homework tasks (Brown & D'Amico, 2000; O'Malley, Johnston, & Bachman, 1998). Adolescent alcohol use is also associated with risky sexual behavior, reduced academic achievement, and car accidents (Bachman et al., 2008; Eaton et al., 2006; National Highway Traffic Safety Administration, 2000).

In addition to having negative short-term social and health-related consequences, adolescent alcohol use can have problematic long-term effects. Adolescence is a time when patterns of alcohol use can be established (Patton et al., 2004; Toumbourou et al., 2007), and some adolescents escalate use to problematic levels, resulting in 18% of emerging adults endorsing alcohol abuse/dependence (Cranford, McCabe, & Boyd, 2006). Substantial research evidence has established that peer, parent, and individual factors predict adolescent binge drinking (e.g., Catanzaro & Laurent, 2004; Chartier et al., 2010; Chassin, Pillow, Curran, Molina, & Barrera, 1993; Dishion & Owen, 2002; Sartor, Lynskey, Heath, Jacob, & True, 2007), but limited research has examined the role of adolescents' romantic partners (Gudonis-Miller, Lewis, Tong, Tu, & Aalsma, 2012; Longmore, Taylor, Giordano, & Manning, 2008).

This lack of attention to the influence of romantic partners is a notable oversight given the frequency and intensity of these relationships (Carver, Joyner, & Udry, 2003). Adolescents often spend substantial time with their partners, reporting spending more leisure time with partners than with friends or family members (Laursen & Williams, 1997; Roth & Parker, 2001). Research

shows that adolescents in romantic relationships drink more than their non-partnered peers (Aro & Taiple, 1987; Furman, Ho, & Low, 2007; Miller et al., 2009; Thomas & Hsiu, 1993). However, studies have yet to elucidate what aspects of romantic relationship involvement might put adolescents at risk for alcohol use and, potentially, for related consequences.

The current study extends prior research by examining whether romantic relationship seriousness separately predicts two aspects of adolescent binge drinking and drinking consequences among high school students (ages 14-18): (a) The likelihood of adolescents potentially engaging in binge drinking or experiencing drinking consequences and (b) Frequency of binge drinking or drinking consequences among adolescents who might have experienced these drinking outcomes. This study tests the hypothesis that higher relationship seriousness relates to lower likelihood of potentially engaging in binge drinking and of experiencing drinking consequences and to lower frequency of binge drinking and drinking consequences among adolescents who might experience these drinking outcomes. This study also addresses whether the relations between relationship seriousness and drinking outcomes vary by age, partner age, status as a child-of-an-alcoholic (COA), or gender. It was hypothesized that relationship seriousness would be more strongly associated with both aspects of binge drinking and drinking consequences among older adolescents, individuals with younger romantic partners, females, and COAs. This study also examines whether the moderating effect of partner age varies by adolescent age; it was expected that the moderating effect of partner age would be greater for younger adolescents.

In the following sections, theories and past research on adolescent alcohol use and romantic relationships will be reviewed. First, adolescent development and alcohol use will be discussed, followed by descriptions of adolescent romantic relationships and their variability across adolescence. Next, risk and protective factors associated with romantic relationships will be considered. Then, the rationale for four potential moderators of the relation between relationship seriousness and binge drinking and drinking consequences-- age, partner age, COA status, and gender-- will be explained.

Understanding Adolescent Alcohol Use

To understand adolescents' engagement in alcohol use, one must examine the physical, cognitive, and social changes that occur in this developmental period as well as parents' social and genetic influences. Research shows that adolescence is a time of increased vulnerability to risky behavior like binge drinking in part due to a disconnect between the development of reward sensitivity and cognitive control (Steinberg, 2008, 2010). Neuroimaging research shows that adolescents might process reward and risk information differently from adults, in a manner that increases the likelihood of risk-taking and sensation seeking behavior (Bjork, Smith, Danube, & Hommer, 2007).

Demographic Characteristics and Adolescent Alcohol Use

Certain demographic groups are at particularly high risk of engaging in alcohol use in adolescence. For instance, more non-Hispanic White and Hispanic adolescents report alcohol use (28.7% and 27.2%, respectively) than Black or African American and Asian adolescents (20.8% and 9.6%, respectively; Substance Abuse and Mental Health Services Administration [SAMHSA], 2013). Racial and ethnic differences have been explained by a variety of mechanisms, including diversity in access to alcohol, acceptability of alcohol use, commitment to education, and religious involvement (Brown, Parks, Zimmerman, & Phillips, 2000; Friese & Grube, 2009; Gillmore et al., 1990; Wallace & Bachman, 1991).

There are also gender differences in national estimates of alcohol use among adolescents, with slightly more males than females reporting past month drinking (24.7% v. 24%; SAMSHA, 2013) and past month binge drinking (16.5% v. 14%; SAMSHA, 2013). Research suggests that physiological and social changes during adolescence differentially affect males and females as they transition into emerging adulthood (Schulte, Ramo, & Brown, 2009). Adolescent males might be more prone to binge drinking due to later maturation in brain structures and executive function, lower response to alcohol, more inflated perceptions of peer alcohol use, and socialization into traditional male gender roles (Schulte et al., 2009). Given that the current study seeks to establish whether romantic relationship seriousness is uniquely related to drinking

outcomes, statistical models will control for gender as well as race and ethnicity if these variables are significantly correlated with outcomes in the current data set.

Peer Selection and Influence Effects

In addition to biological and demographic factors, shifts in interpersonal relationships can also affect adolescent alcohol use (Hazen, Schlozman, & Beresin, 2008). Peer influence peaks during adolescence as youth more actively select their environments and social relationships and spend more time with peers instead of with their parents (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996; Windle et al., 2008). Adolescents often select into peer groups of individuals who engage in similar behaviors to their own, but their behavior is also influenced by their peer groups; friends mutually influence each other, becoming more similar over time (Dishion & Owen, 2002; Jaccard, Blanton, and Dodge, 2005; Mercken, Snijders, Steglich, Variainen, & De Vries, 2010; Sieving, Perry, and Williams, 2000). Adolescent alcohol use typically occurs in a peer context (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2006; Ingram, Patchin, Huebner, McCluskey, & Bynum, 2007), and peers can model use, provide access to alcohol, and create norms and expectations for its use (Borsari, Borsari, & Carey, 2006). Alcohol use is particularly common among delinquent peer groups, which rebel against adult authority and engage in rule-breaking behavior (Haynie, 2002; Moffitt & Caspi, 2001). Social learning theory purports that adolescents affiliating with deviant peer groups observe and imitate problem behaviors like drinking, are socially reinforced for engaging in these behaviors, and develop positive expectancies surrounding them (Svensson, 2003). Fifty percent of the variance in adolescent alcohol use is attributable to an adolescents' number of alcohol-using friends (Windle et al., 2008). Research also suggests that even perceptions that peers approve of alcohol use and engage in drinking in the absence of actual observation of drinking predict adolescent alcohol use (Andrews, Hampson, Barckley, Gerrard, & Gibbons, 2008). Given these findings, it is not surprising that affiliating with deviant peers is a known correlate of adolescent drinking (Barnow et al., 2004; Dishion, Capaldi, Spracklen, & Li, 1995). To examine the unique relation between romantic relationship seriousness and drinking outcomes, statistical models will control for peer

alcohol use if it is found to be significantly correlated with outcomes in the current study. Given that individuals often select into peer groups whose behavior mirrors their own (e.g., delinquent adolescents select into delinquent groups) and given that peer groups influence adolescent drinking behavior, the current study will also assess whether adolescent delinquency should be included as a covariate.

Romantic Partner Effects

The limited research that has considered the unique influence of romantic partners on adolescent alcohol has shown that adolescent romantic partners can affect adolescent drinking behavior both directly and indirectly through the broader peer group. Adolescents regularly attempt to influence their romantic partners' behavior and these efforts are frequently effective given the extent of interaction and communication between partners (Center on Addiction and Substance Use at Columbia University, 2004; Giordano, Manning, & Longmore, 2002). Research shows that adolescents find it particularly challenging to turn down offers of alcohol from their romantic partners (Trost, Langan, & Kellar-Guenther, 1999). As such, it is not surprising that adolescent partner drinking has a significant effect on adolescent drinking above and beyond other peer effects (Gudonis-Miller et al., 2012; Longmore et al., 2008). Further, adolescents who date deviant partners are at particular risk; romantic partner deviancy predicts adolescents' drinking behavior after controlling for peer effects (Haynie, Giordano, Manning, & Longmore, 2005).

Romantic partners can also influence adolescents' alcohol use by changing the structure of peers' social networks and facilitating ties with new peers, creating new opportunities for involvement with alcohol (Kreager & Haynie, 2011). Adolescents seeking to improve their social status might be particularly prone to adopt substance use behaviors as their networks expand in an attempt to "fit in" (Crosnoe, Muller, & Frank, 2004; Hagan, 1991). The current study extends the literature, which has focused on effects of partner drinking, by addressing the relevance of relationship seriousness to understanding drinking outcomes.

Parent Effects: The Protective Nature of Positive Parenting Practices

Although peers robustly affect adolescents' engagement in antisocial and risky behaviors like alcohol use (Windle et al., 2008), parents also impact adolescent alcohol use in multiple ways. As adolescents engage more with their peers and partners away from direct parental supervision, parents need to employ more active parental monitoring practices (e.g., ensuring awareness of adolescents' activities and whereabouts, getting to know adolescents' friends) to know what is going on with their children and enforce rules and restrictions (Laird, Pettit, Bates, & Dodge, 2003). Adolescents who have close relationships and communicate well with their parents are more willing to disclose information to their parents, making it easier for parents to monitor their behavior (Stattin & Kerr, 2000). Parental monitoring, acceptance, and good parent-adolescent communication are associated with reduced involvement with peers and friends who drink alcohol, increased self-efficacy to refuse alcohol offers, and less drinking (Nash, McQueen, & Bray, 2005). Many studies provide further support for a relation between positive parenting practices and less adolescent alcohol use (e.g., Barnes and Farrell, 1992; Barnes, Reifman, Farrell, & Dintcheff, 2000; Flannery, Williams, & Vazsonyi, 1999; Mason, Cauce, Gonzales, & Haraga, 1994; Smetana, Crean, & Daddis, 2002). This is particularly true when parents express disapproval of adolescent drinking (Knafo & Schwartz, 2003; Nash et al., 2005). Given the established relation between aspects of parent-adolescent relationships and drinking outcomes, the current study will assess the appropriateness of including mother-adolescent and father-adolescent relationship quality as covariates in the statistical models.

Research shows that COAs tend to receive lower levels of emotional support and less consistent discipline and monitoring from parenting than do non-COAs (DeLucia, Belz, & Chassin, 2001; Dishion, Patterson, & Reid, 1988; Rutherford, Cacciola, Alterman, McKay, & Cook, 1997). Sher's (1991) deviancy proneness model suggests that adolescent COAs are at increased risk of alcohol use and abuse due to a combination of these parenting factors and genetic factors (e.g., increased likelihood of inheriting a tendency toward behavioral undercontrol). Given the relevance of parental alcoholism to understanding adolescent drinking,

COA status will be controlled for and tested as a moderator of the relation between relationship seriousness and drinking outcomes.

Drinking for Tension Reduction

Research suggests that the function drinking serves is context-specific; adolescents might drink to enhance a positive social experience in one situation and drink to cope in another (Cooper, Frone, Russell, & Mudar, 1995). However, literature supporting a tension reduction model of alcohol use and abuse (Sher, 1991) is inconsistent (e.g., Colder, 2001; Colder & Chassin, 1997; Hill, White, Chung, Hawkins, & Catalano, 2000; Hussong, Hicks, Levy, & Curran, 2001; Kushner & Sher, 1993). Although some researchers have suggested that drinking to cope might not occur until after adolescence (Sher, 1991; Zucker, 1986), others have found evidence that youth drink to cope with depressive symptoms (Hussong & Chassin, 1994; King, Iacono, & McCue, 2004; Sung, Erkanli, Angold, & Costello, 2004). Discrepant findings might be due to different operationalization of negative affect; research has revealed stronger effects of adolescent depression than anxiety in predicting alcohol use (Costello, Erkanli, Federman, & Angold, 1999; Hill, Shen, Lowers, & Locke, 2000; Hussong & Chassin, 1994). Adolescents might be at higher risk of drinking to cope when they are not well-versed in other effective coping strategies (Wills & Shiffman, 1985). Adolescent COAs may be at increased risk of drinking to cope because behavioral undercontrol is associated with difficulty coping with emotional distress (Sher, 1991). Adolescents who drink to cope are at increased risk for binge drinking and are prone to drink more often and to experience greater negative consequences than others (Cooper, 1994; Cooper, Russell, & George, 1988; Wills, Vaccaro, & McNamara, 1992).

Summary

Research suggests that adolescents often drink in social contexts to connect with peers and that they might also drink to cope with stress under other circumstances. Their drinking behavior is influenced by family factors, including parenting behavior and parental alcoholism. Although interpersonal relationships have a known impact on adolescent alcohol use and being in a romantic relationship in adolescence is associated with alcohol use (Aro & Taipale, 1987;

Furman et al., 2007; Miller et al., 2009; Thomas & Hsiu, 1993), researchers have not examined thoroughly the facets of such relationships, such as seriousness, that might explain this relation. The following sections will present theories and research on adolescent romantic relationships and examine their relation to drinking outcomes.

The Nature of Adolescent Romantic Relationships

To understand the influence of relationship seriousness on drinking outcomes, it is important to consider the nature of relationships in adolescence and the risk and protective factors associated with these relationships. Romantic partners rarely have been considered in the study of adolescent alcohol use and its consequences, which is surprising given that estimates from a national sample showed that 36% of 13 year-olds, 53% of 15 year-olds, and 70% of 17 year-olds reported a special romantic relationship in the prior 18 months (Carver et al., 2003). Contrary to a common assumption that romantic relationships in adolescence are short-lived and superficial (Brown, Feiring, & Furman, 1999; Collins, 2003), research has shown that middle to late adolescent romantic relationships last an average of 12 months or more (Carver et al., 2003; Shulman & Scarf, 2000). And, analysis of data from the National Longitudinal Study of Adolescent Health (Add Health) revealed that half of the romantic relationships of adolescents ages 16-19 had been sustained for at least 21 months and that the majority of these couples had said "I love you" (Raley, Crissey, & Muller, 2007), a significant relationship milestone (Nydick & Cornelius, 1984).

These relationships can be a unique and powerful type of peer relationship that significantly contributes to development and well-being (Collins, 2003; Furman & Collins, 2008; Furman & Shaffer, 2003). As is the case with friendships, romantic relationships can create a forum for mutual validation of self-worth and an egalitarian context in which adolescents practice collaboration and intimate self-disclosure (Furman & Simon, 1999). However, while friendships are primarily affiliative, meaning they are based on companionship, romantic relationships often entail integration of various behavioral systems: affiliation, attachment, sexuality, and caregiving (Shaver, Hazan, & Bradshaw, 1988; Furman & Simon, 1999). Like parent-child attachment

relationships, adolescent romantic relationships might entail seeking proximity to the other person and considering that person a safe haven to turn to for comfort or protection in times of distress or potential threat (Hazan & Shaver, 1987; Hazan & Zeifman, 1994; Shaver & Hazan, 1988). These relationships also often entail actual or anticipated sexual contact (Collins, Welsh, & Furman, 2009; Hazan & Zeifman, 1994). Seventy-one percent of 18-year-olds report having engaged in sexual intercourse (Alan Guttmacher Institute, 1994), and most adolescents experience first intercourse with someone they are dating exclusively or someone they know well and like a lot (Abma, Chandra, Mosher, Peterson, & Piccinino, 1997; Rodgers, 1996). Additionally, adolescent romantic relationships often feature elements of caregiving, characterized by displays of concern for partner well-being, emotional support, and reassurance (Simpson, Rholes, & Nelligan, 1992). Adolescents identify support and emotional intimacy as primary benefits of romantic relationships (Hand & Furman, 2009).

In conclusion, adolescent romantic relationships are distinct from other relationships adolescents have experienced, thus creating a challenge. Some researchers theorize that navigating these complex relationships is a “critical stage salient task” (Davies & Windle, 2000, p. 91) that enables youth to hone interpersonal skills and competencies.

Developmental Variability in Romantic Relationships

Romantic relationships typically play different roles and employ the behavioral systems of attachment, affiliation, sexuality, and caregiving differently across periods of adolescence (Collins et al., 2009; Furman & Simon, 1999). It is common for U.S. adolescents to become increasingly interested in the opposite sex around age 11-13 and to begin dating around age 14 (Connolly & McIsaac, 2011). Typical progression of dating entails first engaging with many potential partners in mixed-gender groups, breaking off to form pairs who date as part of group activities, and ultimately forming dyadic romantic relationships that function outside of the peer group (Connolly, Craig, Goldberg, & Pepler, 2004).

For young adolescents who are just entering the dating sphere, dating in mixed-gender groups is appealing because it offers opportunities to involve oneself in a wider social group and

enhance peer connections (Windle et al., 2008). Romantic relationships in early adolescence tend to be primarily affiliative like friendships, with companionship playing a central role (Feiring, 1996). Adolescent romantic relationships later in adolescence can be extremely different from earlier relationships as dyads function more outside of peer groups. Relationships in this period tend to involve substantially higher levels of commitment, companionship, support, and emotional and sexual intimacy and can be construed as attachment relationships (Furman & Simon, 1999; Richards, Crowe, Larson, & Swarr, 1998; Sharabani, Gershoni, & Hofman, 1981). Middle-to-late adolescents often feel highly invested in these relationships (Laursen & Jensen-Campbell, 1999), which often take priority over other relationships and provide a broad range of social provisions, like social support (Connolly & Johnson, 1996). Research has shown that 15-16 year olds identify their romantic relationships as being one of their most supportive relationships (Furman & Buhrmester, 1992).

The Protective Nature of Serious Romantic Relationships

The current study hypothesized that serious romantic relationships would protect adolescents from binge drinking and experiencing drinking consequences because they provide emotional support, promote self-esteem, and put adolescence in mature roles that are incompatible with a “partying” lifestyle. The working models adolescents develop about relationships, in tandem with the nature of adolescents’ relationships with romantic partners, affect how adolescents respond in times of distress. Those with secure views of romantic relationships turn to their partners for social support when stressed, while others withdraw from their partners or become preoccupied with their partner’s level of responsiveness (Collins & Read, 1990; Hazan & Shaver, 1987; Hazan & Zeifman, 1994; Shaver & Hazan, 1988; Simpson et al., 1992). This suggests that security in romantic relationships, a component of attachment (a common feature of serious relationships), affects how adolescents react to stress.

Romantic relationships can be protective, contributing to reductions in depressive symptoms and problem behaviors like binge drinking, especially among middle-to-older adolescents (Davies & Windle, 2000). This effect might be attributable in part to romantic partners in serious relationships providing adolescents with a supportive outlet when they

experience distress. Support from peers has been shown to affect late adolescents' drinking such that adolescents with intimate and supportive friendships are less prone to drinking in order to relieve stress (Ford & Carr, 1990; Hussong et al., 2001; Karwacki & Bradley, 1996; Steptoe, Wardle, Pollard, & Canaan, 1996). Not only can serious relationships provide adolescents with support, but they can also contribute to perceptions of social competence and positive self-appraisals and promote overall self-esteem (Feiring & Lewis, 1991; Paul & White, 1990; Roscoe, Kennedy, & Pope, 1987). This is notable given that low self-esteem is associated with greater frequency of alcohol use and problem drinking in adolescence (Scheier, Botvin, Griffin, & Diaz, 2000).

It is possible that serious romantic relationships also protect adolescents from binge drinking and drinking consequences by putting adolescents in roles that are incompatible with a "partying" lifestyle. Sharing a close relationship with a romantic partner can create a social bond for adolescents (Haynie et al., 2005) that they might fear jeopardizing by engaging in deviant or risky behavior like binge drinking. A longitudinal study found that adolescents who engaged in multiple dating relationships across the year were at greatest risk for involvement in a drinking subculture, whereas those who progressed into steady relationships did not exhibit increased alcohol use (Davies & Windle, 2000). Interestingly, adolescents who remained in steady relationships across the year experienced decreased alcohol use, delinquency, and depressive symptoms (Davies & Windle, 2000). The researchers theorized that these youth, who were likely experiencing attachment-like romantic relationships and associated responsibilities that resemble adult relationships, might be "maturing out" of excessive alcohol use. This phenomenon occurs in emerging/young adults and is accelerated in those who are cohabitating or married (Duncan, Wilkerson, & Englund, 2006; Lee, Chassin, & MacKinnon, 2010; Lee, Chassin, & Villalta, 2013).

The Risky Nature of Low-Serious Romantic Relationships

Like any close interpersonal relationship, romantic relationships in adolescence can be protective against negative outcomes, but can also pose risks to healthy adolescent development. Low-serious romantic relationships are expected to be problematic for youth because they could cause stress and could promote adolescent engagement with the broader,

potentially alcohol-using, peer group more so than more serious relationships, which are more dyadic. In fact, research shows that romantic relationships are the single largest source of stress among adolescents (Larson, Clore, & Wood, 1999; Larson & Asmussen, 1991). Adolescents devote extensive time to thinking about romance, which greatly affects mood both positively and negatively (Seiffge-Krenke, 2013). Adolescents experience heightened emotionality when navigating romantic relationships, because these relationships represent a new interpersonal arena that is less settled and comfortable than parent or other peer relationships (Giordano et al., 2006). Although adolescents report having more strong positive emotions about other-sex peers than about family, same-sex peers, or school (Larson & Richards, 1998; Wilson-Shockley, 1995), they also report these relationships to be their most common source of negative emotions (Wilson-Shockley, 1995). Research has shown romantic relationships have unique effects on various indices of adolescent adjustment, including depression and delinquency (Joyner & Udry, 2000; Haynie et al., 2005).

Negative emotions might be most likely to occur in low-seriousness relationships due to challenges like feeling rejected by romantic partners, experiencing relationship transitions, and navigating complex sexual dynamics. Some adolescents who report low-serious relationships might be in such relationships because their partners are not interested in deepening the relationship. These adolescents might be especially likely to feel unwanted or rejected by their romantic partners, which can contribute to depressive symptoms (Harper, Welsh, & Grello, 2002). Further, adolescents who engage in low-serious relationships are likely to experience more frequent transitions in and out of relationships, which are associated with internalizing symptoms, poor emotional health, and increased alcohol use (Davies & Windle, 2000; Zimmer-Gembeck, Siebenbruner, & Collins, 2001). Also, negotiating sexual dynamics in relationships can be very stressful for adolescents (Welsh, Grello, & Harper, 2003) and might be particularly challenging among adolescents in low-serious relationships who might not have the expectations or assumptions of fidelity that are common in romantic relationships (Feldman & Cauffman, 1999a; Sheppard, Nelson, & Andreoli-Mathie, 1995). Experiencing a low-serious relationship in which ones partner engages in sexual behavior with others could lead to feelings of sadness, anger,

depression, and inadequacy (Feldman & Cauffman, 1999a; Feldman & Cauffman, 1999b). In sum, involvement in low-serious romantic relationships might put adolescents at particularly high risk of experiencing stressors that contribute to depressive symptoms (Joyner & Udry, 2000), which might elicit drinking to cope (Hussong & Chassin, 1994; King et al., 2004; Sung et al., 2004).

While low-serious romantic relationships might be more likely to prompt drinking to cope, it is also possible that they promote drinking to connect with a broader peer group. Adolescents in low-serious relationships are likely exposed to new behaviors through their partners' peer networks and might begin to alter their own behavior to connect with new peers, particularly if such behaviors are viewed as status-enhancing (Kreager & Haynie, 2011). As such, expanding social networks in this manner might put adolescents at risk of binge drinking and experiencing drinking consequences.

Summary

In summary, the current study hypothesized a main effect of relationship seriousness on drinking outcomes based on the understanding that serious relationships typically provide support and guide adolescents away from a drinking peer group and that low-serious relationships do the opposite. Although collection of data at two time points precluded testing a mediational model, it was theorized that the negative relations between seriousness and drinking outcomes might be explained in part by adolescents' efforts to cope with relationship stressors by drinking and in part by peer influence.

Prior Research on the Relation between Adolescent Romantic Relationship Seriousness and Drinking Outcomes

Only two known studies have examined the relation between adolescent relationship seriousness and drinking outcomes (Beckmeyer, 2015; Gudonis-Miller et al., 2012). Gudonis-Miller et al. analyzed Add Health data to examine how adolescent relationship seriousness at Wave I (ages 11-19) related to alcohol use at Wave III (ages 18-26), and did not find a main effect. This could be because they assessed seriousness among adolescents ages 11-19, failing

to consider developmental variability. It could also be that influence of relationship seriousness was not strong enough to have an effect on alcohol use seven years later. Beckmeyer, meanwhile, examined middle-adolescents' likelihood of past-year drinking across three different types of engagement in romantic relationships (i.e., romantic socializing, dating, and serious relationships). Beckmeyer found that history of any involvement in serious relationships was associated with increased odds of having engaged in past-year alcohol use. Given that Beckmeyer neither defined "serious relationship" for participants nor assessed the activities that occurred in such relationships, it is unclear what participants considered a serious relationship. Further, Beckmeyer used retrospective reporting to assess history of serious relationships without considering when such relationships occurred. As such, adolescents could have reported on serious relationships that occurred in early adolescence, which might have a different effect on alcohol use than serious relationships in middle adolescence. Beckmeyer's findings, therefore, could partly be explained by the previously discussed risk of engaging in serious relationships in early adolescence. Further, given the cross-sectional nature of this research, causal conclusions about the effect of relationship seriousness on drinking cannot be drawn.

The current study extends the literature in several ways. Specifically, this study assessed relationship seriousness using a validated tool and examined the following potential moderators of the relation between relationship seriousness and two drinking outcomes, binge drinking and drinking consequences: adolescent age, partner age (a proxy for partner drinking and access to alcohol), gender, and COA status. Further, the current study considered whether a moderating effect of partner age on the relation between relationship seriousness and drinking outcomes varied by adolescent age. This study used longitudinal data to examine separately the relations between relationship seriousness and binge drinking and drinking consequences one year later, controlling for baseline measures of binge drinking and drinking consequences in their respective models. The following sections will discuss the moderators that were tested and rationales for the hypothesized relations.

Adolescent Age as a Moderator

Although literature purports that romantic relationships are qualitatively different across the span of adolescence, researchers have not yet examined whether the relations between relationship seriousness and alcohol use and drinking consequences vary by age. The current study tested the hypothesis that the relation between relationship seriousness and drinking outcomes is stronger among middle-to-older adolescents than younger adolescents. Specifically, it was expected that low-serious relationships would put adolescents of all ages at risk for potentially engaging in binge drinking and experiencing drinking consequences, especially older adolescents, and that highly serious relationships would be more protective for older adolescents. It was also expected that among adolescents who might binge drink or experience drinking consequences, higher relationship seriousness would more strongly predict lower frequency of binge drinking and fewer drinking consequences among older adolescents. Because low-serious relationships were expected to put adolescents at risk by prompting adolescents to engage with broader peer groups (Kreager & Haynie, 2011), they were expected to be particularly problematic for older adolescents whose peers are more likely to drink. Also, stressors that are particularly common in low-serious relationships (e.g., relationship transitions, rejection by partners, limited partner support) might be especially upsetting to older adolescents, for whom more serious, dyadic relationships that entail attachment expectations are common. Older adolescents might expect or hope for more consistent availability, support, and companionship from romantic partners than younger adolescents, which might make low-serious relationships and their associated stressors particularly problematic.

Highly serious relationships were expected to be less protective for younger adolescents than for older adolescents in terms of drinking outcomes. Adolescents of all ages in highly serious relationships are likely somewhat protected from drinking outcomes due to experiencing emotional support and enhanced self-esteem. And, adolescents in serious relationships are expected to be protected from binge drinking that occurs in broader peer contexts because they are spending more time with their partners alone. Highly serious relationships, however, could

create role incompatibility issues for early adolescents, for whom brief relationships and group dating are normative. By separating from the broader peer group to focus on romantic partnerships, early adolescents might lose out on socialization opportunities with other adolescents, which could limit their social development and identity formation. Research shows that adolescents with romantic partners interact less with friends than do their non-partnered peers (Laursen & Williams, 1997), often creating competition among friends and romantic partners for these adolescents' time and attention (Zani, 1993). Young adolescents in highly serious relationships might be more likely than older adolescents (whose friends are more likely to also be in serious relationships) to experience conflicts with neglected friends. Role incompatibility and missing out on developing a social identity within a wider peer network early in high school could potentially promote problems like depression among young adolescents, which could contribute to alcohol use (Joyner & Udry, 2002) and experiencing associated consequences.

Partner Age as a Moderator

In addition to examining adolescent age as a moderator, the current study considered whether the relation between relationship seriousness and drinking outcomes varied by romantic partner age. It was hypothesized that the relation between relationship seriousness and drinking outcomes is stronger among adolescents whose partners are younger adolescents. Specifically, it was expected that highly serious relationships would protect adolescents with younger partners from binge drinking and drinking consequences and that this would be less evident for adolescents whose partners are older adolescents or emerging/young adults. One rationale for this prediction is that in the current study partner age serves as a proxy for partner drinking and access to alcohol. Substantial research suggests that it is typical for alcohol use to begin in early adolescence (ages 13-15), to escalate throughout adolescence, to peak in emerging adulthood (ages 20-23), and to drop dramatically during young adulthood (e.g., Chen & Kandel, 1995; Harford, Grant, Yi, & Chen, 2005; Johnston et al., 2007; Rohde & Andrews, 2006). Older partners, therefore, are more likely to drink, to have access to alcohol, and/or to interact with

peers who drink. Similar to the role of peers in deviancy training (Dishion, Spracklen, Andrews, & Patterson, 1996), romantic partners' deviant or risky behavior could affect initiation, maintenance, or increases in adolescents' problem behaviors (Moffitt, Caspi, Rutter, & Silva, 2001).

Longitudinal research conducted on this topic showed that adolescents' romantic partners' alcohol use uniquely affected adolescent alcohol use and alcohol-related problems, such that partner alcohol use was significantly positively related to adolescent alcohol use one year later (Longmore et al., 2008).

Adolescents whose partners are older (e.g., late adolescents or emerging or young adults) were hypothesized to be at risk for binge drinking and experiencing drinking consequences across levels of relationship seriousness for several reasons. Being in a low-serious relationship with an older partner was expected to put adolescents at risk of binge drinking and drinking consequences, because adolescents typically attempt to form social bonds with their partners' peers (Kraeger & Haynie, 2011), and older partners' peers are more likely to drink. However, being in a highly serious relationship with an older partner also was expected to be risky because of the frequency of time the partners spend together, which creates opportunities for repeat alcohol offers over time (Miller & Boster, 1988). Further, serious relationships with older partners could be risky because serious relationships tend to entail a "closed social network," consisting of their friends, their partner, and their partners' friends (Kraeger & Haynie, 2011). Being in a closed network with older adolescents or emerging or young adults is likely riskier than being in a closed network with younger adolescents because the older groups are more likely to drink. In conclusion, although serious relationships with older adolescents were expected to be somewhat protective given the support likely provided by partners, the protective effect of a serious relationship was expected to be reduced when dating an older partner.

In considering the impact of partner age, it is important to consider the adolescent's own age. It was hypothesized that the moderating effect of partner age varied by adolescent age such that dating an older partner would mute the protective effect of relationship seriousness more for

younger adolescents than older adolescents. By dating older partners, younger adolescents are more likely to encounter new drinking norms and behaviors through their partners and their partners' peer groups than are older adolescents. Consistent with a Transition Catalyst Model of alcohol use, these adolescents might drink in order to appear older and thus enhance their social bonding (Jessor, 1992). Further, adolescents learn to regulate positive and negative emotions through interactions with peers (Brown, Dolcini, & Leventhal, 1997), and younger adolescents are likely particularly naïve in this realm and more at risk of being influenced (in this case negatively) by older partners.

Gender as a Moderator

The current study tested the hypothesis that the relation between relationship seriousness and drinking outcomes is stronger for females. Gender differences in adolescent approaches to romantic relationships and alcohol use suggest that low-serious relationships might be particularly risky for adolescent females in terms of binge drinking and drinking consequences, while highly serious relationships might be particularly protective. For instance, adolescent females tend to value social goals (e.g., maintaining friendships, helping others; Ford, 1982) more than males do and to be more invested than males in romantic relationships (Darling, Dowdy, Van Horn, & Caldwell, 1999). As such, female adolescents are thought to be particularly vulnerable to problems in romantic relationships. They are also more likely than males to seek social support as a coping strategy (Eschenbeck, Kohlmann, & Lohaus, 2007; Stark, Spirito, Williams, & Guevremont, 1989), and might be particularly negatively impacted by lacking this support in low-serious romantic relationships. Further, problems between romantic partners have a stronger effect on depression for females than males (Furman & Shomaker, 2008; Nolen-Hoeksema & Girgus, 1994), and internalizing problems are more strongly associated with substance use outcomes for females than for males (e.g., Armstrong & Costello, 2002; Laurent, Catanzaro, & Callan, 1997; Windle & Davies, 1999). Low-serious relationships might also be riskier for females than males because by dating and expanding their social network to include more members of the opposite sex, females might encounter greater access to alcohol and a

greater increase in offers of alcohol than do males. After all, research shows that male partners make approximately twice as many offers of substances to their female partners than vice versa (Troost et al., 1999). Further, females' efforts to befriend their partners' friends might put them at risk; one study found that 19.8% of substance use offers to adolescent females came from male friends while only 5.7% of offers to adolescent males came from female friends (Troost et al., 1999). As such, low-serious relationships were expected to more strongly impact drinking outcomes among females.

Whereas low-serious relationships were hypothesized to put females at greater risk than males, highly serious relationships were expected to be more protective for females for several reasons. For instance, given that female adolescents' goals and feelings of self-worth are more tied to success in interpersonal domains (Darling et al., 1999; Ford, 1982; Rosenfield, 1999), highly serious relationships are likely generally more protective for them than for males. Further, female adolescents are more likely than males to talk about their problems and enlist emotional support to respond to stress (Chapman & Mullis, 1999; Gomez, Holmberg, Bounds, Fullarton, & Gomez, 1999; Hunter & Boyle, 2004). Given that they are more likely to seek support from their partners, they are expected to benefit more from the support provided in serious relationships and to be protected from drinking to cope. Also, highly serious relationships might be more likely to promote "maturing out" of binge drinking in female adolescents given adult literature suggesting a slower or later maturing out process for males (Bartholow, Sher, & Krull, 2003; Harford et al., 2005; Marmorstein, 2009; Wells, Horwood, & Fergusson, 2006).

Highly serious relationships were hypothesized to also be protective for males. Because females are more invested than males in intimacy, nurturance, support, and problem-solving in relationships (Jarvinen & Nicholls, 1996; Rose & Asher, 2004) and are more prone to be empathetic and prosocial (Olweus & Endresen, 1998; Tucker, Updegraff, McHale, & Crouter, 1999; Van Tilburg, Unterberg, & Vingerhoets, 2002), females in highly serious relationships might provide support to their partners that reduces males' likelihood of drinking to cope. Although males are less likely to cope with stress by seeking social support (Eschenbeck et al., 2007; Stark

et al., 1989), the support they get from their female partners might be particularly impactful. As such, relationship seriousness was expected to relate negatively to binge drinking and drinking consequences for males, although this relation was expected to be less strong for males than for females.

COA Status as a Moderator

COAs are an important group to study given that one in four children in the United States is exposed to familial alcohol dependence or abuse (Grant, 2000). Compared to non-COAs, adolescent COAs experience lower self-esteem, weaker school bonding, and less family cohesion and are at heightened risk for internalizing and externalizing symptomatology in adolescence (Chassin, Rogosch, & Barrera, 1991; McGue, Sharma, & Benson, 1996; Moos & Billings, 1982; Mylant, Ide, Cuevas, & Meehan, 2002; Roosa, Sandler, Beals, & Short, 1988; Tubman, 1993). Further, COAs are more prone to earlier initiation of drinking, faster escalation of use, and transition to alcohol use disorder (Chassin, Curran, Hussong, & Colder, 1996; Hussong, Bauer, Chassin, 2008). According to estimates from a community-based study, by young adulthood over half (53%) of COAs endorse an alcohol use disorder (AUD) compared to 25% of non-COAs (Chassin, Pitts, DeLucia, & Todd, 1999).

Adolescent COAs are more likely than non-COAs to be exposed to environmental stress (Chassin et al., 1993) and to experience non-optimal parenting, characterized by low parental warmth and monitoring (DeLucia et al., 2001; Dube et al., 2001; Rutherford et al., 1998). COAs who receive low parental support might rely more on their partners for support than do non-COAs. Research has shown that parental support can buffer the effect of behavioral undercontrol on drug use disorders (King & Chassin, 2004; Stice & Gonzalez, 1998), and it is possible a similar effect could occur with romantic partners.

Whereas highly serious relationships might be especially protective for COAs, low-serious relationships might put COAs at especially high risk for binge drinking and experiencing drinking consequences. Research shows that family history of alcoholism moderates the relation between stress exposure and heavy drinking to relieve stress (Sayette, 1999). According to

social learning theory (Bandura, 1977), children learn in part by observing and repeating parents' behaviors, and research shows that exposure to a family member abusing alcohol predicts stronger positive alcohol expectancies over and above family history of alcoholism (Brown, Feiring, & Furman, 1999). As such, beliefs about what to expect from alcohol use may be derived in part from parent models (Chung, Hipwell, Loeber, White, & Stouthamer-Loeber, 2008; Dunn & Yniguez, 1999). Adolescent COAs in low-serious relationships might be more at risk of drinking to cope with relationship stressors (and experiencing drinking consequences) than non-COAs because they have observed their alcoholic parents drink to regulate negative affect and expect a stress-response dampening effect (Chartier et al., 2010; Newlin, Miles, van den Bree, 2000). Further, some research suggests that COAs are genetically predisposed to experience greater stress-response dampening benefits from alcohol than non-COAs (Finn, Zeitouni, & Pihl, 1990; Shuckit & Smith, 2001). Adolescent COAs, therefore, may drink to cope more frequently than non-COAs, as Chalder, Elgar, and Bennett (2006) found, because doing so is more effective for them. The current study considered parental alcoholism as a moderator, testing the hypothesis that the relations between romantic relationship seriousness and binge drinking and drinking consequences are stronger for COAs than non-COAs.

Contributions of the Current Study

The current study advances research on adolescent binge drinking and drinking consequences, which have a significant impact on personal and public health and well-being, in several ways. First, this study is the first to consider the role that adolescent romantic relationship seriousness plays in predicting binge drinking and drinking consequences over and above previously identified predictors (i.e., race, ethnicity, age, gender, mother-adolescent relationship quality, father-adolescent relationship quality, deviancy, parental alcoholism, and peer drinking). Relationship seriousness was expected to relate negatively to two aspects of binge drinking and drinking consequences: (a) likelihood of potentially engaging in binge drinking or experiencing drinking consequences and (b) frequency of binge drinking or number of drinking consequences among those who might experience these drinking outcomes. The current study

also considered whether the effect of relationship seriousness on binge drinking and drinking consequences varies by adolescent age, partner age, gender, and COA status. Specifically, the relation between relationship seriousness and binge drinking and drinking consequences was expected to be stronger for older adolescents, adolescents with younger partners, females, and COAs. Further, the moderating effect of partner age on the relation between relationship seriousness and drinking outcomes was hypothesized to vary by adolescent age, such that the protective effect of relationship seriousness was expected to be particularly muted among younger adolescents with older partners.

CHAPTER 2

METHOD

Participants:

Participants were drawn from the National Longitudinal Study of Adolescent Health (Add Health), a project conducted by the Carolina Population Center of the University of North Carolina at Chapel Hill. The full Add Health dataset is comprised of a nationally representative sample of adolescents who were in grades 7-12 in the United States during the 1994-1995 school year. At Wave I, 144 schools were selected for participation using systematic sampling methods to ensure diversity of geographic region, urbanicity, school size and type, and ethnicity. From these schools, 90,118 youth completed in-school questionnaires. Students were only excluded if their parents requested they not participate (in passive consent cases) or if parents did not consent (in active consent cases). Students in each school were stratified by grade and sex and then randomly selected to participate in an in-home interview. This method yielded a sample of 12,105 adolescents who form the core in-home sample. In addition to the core sample, supplemental in-home samples were drawn from the in-school population based on ethnicity (Cuban, Puerto Rican, and Chinese) and genetic relatedness of siblings (twins, full siblings, half siblings, and unrelated youth sharing a household). These subsamples, as well as Black adolescents with highly educated parent participants, were oversampled for in-home interviews. Add Health participants have been followed into young adulthood up to ages 24-32 with four in-home interviews in 1994-1995, 1996, 2001-2002, and 2008-2009. Overall, 20,745 adolescents completed in-home interviews at Wave I.

Parents or other adult household members of adolescents who completed Wave I in-home interviews were asked to participate in in-home interviews as well. Participants were typically mothers based on study protocol indicating that: "the adolescent's mother [...] is the desired respondent [...] because, according to the results of previous studies, mothers are more familiar than fathers with the schooling, health status, and health behaviors of their children" (UNC Carolina Population Center). If biological mothers did not reside in an adolescent's

household or declined to participate, respondents were selected from the following list, in order of preference: 1. Stepmother, 2. Other female guardian, such as a legal guardian or grandmother, 3. Father, 4. Stepfather, 5. Other male guardian, such as a legal guardian or grandfather.

Respondents will be referred to as “parent participants” in this document, as they are referred to in Add Health codebook documentation (Carolina Population Center, 2008).

The current sample consists of 928 adolescents who completed in-home interviews at Waves I and II and met the eligibility criteria listed below and 824 parent participants who completed in-home interviews at Wave I. These adolescents are a subgroup of the public-use database of Add Health, which reflects a randomly selected group of the core sample and of the supplemental sample of Black adolescents with highly educated parents. The public-use database includes 6,504 adolescents who participated in Wave I in-home interviews, 4,834 of whom completed Wave II in-home interviews.

Of the 4,834 adolescents who completed Waves I and II, 928 (19.2%) were eligible for the current study based on the following inclusion criteria: (a) completed both Wave I and II in-home interviews, (b) were between ages 14-18 at Wave I, (c) were in grades 9-11 at Wave I, (d) reported a current heterosexual relationship with one partner at Wave I, and (e) reported no prior year pregnancies at Wave I or II. The current study was restricted to adolescents who completed both waves of data because only adolescents who completed Wave II were given a Wave II sampling weight variable that adjusts for oversampling of the above-described groups. This criterion was based on Add Health’s recommendations that users of Add Health’s longitudinal data use the sampling weight from the last wave of data being analyzed (i.e., Wave II in the current study) and delete cases that have missing weights from analysis (Chen & Chantala, 2014). Adolescent grade was restricted to avoid confounding factors related to junior high versus high school social contexts; 12th graders were excluded because the majority did not complete in-home interviews at Wave II. Further, adolescents who reported not being in school were excluded to avoid confounding factors related to their noninvolvement in school. Participants who reported pregnancies were excluded given that the current study assesses past year alcohol use

and the U.S. Surgeon General recommends that pregnant women abstain from alcohol use (Office of the Surgeon General, 2005; US Surgeon General, 1981).

Among the 4,834 adolescents who completed Wave II, 1,767 (36.6%) adolescents who were excluded from the present study did not meet two or more eligibility criteria. Of the 4,834 adolescents, 954 (19.7%) were ineligible to participate due to age and 1,932 (40%) did not meet grade eligibility at Wave I. Among adolescents who completed Wave II, 3,337 (69.1%) were excluded because they did not report a current romantic partner at Wave I. Seventy-four adolescents (1.5%) who reported more than one current romantic partner and 33 adolescents (.68%) who reported a current homosexual relationship at Wave I were excluded. A total of 193 adolescents (4%) who reported pregnancies in the 12 months prior to Wave I or II were excluded. Four participants were excluded because they indicated their romantic partners were 1 ($n=2$), 7, or 10 years-old, and did not report engaging in romantic activities on the Romantic Relationship Activities List, suggesting misinterpretation of the item or an error in data entry. Seven participants were excluded because they refused to answer items assessing frequency of binge drinking and/or drinking consequences at Wave II or they indicated they did not know the answers. These participants were removed given that their non-response might relate to the data itself (e.g., heavy drinkers might be less prone to respond to drinking-related items, e.g., Wild, Cunningham, & Adlaf, 2001), making their data missing not at random.

Among the 928 adolescents in the current sample, 506 (54.1%) were female. Age at Wave I ranged from 14-18, and the mean age was 16.09 ($sd = 1.02$). One hundred and three participants (11.1%) identified as Hispanic. Among the 927 participants who identified one or more racial categories that apply to them, 625 adolescents (67.4%) indicated that they were White, 242 (26.1%) were Black or African American, 32 (3.5%) were American Indian or Native American, 19 (2%) were Asian or Pacific Islander, and 58 (6.3%) were another race.

Of the 928 adolescents, 824 (88.8%) of their parent participants completed in-home interviews. Among the 819 adults who reported their relationship to the adolescent participants, 721 (88%) were biological mothers, 41 (5%) were biological fathers, 20 (2.4%) were stepmothers,

13 (1.6%) were adoptive mothers, and 24 (2.9%) were other adult household members. Among parent participants, 92.3% were female, which is unsurprising given study protocol indicating that mothers were preferred respondents. Among the 806 parent participants to report their ethnicity, 69 (7.4%) identified as Hispanic. Among the 812 parent participants to identify one or more racial backgrounds, 590 (72.7%) identified as White, 187 (23%) were Black or African American, 18 (2.2%) were American Indian or Native American, 14 (1.7%) were Asian or Pacific Islander, and 22 (2.7%) were another race. Parent participants' ages ranged from 20 to 75, with a mean of 41.9 years ($sd= 6.03$).

Procedure:

Written informed consent for in-home interviews was provided by parent participants and assent was provided by adolescents. In-home adolescent data were collected by trained interviewers. Some sections of the in-home assessment, including those addressing sensitive information like sex and drug use, were self-administered by adolescents. Interviewers provided parent participants with in-home Scantron questionnaires at Wave I. Adolescent participants were given \$20 for participation in in-home interviews at both Waves I and II. Parent participants did not receive monetary compensation.

Measures:

Predictor:

Relationship Seriousness: An adaptation of Add Health's Real Relationships Activities List (RRAL) was used to assess romantic relationship seriousness (see Appendices A and B for original and revised scales, respectively). The adaptation process is described in the preliminary analyses section of the Results section. The adapted eight-item measure ($\alpha = .72$) assesses whether adolescents have engaged in behaviors with their current romantic partners that primarily tap affiliative (e.g., "We went out together alone") and attachment (e.g., "I told my partner that I loved him or her.") systems. Like other studies that have assessed relationship seriousness in the Add Health dataset, the current study did not include relationship duration or sexual behavior in measuring seriousness (Cleveland, Herrera, & Stuewig, 2003; Gudonis-Miller et al., 2012). A

composite score was created to reflect the number of activities endorsed, with higher scores indicating greater relationship seriousness. The predictive validity of RRAL items is supported by research indicating that relationship seriousness as defined by a subset of RRAL items significantly predicted physical abuse in romantic relationships (Cleveland et al., 2003). Seriousness as defined by a different subset of RRAL items was related to marijuana use in late adolescence/emerging adulthood, such that increased relationship seriousness predicted decreased marijuana use (Gudonis-Miller et al., 2012). Further, research has found that items on this measure are highly correlated with measures of intimacy, social support, and intimate self-disclosure in adolescent romantic relationships (Haynie et al., 2005). Adolescents endorsed between 0-8 items and reported a mean of 6.82 ($sd= 1.75$) on the relationship seriousness scale, suggesting that on average these relationships were serious.

Moderators:

Adolescent Age: Age was assessed at Wave I by adolescent report. Age was treated as a continuous variable. Adolescents ranged from 14-18 years old and were 16.09 ($sd= 1.02$) years old on average.

Adolescent Sex: Sex was reported by adolescents at Wave I. Sex was coded as a binary variable (0= male; 1= female). There were 506 (54.1%) females and 422 (45.9%) males in this study.

Adolescent Partner Age: At Wave I, adolescents provided the month and year their romantic relationship started and their partner's age at relationship initiation. Because data on partner's current age at Wave I was not provided, partner age was calculated by adding the duration of time (in years) between relationship initiation and the Wave I interview to the partner's age at relationship initiation. Partner age ranged from 10-44 and partners were, on average, 16.89 ($sd= 2.4$) years old.

COA Status: COAs were identified using the parent participant's report of parental alcoholism at Wave I. Parental alcoholism was coded (0= neither biological parent was reported to have an alcohol problem, 1= one or both biological parents was reported to have an alcohol problem) in a

manner consistent with other analyses of Add Health data (Mays, DePadilla, Thompson, Kushner, & Windle, 2010; Shin, Edwards, & Heeren, 2009; Timberlake et al., 2007). Prior research has found that parental alcoholism as measured in this manner is associated with adolescent binge drinking, cigarette smoking, and depressive symptoms, supporting the predictive validity of this method of measurement (Goodman & Capitman, 2000; Shin et al., 2009; Timberlake et al., 2007). Of the 928 adolescents, 741 parent participants provided data on parental alcoholism. Of these, 143 (15.4%) indicated that one or both of the adolescent's biological parents had an alcohol problem.

Covariates:

Parent-Adolescent Relationship Quality: Mother-adolescent and father-adolescent relationship quality were assessed at Wave I. Regarding each parent, adolescents answered one item about closeness and one item about caring. The two items pertaining to mother-adolescent relationship quality were significantly correlated ($r = .48, p < .001$), as were the two items about father-adolescent relationship quality ($r = .59, p < .001$). The two mother-adolescent relationship quality scores were averaged and the two father-adolescent relationship quality scores were averaged to create separate scores for mother-adolescent and father-adolescent relationship quality. Higher scores indicate higher relationship quality. On a scale of 1-5, adolescents reported a mean mother-adolescent relationship quality of 4.66 ($sd = .55$) and a mean father-adolescent relationship quality of 4.45 ($sd = .73$), suggesting high-quality relationships with mothers and fathers.

Peer Alcohol Use: Adolescents completed one item about the drinking behavior of their peers at Wave I: "Of your 3 best friends, how many drink alcohol at least once a month?" that used a 4-point scale (0= no friends; 3= 3 friends). Adolescents reported an average of 1.41 ($sd = 1.17$) best friends who drink alcohol at least once a month.

Adolescent Delinquency: Fifteen items ($\alpha = .8$) at Wave I assessed frequency of involvement in delinquent activities such as painting graffiti, stealing, getting into physical fights, and lying to their parents about their whereabouts (see Appendix C). Participants responded on a 0-3 scale (0=

never; 3= 5 or more times), indicating the number of times each delinquent act had been committed in the prior year. The sum of the types of delinquent acts committed in the last year was used to assess delinquency (possible range of 0-15). Adolescents reported an average of 3.24 ($sd= 2.94$) delinquent acts.

Adolescent Ethnicity: Adolescents reported on their ethnicity at Wave I. Ethnicity was coded as a binary variable (0= non-Hispanic; 1= Hispanic). One hundred and three (11.1%) of adolescents reported being Hispanic.

Adolescent Race: Adolescents reported on their race at Wave I by marking all that apply to five racial categories (i.e., White, Black or African American, Asian or Pacific Islander, American Indian or Native American, other). Participants who identified more than one race were coded as multiracial. Given that few adolescents identified as American Indian or Native American or Asian or Pacific Islander, these categories were collapsed into the “other race” category. Dummy codes were created to compare the reference group, White adolescents, separately to three other groups: Black or African American adolescents, multiracial adolescents, and adolescents who identified other racial backgrounds. Among 927 adolescents to report their racial backgrounds, 625 adolescents (67.4%) indicated that they were White, 242 (26.1%) were Black or African American, 32 (3.5%) were American Indian or Native American, 19 (2%) were Asian or Pacific Islander, and 58 (6.3%) were another race.

Parents' Marital Outcome: Given that no single item assessed the marital status of adolescents' biological parents, parents' marital outcome was assessed by biological parent participants' reports of annual histories of their “marriage or marriage-like relationships.” Biological parents who reported being in such a relationship consistently from the year of the participating adolescent's birth to the time of the parent's interview were coded as “Married.” Parents who reported a marriage or marriage-like relationship the year of their child's birth and indicated the relationship later ended in separation, divorce, or annulment were coded as “Divorced.” Other parent participants (e.g., those who were single at the time of their adolescent's birth, those who were widowed, those who reported “other” as the outcome of their marriage or marriage-like

relationship) were coded “Other.” Two dummy codes were created to compare the reference group, divorced parents, to married parents and parents with other types of relationships. Among adolescents, 343 (47.1%) had biological parents who were still married, 203 (27.8%) had biological parents who were divorced, and 183 (25.1%) had biological parents who experienced a different relationship outcome.

Household Composition: Because no single item assessed whether adolescents lived with both of their biological parents, this household composition construct was assessed by parent participants’ responses to the following items: “Does {adolescent’s name}’s biological father live in this household?” and “Does {adolescent’s name}’s biological mother live in this household?” If a parent participant was the adolescent’s biological mother or father, the item pertaining to their own living situation was not administered as all parent participants lived in the adolescents’ households. Household composition was coded as a binary variable (0= both biological parents do not live in household; 1= both biological parents live in household). For 407 (49.6%) adolescents, both biological parents lived in their household.

Outcomes:

Binge Drinking: Frequency of binge drinking was assessed by a single item at Waves I and II: “Over the past 12 months, on how many days did you drink five or more drinks in a row?” At Wave I, this item was only administered to adolescents who both indicated that they consumed alcohol in the prior year and answered “yes” to the item “Have you had a drink of beer, wine, or liquor—not just a sip or a taste of someone else’s drink—more than 2 or 3 times in your life?” (n= 533). Further, at Wave II the binge drinking item was only administered to adolescents who answered “yes” to a similar item that assessed whether participants drank alcohol more than 2 or 3 times in the period between the Waves I and II interviews (n= 509). Participants responded to the frequency of binge drinking item on a 7-point scale (1= every day or almost every day; 7= never). Scores were recoded (0= never... 6= every day or almost every day) so that higher scores represent greater frequency of binge drinking (Coxe, West, & Aiken, 2009). Adolescents who were not administered this item following the protocol described above were given a score of

0 (n= 395 at Wave 1; n= 419 at Wave 2). Although binge drinking is commonly assessed by measuring consumption of 5+ drinks (or 4+ drinks for women) in the prior two weeks (O'Malley, Bachman, & Johnston, 1984), research supports the validity of assessing binge drinking over the past year. For example, past year binge drinking is associated with a variety of negative consequences such as blackouts, injury, and missing class or work due to drinking (Cranford, McCabe, & Boyd, 2006). Among the full sample, adolescents reported an average binge drinking frequency of between 0 and 1-2 times in the past year at both Waves I and II. Among those who reported any prior year binge drinking at Wave I (n= 321) and Wave II (n= 363), average binge drinking frequency was between once a month or less and two or three days a month.

Drinking Consequences: Consequences of drinking alcohol during the last year were assessed by nine items administered at Waves I and II that assessed frequency of experiencing negative consequences of drinking related to relationships, academics, physical effects of alcohol use in the past year (see Appendix D). This measure used a 0-4 scale (0= never... 4= 5 or more times). For adolescents who were not administered this item because they reported no prior year drinking and/or reported consuming fewer than two or three drinks either in their life (Wave I) or in the prior year (Wave II), responses were coded as 0. Drinking consequences were defined by a count of types of drinking consequences in the prior year (possible range of 0-9). Among the full sample, adolescents reported experiencing an average of 1.28 (*sd*= 1.91) drinking consequences at Wave I and an average of 1.25 (*sd*= 1.95) drinking consequences at Wave II. Among those who reported any prior year drinking consequences at Wave I (n= 379), adolescents reported an average of 3.14 (*sd*= 1.79) consequences. Among those who reported any prior year drinking consequences at Wave II (n=376), adolescents experienced an average of 3.09 (*sd*= 1.92) consequences.

Data Analytic Plan

Preliminary Analyses

The factor structure of RRAL items was examined to assess whether the measure appropriately assesses a single-factor of relationship seriousness. Measurement invariance was

examined for the RRAL to assess whether the underlying construct of relationship seriousness was invariant across male and female participants and across younger and older participants. To assess measurement invariance by age, adolescents were divided into two age groups (i.e., those <15.5 years old and those ≥15.5 years old). Measurement invariance by gender was first examined, the RRAL measure was adapted accordingly, and this adapted measure was tested for invariance by age.

For both gender and age, analyses first tested a configural invariance model in which each item was constrained to load on one factor and then tested a metric invariance model in which all factor loadings were invariant. Model identification required a distinct approach given that the measured variables are all dichotomous (Millsap & Kim, in press; Millsap & Tein, 2010). Specifically, to permit model identification, the factor mean was set to zero for one group, a reference group, and allowed to be free for the other group. Further, in the reference group, diagonal elements of the covariance matrix were set to 1. The estimation model was weighted least-square (WLSMV) and all models were fit using the Mplus theta parameterization, which enables unique factor variances to be constrained in the model (Muthén & Muthén, 2010). Modification indices were examined when the configural model could not be identified, and items identified as prohibiting model identification were removed as necessary.

To assess goodness of fit, the chi-square fit test, the RMSEA, and the CFI were examined. RMSEA values between .05 and .08 are indicative of fair fit, while values ≤ .05 suggest good fit (Browne & Cudeck, 1993); CFI values greater than .95 indicate good model fit (Hu & Bentler, 1995). The DIFFTEST procedure in Mplus was used to examine changes in fit across configural and metric models. Modification indices were examined when there were significant changes in model fit. Partial-weak invariance models that allowed certain items to vary across groups were tested when items were identified as contributing to substantial changes in fit across models and when there were theoretical explanations for why these items would vary across groups.

Additional preliminary analyses involved examining interclass correlation coefficients (ICC) to assess the extent to which relations between study predictor, moderators, and outcome variables were explained by a school effect and to assess the necessity of controlling for clustering within schools in statistical models. Also, attrition analysis was conducted to examine whether attrition between Waves I and II was related to demographic variables or any of the variables included in study analyses, which is particularly relevant given that the current study excluded participants who attrited. Outlier analyses examined separately the regression of RRAL scores on binge drinking and drinking consequences to identify extreme cases in the data. Mahalanobis distance, a measure of the distance between specific outliers' values on the predictor variables and the centroid of the independent variables, was employed using Stevens' (1984) recommended conventional cutoff scores. Stevens suggested that for a large sample of over 500 individuals, a Mahalanobis distance of over 18.12 indicates a potential outlier. DFFITS and Cook's D values also were examined to determine the effect of cases on the overall regression model (Cohen, Cohen, West, & Aiken, 2003). Values of DFFITS and Cook's D over one indicate potential outliers that significantly influence regression models (Stevens, 1984). Given the high skewness of partner age, outlier analysis was also used to determine if any data points influenced the regression lines due to partner age.

Preliminary analyses also entailed identification of covariates to include in statistical models. Bivariate correlations between study variables and potential covariates that were continuous or binary variables (i.e., ethnicity, adolescent delinquency, peer alcohol use, mother-adolescent relationship quality, father-adolescent relationship quality, and household composition) were computed to identify variables that were significantly ($p < .05$) correlated with outcomes. Variables that were significantly correlated with a drinking outcome were included in statistical models for that outcome. Race and parents' marital outcome were also examined as potential covariates. Both race and parents' marital outcome were dummy coded as previously described to allow for group comparisons. Race codes and parents' marital outcome codes were separately entered into regressions for Wave II binge drinking and Wave II drinking

consequences. Variables that significantly predicted a drinking outcome were included in statistical models for that outcome.

Primary Analyses

Zero-inflated ordinal Poisson (ZIP) regression models using Mplus software were used to test study hypotheses given that both drinking outcome variables are ordered categorical variables with a high percentage of zero responses. These models distinguish between a class of individuals whose values can only be zero (i.e., a structural zero class) and a class of individuals with count values ranging from zero to any other positive integer (i.e., a non-structural zero class). As such, these models can simultaneously estimate a logistic regression distinguishing the two classes and a Poisson regression predicting count values among the non-structural-zero class. The outcomes of binge drinking and drinking consequences were examined in separate models. By entering information on the Add Health sample weight variable into complex sample analyses in Mplus, data analyses also accounted for oversampling of certain populations. Missing data were handled by Mplus using Full Information Maximum Likelihood.

ZIP models were first used to examine separately the relation between relationship seriousness and each drinking outcome controlling for covariates, Wave I controls, and proposed moderators. Next, interactions of relationship seriousness and covariates and control variables were separately added to the ZIP models. Finally, interactions of relationship seriousness and proposed moderators were separately added to ZIP models. Significant interactions of relationship seriousness and continuous variables were probed to inform interpretation by regressing and plotting simple slopes of the drinking outcome on relationship seriousness at the mean, 1 SD above the mean (“high”) and 1 SD below the mean (“low”) of the moderator (Aiken & West, 1991). Significant interactions of relationship seriousness and categorical variables were further examined by plotting simple slopes of the drinking outcome on relationship seriousness for each category of the moderator (e.g., males and females).

CHAPTER 3

RESULTS

Preliminary Analyses

Factor Structure. RRAL item loadings ranged from .42 to .89 and all items loaded positively on the single factor, providing support for a one-factor measure of relationship seriousness.

RRAL Measurement Invariance by Gender. Initially, the configural model could not be identified in Mplus based on two issues with the 11-item RRAL scale: a high correlation ($r = .83$) between two items (i.e., “I told my partner that I loved him or her” and “My partner told me that he or she loved me”) and substantially more variance within one item than others. Specifically, many fewer respondents endorsed the item “I saw less of my other friends so I could spend more time with my partner” than endorsed other items. To enable model identification, the items “I told my partner that I loved him or her” and “I saw less of my other friends [...]” were removed from the RRAL scale. Global fit statistics for this nine-item version of the RRAL measure suggested fair model fit: $\chi^2(54) = 244.205$, RMSEA = .089, CFI = .953. Configural fit was further evidenced by significant standardized factor loadings $>.46$ for all items on the single factor across groups.

Additional constraints were added to test a metric invariance model. The DIFFTEST procedure suggested a significant difference in model fit between configural and metric models: $\Delta\chi^2 = 87.19$ ($p < .001$). Examination of model fit indices revealed differences in factor loadings across gender for the following items: “I gave my partner a present” and “My partner gave me a present.” To retain these items in the RRAL measure, responses to these items were combined to create one score assessing whether *either* the adolescent participant or his or her partner engaged in gift-giving. To maintain consistency in treatment of pairs of items assessing the same behavior across adolescents and their partners, the decision was made to assess whether *either* adolescent participants or their partners told the partner they loved him/her. Thus, the previously removed item “I told my partner that I loved him or her” was re-included by combining it with its paired item.

A configural model of the eight-item scale was then examined. Global fit statistics for this scale suggested good model fit: $\chi^2(39) = 98.67$, RMSEA = .058, CFI = .97. The addition of constraints to a metric model led to the following fit indices: $\chi^2(52) = 109.24$, RMSEA = .05, CFI = .97. The DIFFTEST showed this was a nonsignificant change to model fit: $\Delta\chi^2 = 22.27$ ($p = .051$). In sum, the eight-item scale met criteria for metric invariance, suggesting that the loadings of these items on a single factor were invariant across genders.

RRAL Measurement Invariance by Age. The eight-item version of the RRAL was assessed for invariance across age. The configural model showed good model fit across age groups: $\chi^2(40) = 89.13$, RMSEA = .052, CFI = .98. Adding constraints of a metric model affected a significant difference in goodness of fit: $\Delta\chi^2 = 43.54(11)$, $p < .001$. Examination of modification indices revealed differences in factor loadings across age groups for items assessing gift-giving and statements of love. Because some age differences in aspects of relationship seriousness were anticipated based on research purporting that relationships often become increasingly seriousness across adolescence (Connolly et al., 2004), the decision was made to retain these items. These items were allowed to vary across age groups and a partial-weak invariance model was tested. There was a nonsignificant change in model fit from the configural to partial-weak invariance model: $\Delta\chi^2 = 8.22(8)$, $p = .4$. Thus, this scale met criteria for partial-weak invariance across age given that some items were not invariant across age groups.

Additional preliminary analyses. ICCs ranged from .001-.046. The highest ICCs existed for peer alcohol use (ICC = .04), Wave II binge drinking frequency (ICC = .04), and Wave I drinking consequences (ICC = .05), suggesting that school effects were accounting for 4-5% of the variance in these variables. To account for these ICC values and to adjust the standard errors for clustering, primary analyses entailed identifying in Mplus the variable containing school clustering information, and conducting a complex sample analysis allowing for estimation of clustered data.

Attrition analysis revealed that Black adolescents were significantly more likely to attrit between waves than White adolescents ($t(1070) = -2.83$). Attrition was not significantly related to any other study variables.

Outlier analyses examining separately the regression of RRAL scores on binge drinking and drinking consequences revealed no data points with Mahalanobis distance or DFFITS and Cook's D values exceeding the recommended cut-offs proposed by Stevens (1984). Outlier analysis assessing whether any data points influenced the regression lines due to partner age revealed that for both binge drinking and drinking consequences, there were five cases in which the Mahalanobis distances exceeded the cut-off points suggested by Stevens. However, none of these cases had DFFITS or Cook's D values exceeding one, suggesting that none of these cases significantly influenced the regression models. As such, no cases were removed from further analyses.

Descriptive Statistics

Descriptive information on the study variables is provided in Table 1. All variables had acceptable levels of skewness and kurtosis, with the exception of partner age (skewness= 3.4; kurtosis= 27.71).

Adolescents reported that their romantic partners were an average of 16.9 years old ($SD= 2.4$), and partner age ranged from 10-44 years. The mean rating of relationship seriousness on a scale of 0-8 was 6.8 ($SD= 1.7$), suggesting that relationships were, on average, highly serious. Five hundred thirty-three adolescents at Wave I and 509 at Wave II were not administered binge drinking items because they indicated that they did not consume alcohol in the prior year and/or noted that they had not had more than 2 or 3 drinks either in life (Wave I) or in the prior year (Wave II). Given that the current study does not exclude individuals based on drinking behavior, these adolescents were included in analyses. Among the full sample, adolescents at Wave I reported an average binge drinking frequency of between 0 and 1-2 times in the past year and an average of 1.28 ($sd= 1.91$) drinking consequences. Among those who reported any prior year binge drinking at Wave I ($n= 321$), average binge drinking frequency was between once a month or less and two or three days a month. Among those who reported any prior year drinking consequences at Wave I ($n= 379$), adolescents experienced an average of 3.14 ($sd= 1.79$) drinking consequences. Among the full sample at Wave II, adolescents reported

an average binge drinking frequency between 0 and 1-2 times in the past year and an average of 1.25 ($sd= 1.95$) drinking consequences. Among those who reported any prior year binge drinking at Wave II ($n= 363$), average binge frequency was between once a month or less and two or three days a month. And among those who reported any prior year drinking consequences at Wave II, adolescence experienced an average of 3.09 ($sd= 1.92$) drinking consequences.

Identification of Covariates

Several tested covariates were significantly correlated with drinking outcomes (see Table 2) and were included in statistical models. Adolescent delinquency and peer alcohol use were significantly positively correlated ($r = .32, p < .001$ and $r = .41, p < .001$, respectively) with Wave II binge drinking, such that adolescents who engaged in more delinquency and had more friends who drink reported more frequent Wave II binge drinking. Adolescent delinquency and peer alcohol use were entered as covariates into statistical models examining the binge drinking outcome. Father-adolescent relationship quality, adolescent delinquency, and peer alcohol use were significantly correlated with Wave II drinking consequences. Specifically, father-adolescent relationship quality was significantly negatively associated with drinking consequences ($r = -.11, p < .01$). Adolescent delinquency and peer alcohol use were significantly positively correlated with Wave II drinking consequences ($r = .37, p < .001$ and $r = .36, p < .001$, respectively), such that adolescents who engaged in more types of delinquent acts and who had more friends who drink experienced more types of drinking consequences. Therefore, adolescent delinquency, peer alcohol use, and father-adolescent relationship quality were entered as covariates into statistical models examining the outcome of drinking consequences. Mother-adolescent relationship quality, household composition, and ethnicity were not significantly correlated with either outcome and were not, therefore, included in statistical models.

Parents' marital outcome was not a significant predictor ($p < .05$) of binge drinking or drinking consequences and was, therefore, not included as a covariate in statistical models. Regressing dummy codes of race comparing Black or African American adolescents, multiracial adolescents, and adolescents who identified as another race to White adolescents on Wave II

binge drinking revealed a significant effect of Black or African American versus White adolescents on this outcome ($p < .001$). Regressing these dummy codes on Wave II drinking consequences resulted in a significant effect of both Black or African American versus White ($p < .001$) and other race versus White ($p < .05$) on this outcome. Therefore, three dummy coded race variables were entered into statistical models as covariates for both outcomes.

Primary Analyses

Binge Drinking

Covariates (i.e., delinquency, race, and peer alcohol use) were entered into a ZIP regression model for binge drinking that also included Wave I measures of relationship seriousness, binge drinking, adolescent age, partner age, COA status, and gender. All included covariates significantly predicted one or both portions of the regression model. As shown in Table 3, delinquency significantly predicted the log odds of being a member of the structural zero class ($p < .01$), such that higher levels of delinquency were associated with lower log odds of being in the structural zero class. Being Black or African American (compared to White) significantly predicted both the log odds of being a member of the structural zero class ($p < .001$) and frequency of binge drinking among the non-structural zeroes ($p < .01$). Black or African American adolescents were more likely than White adolescents to be in the structural zero class (i.e., to be non-binge drinkers), but among non-structural zeroes (i.e., potential binge drinkers), Black adolescents tended to binge drink more frequently than White adolescents. There was also a significant effect of peer alcohol use on the log odds of being a member of the structural zero class ($p < .01$), such that having more friends who drink significantly increased the log odds of an adolescent being a potential binge drinker.

Wave I binge drinking also was a significant predictor of Wave II binge drinking. Specifically, greater binge drinking at Wave I was associated with increased log odds of being a possible binge drinker at Wave II ($p < .05$). Among non-structural zeroes, Wave I binge drinking had a significant effect on Wave II binge drinking ($p < .001$); greater Wave I binge drinking frequency was associated with greater Wave II binge drinking frequency. Further, adolescent

age significantly predicted both the log odds of being in the structural zero class and binge drinking among the non-structural zeroes. Specifically, being older was associated with increased log odds of being a potential binge drinker ($p < .05$). And, among the non-structural zero class, increased age was significantly positively associated with binge drinking ($p < .05$), such that older adolescents reported more frequent binge drinking. Further, among non-structural zeroes, gender was marginally related to frequency of binge drinking, such that females' binge drinking frequency was lower than males' binge drinking frequency ($p < .1$).

Results of the Poisson regression predicting count values among the non-structural zero class revealed a trend towards significance ($p = .06$) for the effect of relationship seriousness on binge drinking. Increased relationship seriousness was associated with less frequent binge drinking among potential binge drinkers (see Figure 1). Relationship seriousness, however, did not significantly predict the log odds of being a member of the structural zero class.

Next, interactions of relationship seriousness and the covariates delinquency, race (Black v. White), and peer alcohol use were separately added to the ZIP model. Other racial comparisons (i.e., multiracial v. White and other race v. White) were not further examined given the relatively small numbers of adolescents identifying their racial backgrounds as multiracial or other. Interactions of relationship seriousness with delinquency and race did not significantly predict either the log odds of being a member of the structural zero class or frequency of binge drinking among non-structural zeroes (see Tables 4-5). The interaction of relationship seriousness with peer alcohol use, however, significantly predicted frequency of binge drinking among the non-structural zero class (see Table 6). This moderating effect was probed to inform interpretation by examining and plotting simple slopes of binge drinking on relationship seriousness at the four reported levels of peer alcohol use (i.e., 0, 1, 2, and 3 best friends drink; see Figure 2). The negative relation between relationship seriousness and binge drinking was strongest among those who reported the lowest level of peer alcohol use (i.e., 0 best friends drink) and was nonsignificant among those who reported the highest level of peer alcohol use

(i.e., 3 best friends drink). The interaction of relationship seriousness and peer alcohol use did not predict the log odds of being a structural zero.

The interaction of relationship seriousness and Wave I binge drinking did not significantly predict either the log odds of being a structural zero or frequency of drinking among non-structural zeroes (see Table 7). And, no relationship seriousness by moderator interaction terms (i.e., partner age by relationship seriousness, adolescent age by relationship seriousness, adolescent age by partner age by relationship seriousness, gender by relationship seriousness, COA status by relationship seriousness) significantly predicted either the log odds of being a member of the structural zero class or frequency of drinking among non-structural zeroes (see Tables 8-12).

Drinking Consequences

The relation between romantic relationship seriousness and drinking consequences was examined by entering covariates (i.e., father-adolescent relationship quality, delinquency, peer alcohol use, and race) and Wave I drinking consequences into a ZIP regression model for Wave II drinking consequences that included relationship seriousness and potential moderators (i.e., partner age, adolescent age, gender, and COA status). Model results were examined and father-adolescent relationship quality was removed given that it was not a significant predictor of either the log odds of being a member of the structural zero class or frequency of drinking among those who are non-structural zeroes. The model was then re-estimated with all other variables (see Table 13). All other covariates significantly predicted one or both of the regression models estimated. Delinquency significantly predicted the log odds of membership in the structural zero class ($p < .01$), such that higher levels of delinquency predicted increased likelihood of potentially experiencing drinking consequences. Among non-structural zeroes, delinquency predicted drinking consequences ($p < .01$), such that more delinquency was associated with more types of drinking consequences. Being Black or African American significantly predicted the log odds of membership in the structural zero class ($p < .01$), such that White adolescents were more likely to experience drinking consequences. Peer alcohol use also significantly affected the log odds of

being a structural zero ($p < .01$) such that the more drinking friends an adolescent reported, the more likely the adolescent would be to possibly experience drinking consequences.

There were also significant effects of Wave I drinking consequences on the log odds of being a structural zero ($p < .001$), such that more reported types of drinking consequences at Wave I were associated with increased log odds of possibly experiencing drinking consequences at Wave II. Among non-structural-zeroes, Wave I drinking consequences significantly positively predicted Wave II drinking consequences ($p < .001$). Age significantly predicted the log odds of membership in the structural zero class ($p < .01$), such that older adolescents were more likely to possibly experience drinking consequences.

Results of the Poisson regression predicting count values among the non-structural zero class revealed a trend towards significance ($p = .1$) for the effect of relationship seriousness on drinking consequences. Specifically, increased relationship seriousness was associated with fewer drinking consequences (see Figure 3). Relationship seriousness, however, did not significantly predict the log odds of being a member of the structural zero class.

Examining relationship seriousness by covariate interactions revealed that the relationship seriousness by delinquency interaction significantly predicted drinking consequences among the non-structural zero class ($p < .05$; see Table 14). Plotting simple slopes at the mean, 1 SD above the mean ("high") and 1 SD below the mean ("low") of delinquency (Aiken & West, 1991) revealed that the negative effect of relationship seriousness on drinking consequences was strongest among adolescents who engaged in less delinquency (see Figure 4). The relationship seriousness by delinquency interaction did not significantly predict the log odds of being a structural zero. The interaction of relationship seriousness and race (Black v. White) did not significantly predict either the log odds of being a member of the structural zero class or frequency of binge drinking among non-structural zeroes (see Table 15). The interaction of relationship seriousness with peer alcohol use, however, significantly predicted drinking consequences among the non-structural zero class (see Table 16). This moderating effect was probed for interpretation by plotting simple slopes of drinking consequences on relationship

seriousness at the four reported levels of peer alcohol use (i.e., 0, 1, 2, and 3 best friends drink; see Figure 5). The negative relation between relationship seriousness and drinking consequences was strongest among adolescents who reported the lowest level of peer alcohol use (i.e., 0 best friends drink; See Figure 5). The relation between relationship seriousness and drinking consequences was nonsignificant for adolescents who reported the highest level of peer alcohol use (i.e., 3 best friends drink). This interaction did not predict the log odds of being a structural zero.

There was also a trend towards significance for the effect of the interaction of relationship seriousness and Wave I drinking consequences on Wave II drinking consequences among non-structural zeroes ($p = .1$; see Table 17). Plotting simple slopes revealed that a significant negative effect of relationship seriousness on Wave II drinking consequences occurred only for adolescents who experienced high consequences at Wave I (see Figure 6). The interaction of relationship seriousness and Wave I drinking consequences did not significantly predict either the log odds of being a structural zero or frequency of drinking among non-structural zeroes (see Table 17).

Examining relationship seriousness by moderator interactions revealed a significant effect of the interaction of relationship seriousness by gender on drinking consequences among non-structural zeroes ($p < .05$; see Table 21). No other hypothesized interactive effects were significant either in predicting the log odds of being a member of the structural zero class or in predicting drinking consequences among non-structural zeroes (see Tables 18-20 and 22). The moderating effect of gender on the effect of relationship seriousness on drinking consequences was probed to inform interpretation. Simple slopes were examined and plotted for both genders (see Figure 7). The negative relation between relationship seriousness and number of drinking consequences was shown for female adolescents only.

CHAPTER 4

DISCUSSION

The current study is the first to examine the relations between adolescent romantic relationship seriousness and binge drinking and drinking consequences among middle-to-late adolescents and to consider how these relations vary by age, partner age, gender, and COA status. Analyses involved examining separately two aspects of binge drinking and drinking consequences; one portion of statistical models assessed the likelihood of adolescents potentially being binge drinkers or individuals who experienced drinking consequences and the second portion examined frequency of binge drinking or drinking consequences among adolescents who might have experienced these outcomes. In support of study hypotheses, results revealed that among adolescents who might engage in binge drinking and might experience drinking consequences, respectively, higher relationship seriousness was marginally related to less frequent binge drinking and fewer drinking consequences. Also, there was a significant moderating effect of gender on the relation between relationship seriousness and drinking consequences among adolescents who might experience drinking consequences. Specifically, higher relationship seriousness was related to fewer drinking consequences among females only. Although no other hypothesized moderating effects were significant, significant interactive effects of relationship seriousness with some study covariates on drinking outcomes were found. Specifically, among adolescents who might binge drink, the relation between higher relationship seriousness and lower binge drinking frequency was significant for those who reported the 0-2 close friends who drink, but not significant for those who reported 3 close friends who drink. Similarly, among adolescents who might experience drinking consequences, the negative relation between relationship seriousness and number of drinking consequences was significant among those who reported 0-2 close friends who drink and among those who reported low and mean levels of delinquency. Further, among adolescents who might experience consequences, higher relationship seriousness was related to fewer drinking consequences for those who reported a high level, but not low or mean levels, of Wave I drinking consequences.

Relationship Seriousness and Binge Drinking

The marginally significant relation between relationship seriousness and binge drinking frequency among adolescents who might engage in binge drinking supports the theory that serious relationships can be protective. Higher relationship seriousness might be related to less frequent binge drinking in part because adolescents in such relationships might have benefited from receiving social support from partners in times of distress (Hazan & Shaver, 1987; Hazan & Zeifman, 1994) and might have experienced increased social competence and self-esteem (Feiring & Lewis, 1991; Paul & White, 1990; Roscoe, Kennedy, & Pope, 1987). Involvement in highly serious relationships is associated with reduced depressive symptoms (Davies & Windle, 2000), which could have contributed to less drinking to cope (Hussong & Chassin, 1994; King, Iacono, & McCue, 2004; Sung, Erkanli, Angold, & Costello, 2004). Further, highly serious relationships might have reduced adolescents' involvement in a drinking subculture. The current study's findings are consistent with prior research indicating that adolescents who remained in stable relationships across a year experienced decreased alcohol use (Davies & Windle, 2000).

Among adolescents who might binge drink, peer alcohol use moderated the relation between relationship seriousness and binge drinking frequency, such that the protective effect of relationship seriousness was significant for adolescents who reported 0-2 out of 3 close friends who drink, but not for those who reported 3 out of 3 close friends who drink. Highly serious relationships might have been particularly protective for adolescents whose close friends do not all drink because they were exposed to fewer drinking opportunities. Adolescents typically befriend and date peers who engage in similar behaviors, including drinking patterns, to their own (Leonard & Mudar, 2003; Lonardo et al., 2009; Simons, Aiken, Prinstein, 2008), and it is likely that adolescents who reported less peer alcohol use also dated partners who were not frequent drinkers. Given that relationship seriousness was high in the current sample, with 95.8% of adolescents endorsing four or more of the eight activities associated with relationship

seriousness, interactions will be interpreted and discussed only for the portion of the graphs representing this vast majority of the data.

Although relationship seriousness and the interaction of relationship seriousness and peer alcohol use significantly predicted frequency of binge drinking among adolescents identified as potential binge drinkers, neither predicted the likelihood of adolescents being potential binge drinkers. In contrast, study covariates delinquency and peer alcohol use predicted the likelihood of adolescents being potential binge drinkers, but did not predict frequency of binge drinking in these statistical models. Other researchers similarly have found that different variables predict different aspects of adolescent drinking outcomes (e.g., Cranford, Zucker, Jester, Puttler, & Fitzgerald, 2010; Janssen, Larsen, Vollebergh, Reinout, Wiers, 2015; Nichter & Chassin, 2015). For instance, Cranford et al. (2010) found that adolescent age and both positive and negative alcohol expectancies predicted likelihood of having been intoxicated in the prior six months, while paternal alcohol use disorders and positive alcohol expectancies predicted frequency of intoxication in the prior six months. Cranford et al. suggested that cognitive factors (e.g., positive and negative alcohol expectancies) might be more relevant to predicting whether an adolescent experiences intoxication, while parental factors (e.g., paternal alcohol use disorders), which have both a genetic and social influence on adolescents, might be more important in predicting frequency of intoxication. It is possible that romantic relationship factors like relationship seriousness (which, like parental factors, have a social influence on adolescents) are more relevant to predicting frequency of binge drinking than likelihood of potentially binge drinking.

It is also possible that the different effects revealed across portions of statistical models are a function of two distinct groups of adolescents being examined. In the part of the current study's statistical models that examined binge drinking frequency, adolescents identified as potential binge drinkers by study analyses were included. To assess likelihood of being a potential binge drinker, however, the full sample of adolescents who met inclusion criteria were considered, including adolescents who abstained from alcohol use, adolescents who drank but did not binge drink, and adolescents who did binge drink. It is possible that relationship

seriousness, particularly among adolescents reporting low peer alcohol use, significantly distinguishes among this full sample in a manner that was not assessed by current analyses. For instance, perhaps relationship seriousness contributes to distinguishing between abstainers and drinkers, but not to distinguishing between non binge drinkers and binge drinkers.

Current study findings are distinct from results of a study that found a nonsignificant effect of relationship seriousness among 11-19 year-olds on frequency of alcohol use seven years later (Gudonis-Miller et al., 2012). The current study differed from Gudonis-Miller et al.'s study in terms of age of the sample and timeframe assessed. Specifically, the current study was restricted to 14-18 year-old high school students. Early adolescents were excluded based on the theory that the hypothesized protective effect of relationship seriousness would not occur among early adolescents given that they generally lack the emotional maturity to handle commitment and intimacy in relationships (Davies & Windle, 2000) and the interpersonal competencies and coping strategies to address challenges and negative emotions common in romantic relationships (Davila, 2008). Unsurprisingly, relationships in this period are associated with alcohol use and delinquency (Davies & Windle, 2000). Given that relationship seriousness might serve as a risk factor among early adolescents, examining relationship seriousness across the span of adolescence might have prevented Gudonis-Miller et al. from finding significant effects. Also, Gudonis-Miller et al. examined the relation between relationship seriousness in adolescence with alcohol use in emerging adulthood. Seven years is a long interval to find this significant relation, and researchers did not consider how other relationships that likely occurred in these intervening years impacted drinking outcomes. The current study, in contrast, examined more proximal outcomes, focusing on a one year timeframe.

The current findings are also distinct from a recent study of 15 year-olds that revealed a positive association between serious relationships and likelihood of having consumed alcohol in the prior year (Beckmeyer, 2015). In the current study, relationship seriousness was assessed on the basis of participation in activities that tap primarily affiliative and attachment behaviors. In Beckmeyer's study, participants reported on the number of serious romantic relationships

experienced so far in life. Adolescents in Beckmeyer's study could have reported on relationships that occurred in early adolescence. As such, Beckmeyer's finding that serious relationships were related to increased risk of alcohol use could be attributable in part to risk of engaging in serious relationships in early adolescence. Further, given the cross-sectional nature of Beckmeyer's study, inferences about causality cannot be drawn. Although Beckmeyer suggested that involvement in serious relationships might have precipitated alcohol use among participants, it also is possible that adolescents' involvement in a drinking subculture affected their engagement in romantic relationships. Research shows that adolescents who drink often select into romantic relationships to further facilitate their access to alcohol (Burk, van der Vorst, Kerr, & Stattin, 2012). The current study might have revealed different relations between relationship seriousness and drinking outcomes from Beckmeyer's study because it used a validated measure of relationship seriousness and longitudinal data.

Relationship Seriousness and Drinking Consequences

The current study also revealed a marginally significant relation among adolescents who might experience drinking consequences between relationship seriousness and number of drinking consequences, which further suggests that highly serious relationships serve a protective function. Adolescents in highly serious relationships might have experienced reduced drinking consequences in part because they experienced partner support and enhanced self-esteem that reduced their likelihood of drinking to cope. These adolescents also might have experienced reduced access to alcohol and fewer drinking consequences because they were drawn out of a broader, potentially risky peer environment to engage in dyadic relationships.

Gender significantly moderated the relation between relationship seriousness and drinking consequences among adolescents who might have experienced drinking consequences, such that the relation was only significant for females. Females might have been at higher risk in less serious relationships than males because the group socializing and expansion of social networks common in these types of relationships likely resulted in more alcohol use offers made to females than to males (Trost et al., 1999). Increased access to alcohol in this manner could

have increased alcohol consumption and the number of drinking consequences female adolescents experienced. Also, females might have benefited more than males from engaging in highly serious relationships, because females might have sought emotional support more frequently from partners (Chapman & Mullis, 1999; Gomez, Holmberg, Bounds, Fullarton, & Gomez, 1999; Hunter & Boyle, 2004), which could have protected them from drinking to cope and experiencing associated drinking consequences. Although it might be expected that relationship seriousness similarly might have a stronger impact on binge drinking frequency for females than males, this was not the case in the current study. As described in more detail below, this could be attributable to issues with the assessment of binge drinking in this study.

Analyses revealed several additional moderating effects of covariates that inform our understanding of the relation between relationship seriousness and drinking consequences. For instance, among adolescents who might experience drinking consequences, peer alcohol use moderated the effect of relationship seriousness on drinking consequences; the relation was significant among adolescents who reported 0-2 close out of three close friends who drink and was nonsignificant among adolescents who reported 3 out of 3 close friends who drink. Adolescent delinquency also moderated the relation between relationship seriousness and drinking consequences among those who might experience drinking consequences; the relation was significant among adolescents who reported low and mean, but not high, levels of delinquency. Adolescents who reported relatively low levels of delinquency and/or peer alcohol use might have experienced protective effects of serious relationships in part because their social environments were less risky than those of adolescents who reported higher levels of delinquency and/or peer alcohol use. Adolescents tend to befriend and date peers who engage in similar behaviors to their own (Haynie et al., 2005; Leonard & Mudar, 2003; Simons, Aiken, Prinstein, 2008). As such, adolescents who engaged in minimal delinquency and those who reported having fewer close friends who drink likely dated partners who engaged in minimal drinking or delinquent behavior. It is not surprising that highly serious relationships with such partners would be associated with low drinking consequences.

Results also revealed a significant interactive effect of relationship seriousness by Wave I drinking consequences on Wave II drinking consequences among adolescents who might experience drinking consequences. Specifically, the relation between relationship seriousness and Wave II drinking consequences was significant only for adolescents who reported high consequences at Wave I. It is possible that serious relationships are uniquely protective among adolescents who reported high Wave I consequences, because these adolescents might have reduced their involvement with drinking and other problematic behavior occurring in peer contexts.

Although there were both main and interactive effects of relationship seriousness on drinking consequences among adolescents identified as potentially experiencing consequences, no significant main or interactive effects of relationship seriousness predicted the likelihood of adolescents experiencing consequences. This is consistent with the findings on binge drinking and likely attributable to similar mechanisms.

Limitations and Future Directions

Although the current study revealed that relationship seriousness is protective for certain groups of adolescents in terms of drinking outcomes, many hypothesized relations were not found. Specifically, the relations between relationship seriousness and either drinking outcome were not moderated by adolescent age, partner age, adolescent age by partner age, or COA status. And, the relation between relationship seriousness and binge drinking among those who might binge drink was not moderated by gender. The lack of these expected effects might be attributable to measurement issues and to features of the current sample. This section reviews these study limitations and provides suggestions for future studies.

There are limitations related to the assessment of romantic relationship seriousness. Although the RRAL assessed engagement in various relationship activities and is highly correlated with measures of intimacy and social support in adolescent romantic relationships (Haynie et al., 2005), it does not assess intimacy or support. It is possible that certain relations were not significant because the measure of relationship seriousness did not directly or

sensitively assess elements of romantic relationships expected to be relevant to adolescent drinking outcomes. Also, because both alcohol use and adolescent sexual behavior might be explained by an underlying tendency towards engagement in risky behavior, the items relating to sexual behavior were excluded. Their exclusion reduced the range of relationship seriousness and likely contributed to the high mean level of relationship seriousness (6.82 on a scale of 0-8). Including sexuality items would enable assessment of a wider range of relationship seriousness and possibly result in a greater likelihood of detecting effects. Alternatively, sexuality items might operate differently from other RRAL items given that involvement in sexual behavior has been positively associated with drinking outcomes. Future research might consider assessing sexual behavior as a separate component of relationship seriousness.

There were several other measurement limitations. First, Add Health did not assess romantic partners' drinking, which is a relevant construct to consider when examining partner effects on adolescent drinking behavior. Research has found that romantic partners' alcohol use affects adolescent alcohol use over and above peer effects (Gudonis-Miller et al., 2012; Longmore et al., 2008). The current study assessed partner age as a proxy for partner drinking based on research showing that drinking frequency typically increases across adolescence and into emerging adulthood (e.g., Chen & Kandel, 1995; Harford et al., 2005; Johnston et al., 2007; Rohde & Andrews, 2006). It is possible that partner age was not a sensitive enough proxy of partner's drinking behavior.

Second, binge drinking was assessed as consuming "five or more drinks in a row" for both males and females. Studies often differentially define binge drinking for males and females (4+ drinks for females; 5+ drinks for males; O'Malley et al., 1984) based on findings that women typically require fewer drinks than males to reach the same blood alcohol concentration and to experience alcohol consequences (Wechsler, Dowdall, Davenport, & Rimm, 1995). It is likely that analyses underestimated binge drinking among females. This might explain why a moderating effect of relationship seriousness and gender was revealed for drinking consequences but not for binge drinking. By assessing drinking outcomes like hangovers and throwing up from alcohol,

this study's measure of drinking consequences might have been more sensitive to capturing problematic drinking than binge drinking among females. Future studies should consider using an assessment of binge drinking that is equally valid for males and females.

Third, in the current study, parental alcoholism was assessed by asking parent participants to report whether or not the adolescents' biological mother and/or father "has alcoholism." The term "alcoholism" was not defined and symptoms of an alcohol use disorder were not assessed. Further, these items were answered by a parent participant who was not necessarily the biological parent and who may have lacked adequate knowledge of the biological parents' use of alcohol. And, among biological parents identified as having alcoholism, it was unknown if they were current drinkers, if they had been sober for their adolescents' whole lives, or somewhere in between. As such, it was not possible to identify whether parental alcohol use had an environmental impact on adolescents. Future studies might consider using a well-validated self-report tool to assess parents' alcoholism, such as The Michigan Alcoholism Screening Test (MAST; Selzer, 1971) or the Alcohol Use Disorders Identification Test (AUDIT; Schmidt, Barry, & Fleming, 1995). The ability to more clearly identify parental alcoholism could enhance the ability to detect moderating effects of parent alcoholism on the relation between relationship seriousness and drinking outcomes.

Unique features of the current sample might have also contributed to the limited findings. Within this study's subgroup of Add Health, 39.1% of adolescents at Wave II reported prior year binge drinking. The average frequency of binge drinking among participants was less than 1 or 2 times in the prior year, and only 16% reported binge drinking more than monthly. According to epidemiological data from Monitoring the Future, in the mid-1990s when Add Health Waves I and II were collected, approximately 30% of 12th graders and 20% of 10th graders reported binge drinking in the prior two weeks (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2013). The Youth Risk Behavior Survey (YRBS) reported an adolescent past-month binge drinking rate of 32.6% in the mid-1990s (YRBS, 2013). It appears that the current sample engaged in less binge drinking than might be expected of the general adolescent population. This may have

occurred because certain high-risk groups were excluded to conservatively evaluate the effect of relationship seriousness on drinking outcomes. Specifically, the current study excluded adolescents with multiple dating partners and adolescents with same-sex partners, groups that are at heightened risk for substance use (Corliss, Rosario, Wypij, Fisher, & Austin, 2008; Davies & Windle, 2000; Ziyadeh et al., 2007). This study also excluded adolescents who reported prior-year pregnancies, and adolescent females who consume alcohol are more likely to experience pregnancy (Deardorff, Gonzales, Christopher, Roosa, & Millsap, 2005). It is possible that a different pattern of findings would have occurred had these high-risk adolescent groups been included in analyses. Future studies might consider using a less-restricted sample of adolescents in order to more thoroughly assess relations between relationship seriousness and drinking outcomes among a more representative group of American adolescents.

Conclusions

The current study is the one of the first to consider the relevance of romantic relationship seriousness to understanding adolescent drinking outcomes. Although prior research has found that participating in romantic relationships can put adolescents at risk for drinking outcomes (Aro & Taiple, 1987; Furman, Ho, & Low, 2007; Miller et al., 2009; Thomas & Hsiu, 1993), results from the current study suggest that relationship seriousness serves as a protective factor in terms of binge drinking and drinking consequences and that this effect is stronger for certain groups. Of note, effects were revealed only among adolescents identified as potentially having engaged in binge drinking and/or having experienced drinking consequences. Relationship seriousness did not significantly affect the likelihood of an adolescent being a binge drinker or of an adolescent experiencing drinking consequences. It would be valuable to continue with this line of study to elucidate our understanding of how adolescent relationships are protective. Future research, for instance, is needed to evaluate further what elements of serious relationships (e.g., support, intimacy, drawing adolescents out of a broader peer group) contribute to their protective impact. This increased understanding could contribute to preventive efforts aimed at reducing adolescent binge drinking and exposure to drinking consequences.

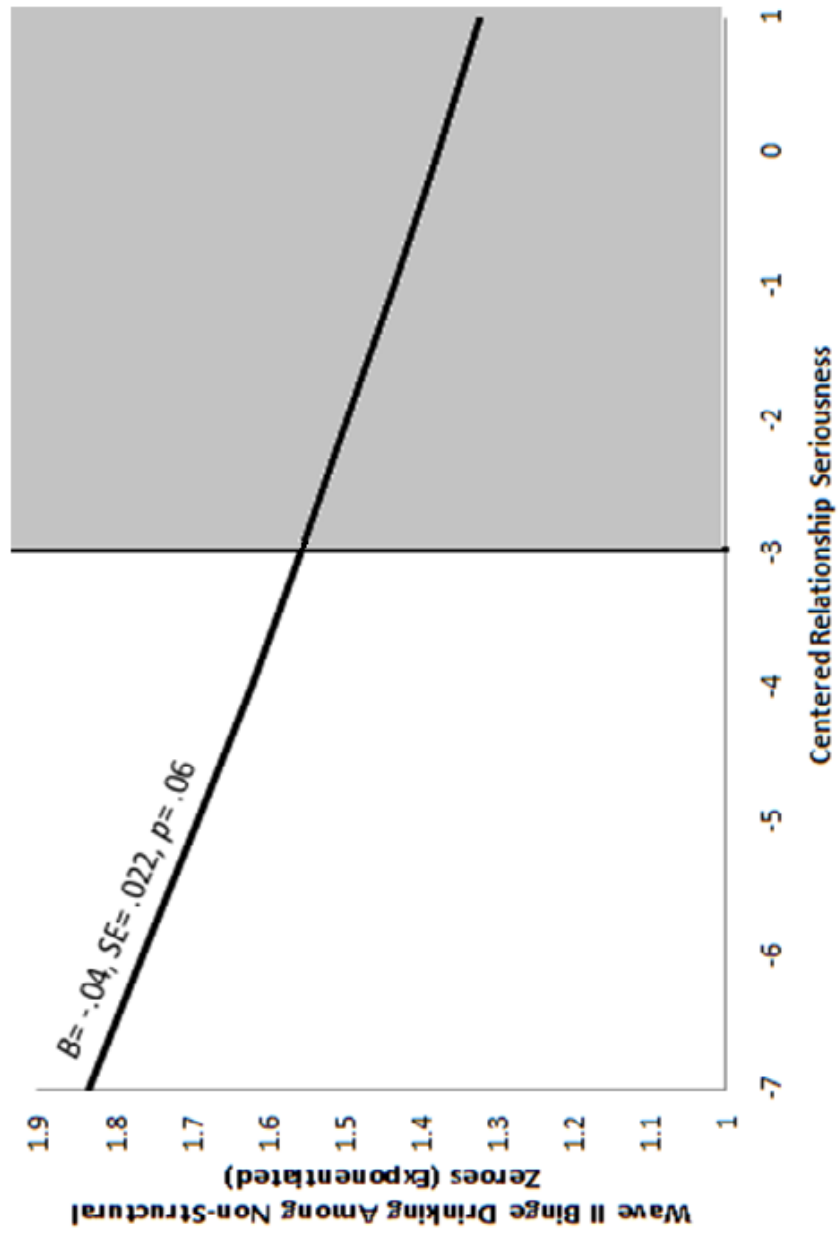


Figure 1. Main Effect of Relationship Seriousness on Wave II Binge Drinking
 Note. Shaded region represents 95.8% of the sample.

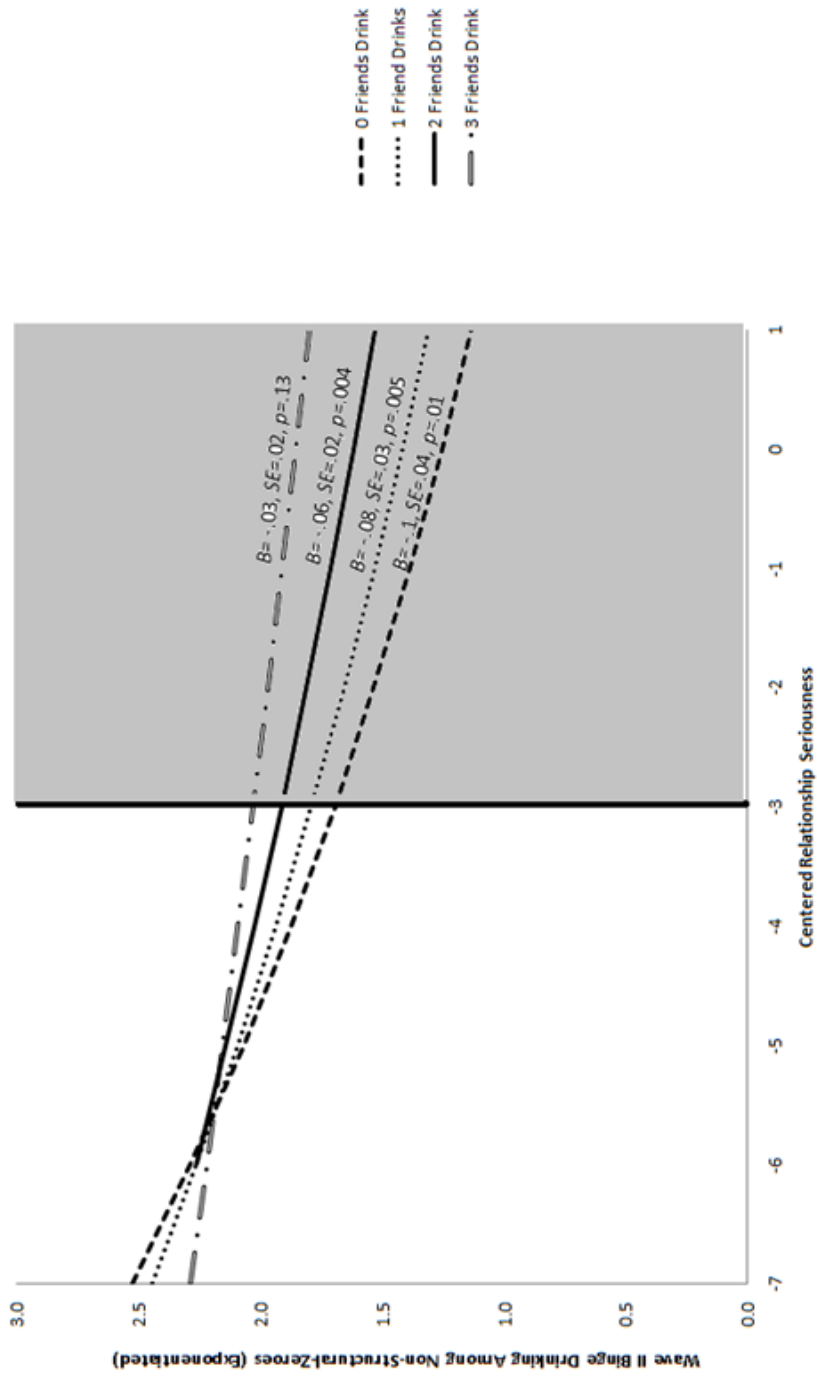


Figure 2. Interaction of Relationship Seriousness and Peer Alcohol Use on Wave II Binge Drinking
 Note. Shaded region represents 95.8% of sample.

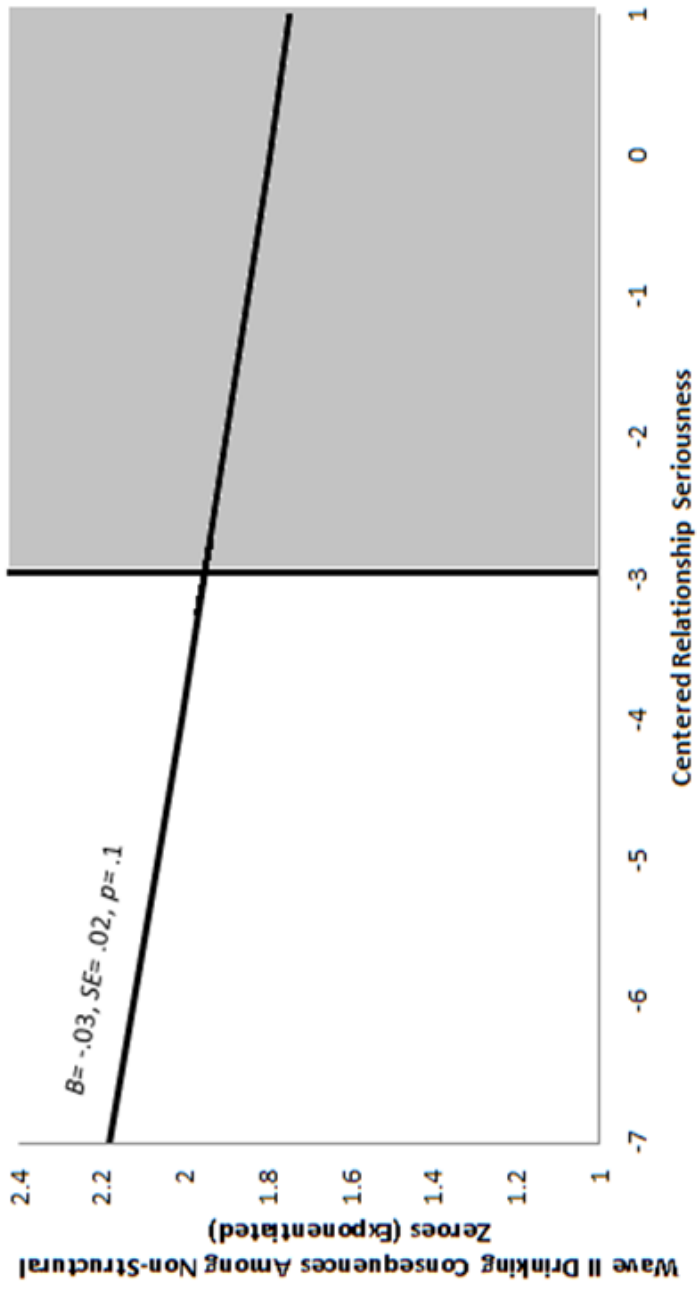


Figure 3. Main Effect of Relationship Seriousness on Wave II Drinking Consequences
 Note. Shaded region represents 95.8% of the sample.

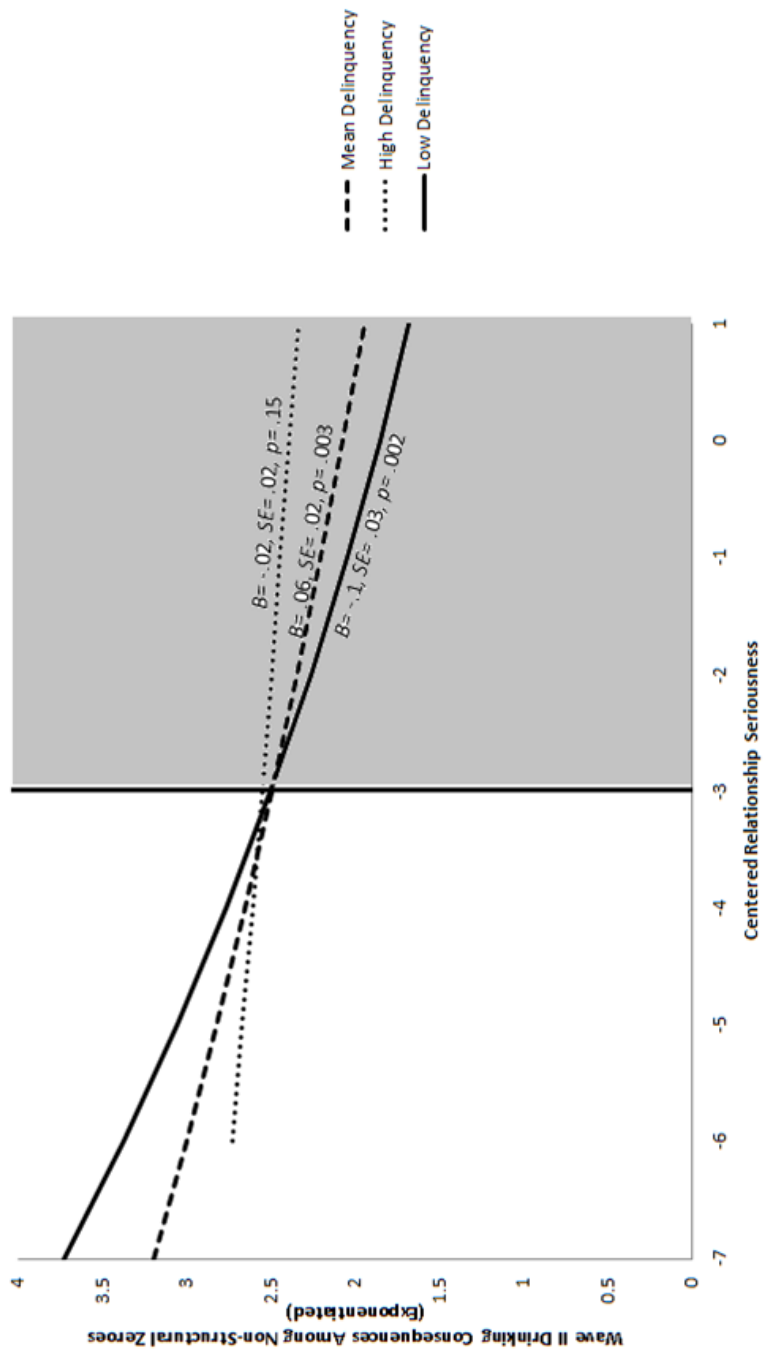


Figure 4. Interaction of Relationship Seriousness and Delinquency on Wave II Drinking Consequences
 Note. Shaded region represents 95.8% of the sample.

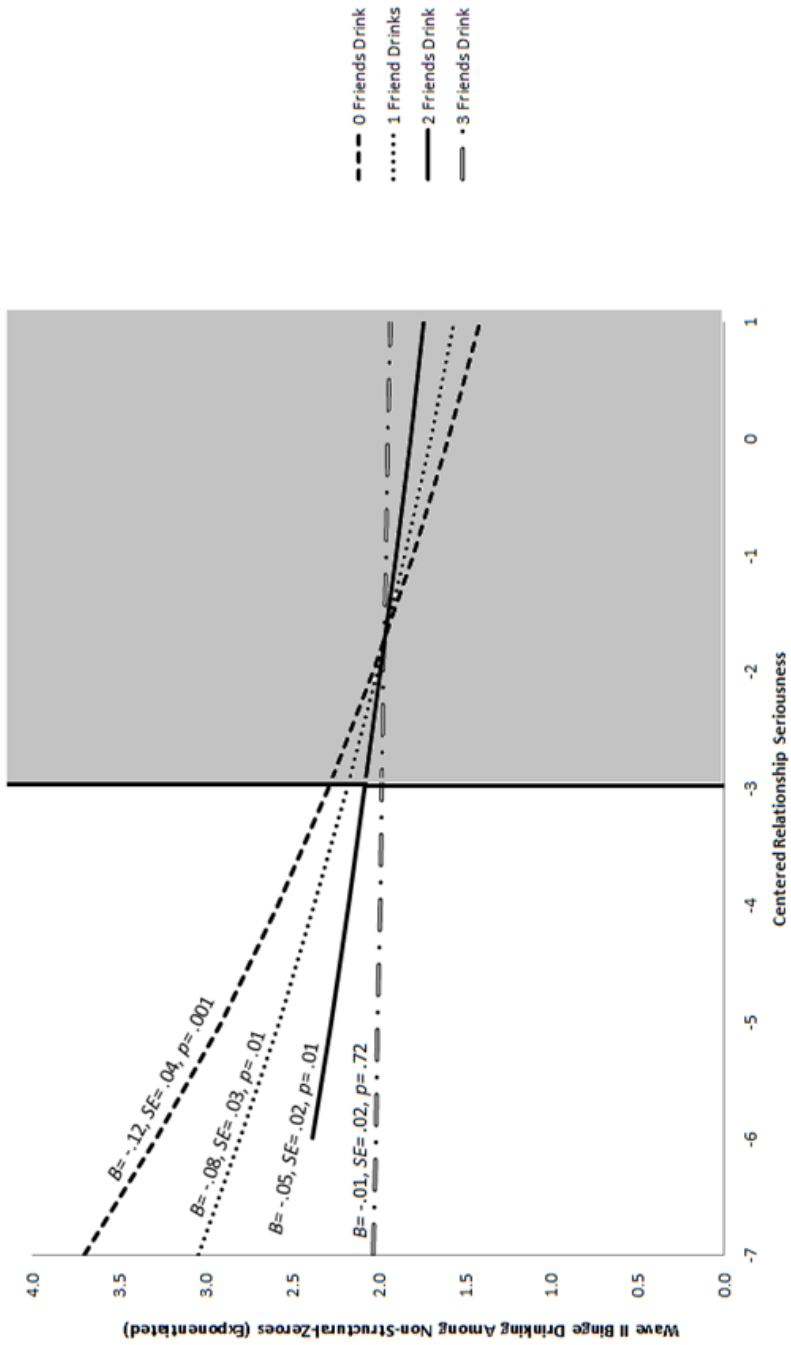


Figure 5. Interaction of Relationship Seriousness and Peer Alcohol Use on Wave II Drinking Consequences
 Note. Shaded region represents 95.8% of the sample.

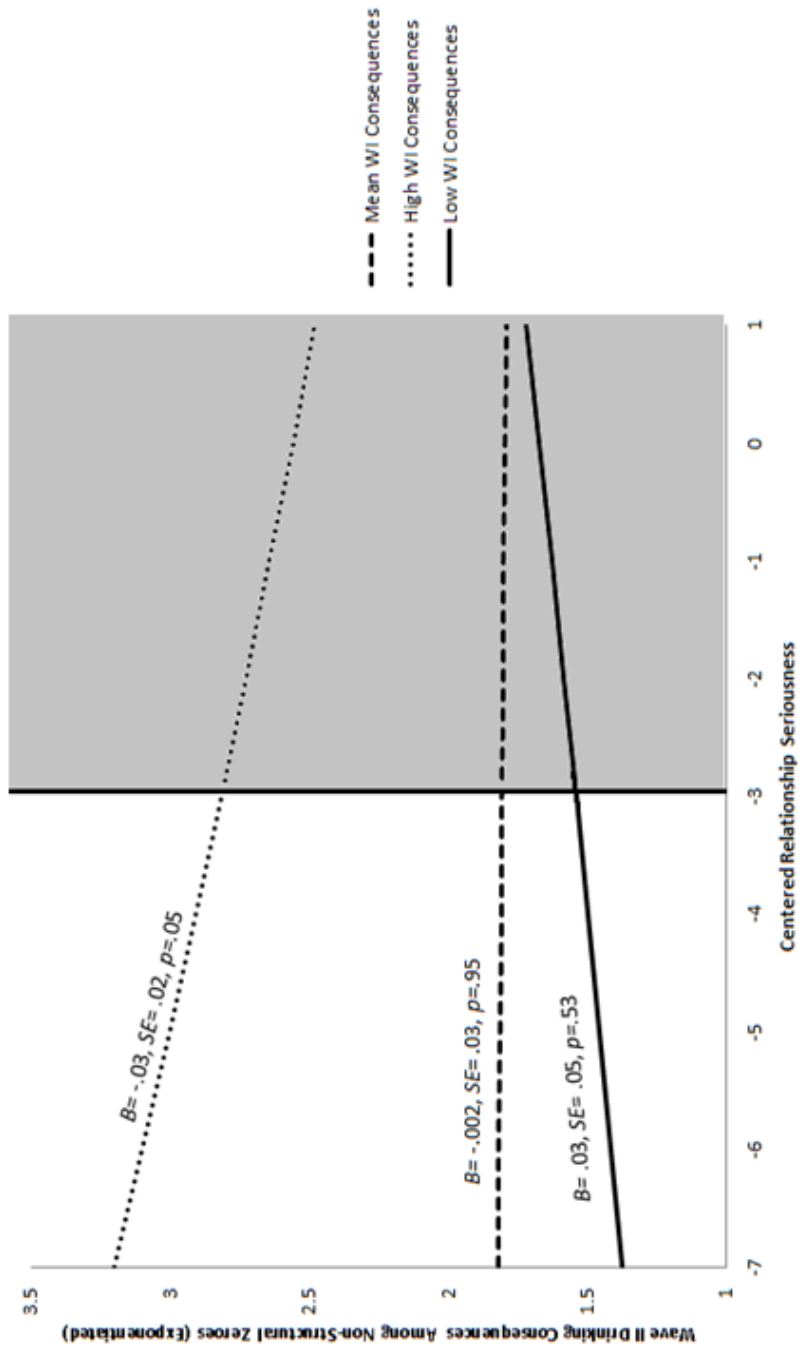


Figure 6. Interaction of Relationship Seriousness and Wave I Drinking Consequences on Wave II Drinking Consequences
 Note. Shaded region represents 95.8% of the sample.

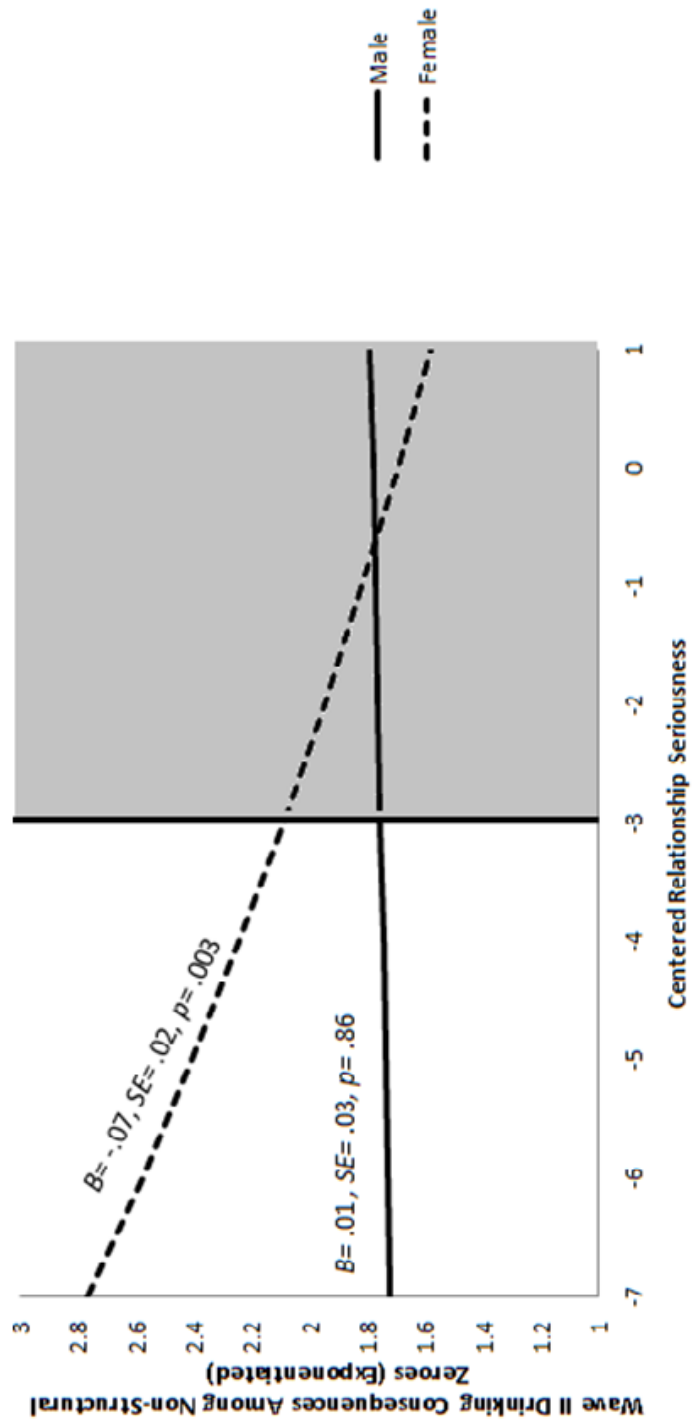


Figure 7. Interaction of Relationship Seriousness and Gender on Wave II Drinking Consequences
 Note: Shaded region represents 95.8% of the sample.

REFERENCES

- Abel, G., Plumridge, L., & Graham, P. (2002). Peers, networks or relationships: Strategies for understanding social dynamics as determinants of smoking behaviour. *Drugs: Education, Prevention and Policy*, 9(4), 325–338.
- Abma, J. C., Chandra, A., Mosher, W. D., Peterson, L. S., & Piccinino, L. J. (1997). Fertility, family planning, and women's health: New data from the 1995 National Survey of Family Growth. *Vital and Health Statistics. Series 23, Data from the National Survey of Family Growth*, 19,1.
- Agnew, R. (1991). The interactive effects of peer variables on delinquency. *Criminology*, 29(1), 47-72.
- Aiken, L. S., & Stephen, G. West (1991). *Multiple regression: Testing and interpreting interactions*, 75-87.
- Alan Guttmacher Institute. (1994). *Sex and America's teenagers*. Washington, DC: Author.
- Andrews, J. A., Hampson, S. E., Barckley, M., Gerrard, M., & Gibbons, F. X. (2008). The effect of early cognitions on cigarette and alcohol use during adolescence. *Psychology of Addictive Behaviors*, 22, 96-106.
- Armstrong, T. D., & Costello, E. J. (2002). Community studies on adolescent substance use, abuse, or dependence and psychiatric comorbidity. *Journal of Consulting and Clinical Psychology*, 70(6), 1224.
- Aro, H., & Taipale, V. (1987). The impact of timing of puberty on psychosomatic symptoms among fourteen-to sixteen-year-old Finnish girls. *Child Development*, 261-268.
- Bachman, J., O'Malley, P., Schulenberg, J., Johnston, L., Freedman-Doan, P., & Messersmith, E. (2008). *The education-drug use connection: How successes and failures in school relate to adolescent smoking, drinking, drug use, and delinquency*. New York: Erlbaum/Taylor & Francis.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- Barnes, G. M., & Farrell, M. P. (1992). Parental support and control as predictors of adolescent drinking, delinquency, and related problem behaviors. *Journal of Marriage and the Family*, 54(4), 763-776.
- Barnes, G. M., Hoffman, J. H., Welte, J. W., Farrell, M. P., & Dintcheff, B. A. (2006). Effects of parental monitoring and peer deviance on substance use and delinquency. *Journal of Marriage and Family*, 68(4), 1084-1104.
- Barnes, G. M., Reifman, A. S., Farrell, M. P., & Dintcheff, B. A. (2000). The effects of parenting on the development of adolescent alcohol misuse: A six-wave latent growth model. *Journal of Marriage and Family*, 62(1), 175-186.
- Barnow, S., Schultz, G., Lucht, M., Ulrich, I., Preuss, U. W., & Freyberger, H. J. (2004). Do alcohol expectancies and peer delinquency/substance use mediate the relationship between impulsivity and drinking behavior in adolescence? *Alcohol and Alcoholism*, 39(3), 213–219.

- Bartholow, B. D., Sher, K. J., & Krull, J. L. (2003). Changes in heavy drinking over the third decade of life as a function of collegiate fraternity and sorority involvement: a prospective, multilevel analysis. *Health Psychology, 22*(6), 616.
- Beckmeyer, J. J. (2015). Comparing the associations between three types of adolescents' romantic involvement and their engagement in substance use. *Journal of Adolescence, 42*, 140-147.
- Bjork, J. M., Smith, A. R., Danube, C. L., & Hommer, D. W. (2007). Developmental differences in posterior mesofrontal cortex recruitment by risky rewards. *The Journal of Neuroscience, 27*(18), 4839-4849.
- Borsari, B., Borsari, B., & Carey, K. B. (2006). How the quality of peer relationships influences college alcohol use. *Drug and Alcohol Review, 25*(4), 361-370.
- Brown, S. A., & D'Amico, E. J. (2000, August). Facilitating adolescent self-change for alcohol problems: A multiple brief intervention approach. Paper presented at the 108th Annual Convention of the American Psychological Association, Washington DC.
- Brown, B. B., Dolcini, M. M., & Leventhal, A. (1997). Transformations in peer relationships at adolescence: Implications for health-related behavior. In J. Schulenberg, J. L. Maggs, & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 161-189). New York: Cambridge University Press.
- Brown, B. B., Feiring, C., & Furmon, W. (1999). Missing the love boat: why researchers have shied away. In W. Furman, B. B. Brown, & C. Feiring (Eds.), *The development of romantic relationships in adolescence* (pp. 1-18). New York: Cambridge University Press.
- Brown, T. L., Parks, G. S., Zimmerman, R. S., & Phillips, C. M. (2001). The role of religion in predicting adolescent alcohol use and problem drinking. *Journal of Studies on Alcohol and Drugs, 62*(5), 696.
- Browne, M. W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J.S. Long (Eds.), *Testing Structural Equation Models*. (pp. 136-162) Newbury Park, CA: Sage.
- Carver, K., Joyner, K., & Udry, J. R. (2003). National estimates of adolescent romantic relationships. In P. Florsheim (Ed.), *Adolescent romantic relations and sexual behavior: Theory, research, and practical implications* (pp. 23-56). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Catanzaro, S. J., & Laurent, J. (2004). Perceived family support, negative mood regulation expectancies, coping, and adolescent alcohol use: Evidence of mediation and moderation effects. *Addictive Behaviors, 29*(9), 1779-1797.
- Center on Addiction and Substance Abuse at Columbia University (2004). National survey of American attitudes on substance abuse IX: Teen dating practices and sexual activity. New York, NY: CASA. Retrieved July 20, 2013 <http://www.casacolumbia.org>
- Chalder, M., Elgar, F. J., & Bennett, P. (2006). Drinking and motivations to drink among adolescent children of parents with alcohol problems. *Alcohol and Alcoholism, 41*(1), 107-113.

- Chapman, P. L., & Mullis, R. L. (1999). Adolescent coping strategies and self-esteem. *Child Study Journal*, 29, 69–77.
- Chartier, K. G., Hesselbrock, M. N., & Hesselbrock, V. M. (2010). Development and vulnerability factors in adolescent alcohol use. *Child and Adolescent Psychiatric Clinics of North America*, 19(3), 493.
- Chassin, L., Curran, P. J., Hussong, A. M., & Colder, C. R. (1996). The relation of parent alcoholism to adolescent substance use: a longitudinal follow-up study. *Journal of Abnormal Psychology*, 105(1), 70.
- Chassin, L., Pillow, D. R., Curran, P. J., Molina, B. S., & Barrera Jr, M. (1993). Relation of parental alcoholism to early adolescent substance use: a test of three mediating mechanisms. *Journal of Abnormal Psychology*, 102(1), 3.
- Chassin, L., Pitts, S. C., DeLucia, C., & Todd, M. (1999). A longitudinal study of children of alcoholics: Predicting young adult substance use disorders, anxiety, and depression. *Journal of Abnormal Psychology*, 108, 106–119.
- Chassin, L., Rogosch, F., & Barrera Jr., M. (1991). Substance use and symptomatology among adolescent children of alcoholics. *Journal of Abnormal Psychology*, 100, 1-15.
- Chen, P., & Chantala, K. (2014). Guidelines for analyzing Add Health data. *Carolina Population Center, University of North Carolina, Chapel Hill, NC*.
- Chen, K., & Kandel, D. B. (1995). The natural history of drug use from adolescence to the mid-thirties in a general population sample. *American Journal of Public Health*, 85(1), 41-47.
- Christiansen, B. A., Goldman, M. S., & Inn, A. (1982). Development of alcohol-related expectancies in adolescents: Separating pharmacological from social-learning influences. *Journal of consulting and Clinical Psychology*, 50(3), 336.
- Chung, T., Hipwell, A., Loeber, R., White, H. R., & Stouthamer-Loeber, M. (2008). Ethnic differences in positive alcohol expectancies during childhood: The Pittsburgh Girls Study. *Alcoholism: Clinical and Experimental Research*, 32: 966-974.
- Cleveland, H. H., Herrera, V. M., & Stuewig, J. (2003). Abusive males and abused females in adolescent relationships: Risk factor similarity and dissimilarity and the role of relationship seriousness. *Journal of Family Violence*, 18(6), 325-339.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Mahwah, NJ: Erlbaum.
- Colder, C. R. (2001). Life stress, physiological and subjective indexes of negative emotionality, and coping reasons for drinking: Is there evidence for a self-medication model of alcohol use? *Psychology of Addictive Behaviors*, 15(3), 237-245.
- Colder, C. R., & Chassin, L. (1997). Affectivity and impulsivity: Temperament risk for adolescent alcohol involvement. *Psychology of Addictive Behaviors*, 11(2), 83-97.

- Collins, W. A. (2003). More than myth: The developmental significance of romantic relationships during adolescence. *Journal of Research on Adolescence*, 13(1), 1-24.
- Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). Social determinants of alcohol consumption: the effects of social interaction and model status on the self-administration of alcohol. *Journal of Consulting and Clinical Psychology*, 53(2), 189-200.
- Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, 58(4), 644-663.
- Collins, W. A., Welsh, D. P., & Furman, W. (2009). Adolescent romantic relationships. *Annual Review of Psychology*, 60, 631-652.
- Connolly, J., Craig, W., Goldberg, A., & Pepler, D. (2004). Mixed-Gender Groups, Dating, and Romantic Relationships in Early Adolescence. *Journal of Research on Adolescence*, 14(2), 185-207.
- Connolly, J. A., & Johnson, A. M. (1996). Adolescents' romantic relationships and the structure and quality of their interpersonal ties. *Personal Relationships*, 3, 185-195.
- Connolly, J., & McIsaac, C. (2011). Romantic relationships in adolescence. *Social development: Relationships in infancy, childhood, and adolescence*, 180-206.
- Cooper M. L. (1994) Motivations for alcohol use among adolescents: development and validation of a four-factor model. *Psychological Assessment*, 6, 117–128.
- Cooper, M. L., Frone, M. R., Russell, M., & Mudar, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of Personality and Social Psychology*, 69(5), 990-1005.
- Cooper, M. L., Russell, M., & George, W. H. (1988). Coping, expectancies, and alcohol abuse: A test of social learning formulations. *Journal of Abnormal Psychology*, 101, 139-152.
- Corliss, H. L., Rosario, M., Wypij, D., Fisher, L. B., & Austin, S. B. (2008). Sexual orientation disparities in longitudinal alcohol use patterns among adolescents: findings from the Growing Up Today Study. *Archives of Pediatrics & Adolescent Medicine*, 162(11), 1071-1078.
- Costello, E. J., Erkanli, A., Federman, E., & Angold, A. (1999). Development of psychiatric comorbidity with substance use in adolescents: Effects of timing and sex. *Journal of Clinical Child Psychology*, 28, 298-311.
- Coxe, S., West, S. G., & Aiken, L. S. (2009). The analysis of count data: A gentle introduction to Poisson regression and its alternatives. *Journal of Personality Assessment*, 91(2), 121-136.
- Cranford, J. A., McCabe, S. E., & Boyd, C. J. (2006). A new measure of binge drinking: Prevalence and correlates in a probability sample of undergraduates. *Alcoholism: Clinical and Experimental Research*, 30(11), 1896-1905.
- Cranford, J. A., Zucker, R. A., Jester, J. M., Puttler, L. I., & Fitzgerald, H. E. (2010). Parental alcohol involvement and adolescent alcohol expectancies predict alcohol involvement in male adolescents. *Psychology of Addictive Behaviors*, 24(3), 386.

- Crosnoe, R., Muller, C., & Frank, K. (2004). Peer context and the consequences of adolescent drinking. *Social Problems, 51*, 288–304.
- Darling, N., Dowdy, B. B., Van Horn, M. L., & Caldwell, L. L. (1999). Mixed-sex settings and the perception of competence. *Journal of Youth and Adolescence, 28*(4), 461-480.
- Davies, P. T., & Windle, M. (2000). Middle adolescents' dating pathways and psychosocial adjustment. *Merrill-Palmer Quarterly, 90*-118.
- Deardorff, J., Gonzales, N. A., Christopher, F. S., Roosa, M. W., & Millsap, R. E. (2005). Early puberty and adolescent pregnancy: The influence of alcohol use. *Pediatrics, 116*(6), 1451-1456.
- DeLucia, C., Belz, A., & Chassin, L. (2001). Do adolescent symptomatology and family environment vary over time with fluctuations in paternal alcohol impairment? *Developmental Psychology, 37*, 207-216.
- Dishion, T. J., Capaldi, D., Spracklen, K. M., & Li, F. (1995). Peer ecology of male adolescent drug use. *Development and Psychopathology, 7*, 803-824.
- Dishion, T. J., & Owen, L. D. (2002). A longitudinal analysis of friendships and substance use: Bidirectional influence from adolescence to adulthood. *Developmental psychology, 38*(4), 480-491.
- Dishion, T. J., Patterson, G. R., & Reid, J. R. (1988). Parent and peer factors associated with drug sampling in early adolescence: Implications for treatment. *NIDA Res Monogr, 77*, 69-93.
- Dishion, T. J., Spracklen, K. M., Andrews, D. W., & Patterson, G. R. (1996). Deviancy training in male adolescent friendships. *Behavior Therapy, 27*(3), 373-390.
- Dube, S. R., Miller, J. W., Brown, D. W., Giles, W. H., Felitti, V. J, Dong, M., & Anda, R. F. (2006). Adverse childhood experiences and the association with ever using alcohol and initiating alcohol use during adolescence. *Journal of Adolescent Health, 38*(4), 444.
- Duncan, G. J., Wilkerson, B., & England, P. (2006). Cleaning up their act: The effects of marriage and cohabitation on licit and illicit drug use. *Demography, 43*(4), 691-710.
- Dunn, M. E., & Yniguez, R. M. (1999). Experimental demonstration of the influence of alcohol advertising on the activation of alcohol expectancies in memory among fourth- and fifth-grade children. *Experimental and Clinical Psychopharmacology, 7*(4), 473-483.
- Eaton, D. K., Kann, L., Kinchen, S., et al. (2006). Youth risk behavior surveillance: United States, 2005. *MMWR Surveillance Summary, 55* (5): 1-108.
- Ennett, S. T., Bauman, K. E., Hussong, A., Faris, R., Foshee, V. A., Cai, L., & DuRant, R. H. (2006). The peer context of adolescent substance use: Findings from social network analysis. *Journal of research on adolescence, 16*(2), 159-186.
- Eschenbeck, H., Kohlmann, C. W., & Lohaus, A. (2007). Gender differences in coping strategies in children and adolescents. *Journal of Individual Differences, 28*(1), 5-18.
- Fang, X., Li, X., Stanton, B., & Dong, Q. (2003). Social network position and smoking experimentation among Chinese adolescents. *American Journal of Health Behavior, 27*(3), 257–267.

- Feiring, C. (1996). Concepts of romance in 15-year-old adolescents. *Journal of Research on Adolescence*, 6, 181-200.
- Feiring, C., & Lewis, M. (1991). The transition from middle childhood to early adolescence: Sex differences in the social network and perceived competence. *Sex Roles*, 24, 489-509.
- Feldman, S. S., & Cauffman, E. (1999a). Sexual betrayal among late adolescents: Perspectives of the perpetrator and the aggrieved. *Journal of Youth and Adolescence*, 28(2), 235-258.
- Feldman, S. S., & Cauffman, E. (1999b). Your cheatin' heart: Attitudes, behaviors, and correlates of sexual betrayal in late adolescents. *Journal of Research on Adolescence*, 9(3), 227-252.
- Finn, P. R., Zeitouni, N. C., & Pihl, R. O. (1990). Effects of alcohol on psychophysiological hyperreactivity to nonaversive and aversive stimuli in men at high risk for alcoholism. *Journal of Abnormal Psychology*, 99, 79-85.
- Flannery, D. J., Williams, L. L., & Vazsonyi, A. T. (1999). Who are they with and what are they doing? Delinquent behavior, substance use, and early adolescents' after-school time. *American Journal of Orthopsychiatry*, 69(2), 247-253.
- Flory, K., Lynam, D., Milich, R., Leukefeld, C., & Clayton, R. (2004). Early adolescent through young adult alcohol and marijuana use trajectories: Early predictors, young adult outcomes, and predictive utility. *Development and psychopathology*, 16(01), 193-213.
- Ford, M. E. (1982). Social cognition and social competence in adolescence. *Developmental Psychology*, 18, 323-340.
- Ford, D. S., & Carr P. (1990). Psychosocial correlates of alcohol consumption among black college health students. *Journal of Alcohol and Drug Education*, 36 (1), 45-51.
- Friese, B., & Grube, J. (2008). Differences in drinking behavior and access to alcohol between Native American and white adolescents. *Journal of Drug Education*, 38(3), 273-284.
- Furman, W. & Buhrmester, D. (1992). Age and sex differences in perceptions of networks of personal relationships. *Child Development*, 63, 103-115.
- Furman, W., & Collins, W. A. (2008). Adolescent romantic relationships and experiences. In KH Rubin, W Bukowski, B Laursen (Eds.). *Handbook of peer interactions, relationships, and groups*. New York: Guilford.
- Furman, W., Ho, M. J., & Low, S. B. (2007). The rocky road of adolescent romantic experience: Dating and adjustment. In C. M. E. Engels, M. Kerr, & H. Stattin (Eds.). *Friends, lovers, and groups: Key relationships in adolescence* (pp. 61-80). Hoboken, NJ: John Wiley & Sons, Ltd.
- Furman W, & Shaffer L. (2003). The role of romantic relationships in adolescent development. In P. Florsheim (Ed.). *Adolescent romantic relations and sexual behavior: Theory, research, and practical implications* (pp. 3-22). Mahwah, NJ: Erlbaum.
- Furman, W., & Shomaker, L. B. (2008). Patterns of interaction in adolescent romantic relationships: Distinct features and links to other close relationships. *Journal of Adolescence*, 31(6), 771-788.

- Furman, W., & Simon, V. A. (1999). Cognitive representations of adolescent romantic relationships. In W. Furman, B. Brown, & C. Feiring (Eds.), *The development of romantic relationships in adolescence* (pp. 75-98). Cambridge, UK: Cambridge University Press.
- Furman, W., & Simon, V. A. (2008). Homophily in Adolescent Romantic Relationships. In M. Prinstein & K. Dodge (Eds.), *Understanding peer influence in children and adolescents* (pp.203-224).
- Gilligan, C. (1996). The centrality of relationship in human development. In G. Noam & K. Fischer (Eds.), *Development and vulnerability in close relationships* (pp. 237-261). Mahwah, NJ: Lawrence Erlbaum Associates.
- Gillmore, M. R., Catalano, R. F., Morrison, D. M., Wells, E. A., Iritani, B., & Hawkins, J. D. (1990). Racial differences in acceptability and availability of drugs and early initiation of substance use. *The American Journal of Drug and Alcohol Abuse*, 16(3-4), 185-206.
- Giordano, P. C., Manning, W. D., & Longmore, M. A. (2006). Adolescent romantic relationships: An emerging portrait of their nature and developmental significance. In A. C. Crouter, & A. Booth (Eds.), *Romance and sex in emerging adulthood: Risks and opportunities* (pp. 127–150). Mahwah, NJ: Lawrence Erlbaum.
- Gomez, R., Holmberg, K., Bounds, J., Fullarton, C., & Gomez, A. (1999). Neuroticism and extraversion as predictors of coping styles during early adolescence. *Personality and Individual Differences*, 27(1), 3-17.
- Goodman, E., & Capitman, J. (2000). Depressive symptoms and cigarette smoking among teens. *Pediatrics*, 106(4), 748-755.
- Granic, I., & Dishion, T. J. (2003). Deviant talk in adolescent friendships: A step toward measuring a pathogenic attractor process. *Social Development*, 12(3), 314-334.
- Grant, B. (2000). Estimates of US children exposed to alcohol abuse and dependence in the family. *American Journal of Public Health*, 90, 112 – 115.
- Gudonis-Miller, L. C., Lewis, L., Tong, Y., Tu, W., & Aalsma, M. C. (2012). Adolescent romantic couples influence on substance use in young adulthood. *Journal of Adolescence*, 35(3), 638-647.
- Hagan, J. (1991). Destiny and drift: Subcultural preferences, status attainments and the risks and rewards of youth. *American Sociological Review*, 56, 567–82.
- Halpern, C. T., Young, M. L., Waller, M. W., Martin, S. L., & Kupper, L. L. (2004). Prevalence of partner violence in same-sex romantic and sexual relationships in a national sample of adolescents. *Journal of Adolescent Health*, 35(2), 124-131.
- Halpern, C. T., Oslak, S. G., Young, M. L., Martin, S. L., & Kupper, L. L. (2001). Partner violence among adolescents in opposite-sex romantic relationships: Findings from the National Longitudinal Study of Adolescent Health. *American Journal of Public Health*, 91(10), 1679-1685.
- Hand, L. S., & Furman, W. (2009). Rewards and costs in adolescent other-sex friendships: Comparisons to same-sex friendships and romantic relationships. *Social Development*, 18(2), 270-287.

- Hansen, G. L. (1987). Extradysadic relations during courtship. *Journal of Sex Research*, 23, 382-390.
- Harford, T. C., Grant, B. F., Yi, H. Y., & Chen, C. M. (2005). Patterns of DSM-IV alcohol abuse and dependence criteria among adolescents and adults: Results from the 2001 National Household Survey on Drug Abuse. *Alcoholism: Clinical and Experimental Research*, 29(5), 810-828.
- Harper, M. S., Welsh, D. P., & Grello, T. (2002, April). Silencing the self: Depressive symptoms and the loss of self in adolescent romantic relationships. In D. P. Welsh (Chair), *When love hurts: Adolescent romantic relationships and depressive symptoms*. Symposium conducted at the biennial meeting of the Society for Research on Adolescence, New Orleans, LA.
- Haynie, D. L. (2002). Friendship networks and delinquency: The relative nature of peer delinquency. *Journal of Quantitative Criminology*, 18, 99-134.
- Haynie, D. L., Giordano, P. C., Manning, W. D., & Longmore, M. A. (2005). Adolescent romantic relationships and delinquency involvement. *Criminology*, 43(1), 177-210.
- Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, 52(3), 511-524.
- Hazan, C., & Zeifman, D. (1994). Sex and the psychological tether. In K. Bartholomew & D. Perlman (Eds.), *Advances in personal relationships, Volume 5: Attachment processes in adulthood* (pp. 151-180). London: Jessica Kingsley.
- Hazen, E., Schlozman, S., & Beresin, E. (2008). Adolescent Psychological Development A Review. *Pediatrics in Review*, 29(5), 161-168.
- Hill, S., Shen, S., Lowers, L., & Locke, J. (2000). Factors predicting the onset of adolescent drinking in families at high risk for developing alcoholism. *Biological Psychiatry*, 48, 265-275.
- Hill, K. G., White, H. R., Chung, I. J., Hawkins, J. D., & Catalano, R. F. (2000). Early adult outcomes of adolescent binge drinking: Person-and variable-centered analyses of binge drinking trajectories. *Alcoholism: Clinical and Experimental Research*, 24(6), 892-901.
- Hittner, J. B., & Swickert, R. (2006). Sensation seeking and alcohol use: A meta-analytic review. *Addictive behaviors*, 31(8), 1383-1401.
- Hu, L. & Bentler, P.M. (1995). Evaluating model fit. In R.H. Hoyle (Ed.) *Structural Equation Modeling: Concepts, Issues, and Applications*. (pp. 76-99) Thousand Oaks, CA: Sage.
- Hunter, S. C., & Boyle, J. M. E. (2004). Appraisal and coping strategy use in victims of school bullying. *British Journal of Educational Psychology*, 74, 83-107.
- Hussong, A., Bauer, D., & Chassin, L. (2008). Telescoped trajectories from alcohol initiation to disorder in children of alcoholic parents. *Journal of Abnormal Psychology*, 117(1), 63.
- Hussong, A. M., & Chassin, L. (1994). The stress-negative affect model of adolescent alcohol use: Disaggregating negative affect. *Journal of Studies on Alcohol*, 55, 707-718.

- Hussong, A. M., Hicks, R. E., Levy, S. A., Curran, P. J. (2001). Specifying the relations between affect and heavy alcohol use among young adults. *Journal of Abnormal Psychology, 110*, 449-461.
- Ingram, J. R., Patchin, J. W., Huebner, B. M., McCluskey, J. D., & Bynum, T. S. (2007). Parents, friends, and serious delinquency: An examination of direct and indirect effects among at risk early adolescents. *Criminal Justice Review, 32*(4), 380-400.
- Jaccard, J., Blanton, H., & Dodge, T. (2005). Peer influences on risk behavior: an analysis of the effects of a close friend. *Developmental Psychology, 41*(1), 135.
- Janssen, T., Larsen, H., Vollebergh, W. A., & Wiers, R. W. (2015). Longitudinal relations between cognitive bias and adolescent alcohol use. *Addictive Behaviors, 44*, 51-57.
- Jarvinen, D. W., & Nicholls, J. G. (1996). Adolescents' social goals, beliefs about the causes of social success, and satisfaction in peer relations. *Developmental Psychology, 32*, 435-441.
- Jessor, R. (1992). Risk behavior in adolescence: A psychosocial framework for understanding and action. *Developmental Review, 12*(4), 374-390.
- Johnston, L., O'Malley, P., Bachman, J., & Schulenberg, J. (2005). Monitoring the Future national results on adolescent drug use: Overview of key findings, 2004. (NIH Publication No. 05-5727) Bethesda MD: National Institute on Drug Abuse.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2007). Monitoring the Future national survey results on drug use, 1975-2006: Volume I, Secondary school students (NIH Publication No. 07-6205). Bethesda, MD: National Institute on Drug Abuse.
- Johnston, L. D., O'Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2014). Monitoring the Future: National Results on Drug Use—2013 Overview: Key Findings on Adolescent Drug Use. The University of Michigan Institute for Social Research.
- Jouriles, E. N., McDonald, R., Garrido, E., Rosenfield, D., & Brown, A. S. (2005). Assessing aggression in adolescent romantic relationships: can we do it better?. *Psychological assessment, 17*(4), 469.
- Joyner, K., & Udry, J. R. (2000). You don't bring me anything but down: Adolescent romance and depression. *Journal of Health and Social Behavior, 369-391*.
- Karwacki, S. B., & Bradley, J. R. (1996). Coping, drinking motives, goal attainment expectancies and family models in relation to alcohol use among college students. *Journal of Drug Education, 26*(3), 243-255.
- King, K. M., & Chassin, L. (2004). Mediating and moderated effects of adolescent behavioral undercontrol and parenting in the prediction of drug use disorders in emerging adulthood. *Psychology of Addictive Behaviors, 18*(3), 239.
- King, S. M., Iacono, W. G., & McGue, M. (2004). Childhood externalizing and internalizing psychopathology in the prediction of early substance use. *Addiction, 99*(12), 1548-1559.
- Knafo, A., & Schwartz, S. H. (2003). Parenting and adolescents' accuracy in perceiving

- parental values. *Child Development*, 74(2), 595-611.
- Kreager, D. A., & Haynie, D. L. (2011). Dangerous liaisons? Dating and drinking diffusion in adolescent peer networks. *American Sociological Review*, 76(5), 737-763.
- Kushner, M. G., Sher, K. J. (1993). Comorbidity of alcohol and anxiety disorders among college students: Effects of gender and family history of alcoholism. *Addictive Behavior*, 18, 543-552.
- Laird, R. D., Pettit, G. S., Bates, J. E., & Dodge, K. A. (2003). Parents' monitoring-relevant knowledge and adolescents' delinquent behavior: Evidence of correlated developmental changes and reciprocal influences. *Child Development*, 74(3), 752-768.
- Larson, R. W., & Asmussen, L. (1991). Anger, worry, and hurt in early adolescence: An enlarging world of negative emotions. In M.E. Colten & S. Gore (Eds.), *Adolescent stress: Causes and consequences* (pp. 21-41). New York: Aldine de Gruyter.
- Larson, R. W., Clore, G. L., & Wood, G. A. (1999). The emotions of romantic relationships: Do they wreak havoc on adolescents? In W. Furman, B. Brown, & C. Feiring (Eds.), *The development of romantic relationships in adolescence* (pp. 19-49). Cambridge, UK: Cambridge University Press.
- Larson, R. W., & Richards, M. (1998). Waiting for the weekend: Friday and Saturday night as the emotional climax of the week. In A. Crouter, R. Larson (Eds.), *Temporal rhythms in adolescence: Clocks, calendars, and the coordination of daily life*, (pp. 37-51). San Francisco, CA: Jossey-Bass.
- Larson, R. W., Richards, M. H., Moneta, G., Holmbeck, G., & Duckett, E. (1996). Changes in adolescents' daily interactions with their families from ages 10 to 18: Disengagement and transformation. *Developmental Psychology*, 32(4), 744.
- Laurent, J., Catanzaro, S. J., & Callan, M. K. (1997). Stress, alcohol-related expectancies and coping preferences: A replication with adolescents of the Cooper et al.(1992) model. *Journal of Studies on Alcohol and Drugs*, 58(6), 644.
- Laursen, B., & Jensen-Campbell, L. A. (1999). The nature and functions of social exchange in adolescent romantic relationships. In W. Furman, B. Brown, & C. Feiring (Eds.), *The development of romantic relationships in adolescence* (pp. 19-49). Cambridge, UK: Cambridge University Press.
- Laursen, B., & Williams, V. A. (1997). Perceptions of interdependence and closeness in family and peer relationships among adolescents with and without romantic partners. In S. Shulman, & W. A. Collins (Eds.), *Romantic relationships in adolescence: Developmental perspectives* (pp. 3-20). San Francisco, CA: Jossey-Bass.
- Lee, M. R., Chassin, L., & Villalta, I. K. (2013). Maturing out of alcohol involvement: Transitions in latent drinking statuses from late adolescence to adulthood. *Development and Psychopathology*, 25(4), 1137-1153.
- Lee, M. R., Chassin, L., & MacKinnon, D. (2010). The effect of marriage on young adult heavy drinking and its mediators: Results from two methods of adjusting for selection into marriage. *Psychology of Addictive Behaviors*, 24(4), 712-718.

- Lonardo, R. A., Giordano, P. C., Longmore, M. A., & Manning, W. D. (2009). Parents, friends, and romantic partners: Enmeshment in deviant networks and adolescent delinquency involvement. *Journal of youth and adolescence*, 38(3), 367-383.
- Longmore, M. A., Taylor, H. L., Giordano, P. C., & Manning, W. D. (2008). Adolescent romantic relationships and alcohol use. Submitted to *Journal of Health and Social Behavior*.
- MacPherson, L., Magidson, J. F., Reynolds, E. K., Kahler, C. W., & Lejuez, C. W. (2010). Changes in sensation seeking and risk-taking propensity predict increases in alcohol use among early adolescents. *Alcoholism: Clinical and Experimental Research*, 34(8), 1400-1408.
- Marmorstein, N. R. (2009). Longitudinal associations between alcohol problems and depressive symptoms: early adolescence through early adulthood. *Alcoholism: Clinical and Experimental Research*, 33(1), 49-59.
- Mason, C. A., Cauce, A. M., Gonzales, N., & Hiraga, Y. (1994). Adolescent problem behavior: The effect of peers and the moderating role of father absence and the mother-child relationship. *American Journal of Community Psychology*, 22, 723-743.
- Mays, D., DePadilla, L., Thompson, N. J., Kushner, H. I., & Windle, M. (2010). Sports participation and problem alcohol use: a multi-wave national sample of adolescents. *American Journal of Preventive Medicine*, 38(5), 491-498.
- McGue, M., Sharma, A., & Benson, P. (1996). Parent and sibling influences on adolescent alcohol use and misuse: Evidence from a U.S. adoption cohort. *Journal of Studies on Alcohol*, 57, 8 - 18.
- Mercken, L., Snijders, T. A., Steglich, C., Vartiainen, E., & De Vries, H. (2010). Dynamics of adolescent friendship networks and smoking behavior. *Social Networks*, 32(1), 72-81.
- Miller, G. R., & Boster, F. (1988). Persuasion in personal relationships. In S. Duck (Ed.). *A handbook of personal relationships* (pp. 275-288). London: John Wiley & Sons.
- Millsap, R. E. and Kim, H. (in press). Factorial Invariance Across Multiple Populations in Discrete and Continuous Data. In P. Irwing, T. Booth & D. Hughes (Eds.), *The Wiley Handbook of Psychometric Testing*. London: John Wiley & Sons.
- Millsap, R. E., & Yun-Tein, J. (2004). Assessing factorial invariance in ordered-categorical measures. *Multivariate Behavioral Research*, 39(3), 479-515.
- Miller, S., Lansford, J. E., Costanzo, P., Malone, P. S., Golonka, M., & Killeya-Jones, L. A. (2009). Early adolescent romantic partner status, peer standing, and problem behaviors. *The Journal of Early Adolescence*, 29(6), 839-861.
- Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology*, 13, 355-375.
- Moffitt, T. E., Caspi, A., Rutter, M., & Silva, P. A. (2001). *Sex differences in antisocial behaviour: Conduct disorder, delinquency, and violence in the Dunedin Longitudinal Study*, Cambridge, UK: Cambridge University Press.

- Monroe, S. M., Rohde, P., Seeley, J. R., & Lewinsohn, P. M. (1999). Life events and depression in adolescence: Relationship loss as a prospective risk factor for first onset of major depressive disorder. *Journal of Abnormal Psychology, 108*, 606-614.
- Moos, R. H., & Billings, A. G. (1982). Children of alcoholics during the recovery process: Alcoholic and matched control families. *Addictive Behaviors, 7*, 155 – 163.
- Muthén, L. K., & Muthén, B. O. (1998-2011). Mplus User's Guide. Sixth Edition. Los Angeles, CA: Muthén & Muthén.
- Mylant, M., Ide, B., Cuevas, E., & Meehan, M. (2002). Adolescent children of alcoholics: vulnerable or resilient? *Journal of the American Psychiatric Nurses Association, 8*(2), 57-64.
- Nash, S. G., McQueen, A., & Bray, J. H. (2005). Pathways to adolescent alcohol use: Family environment, peer influence, and parental expectations. *Journal of Adolescent Health, 37*(1), 19-28.
- National Highway Traffic Safety Administration. (2000). Traffic Safety Facts, 1999—Young Drivers. Washington, DC: U.S. Department of Transportation.
- Newcomb, M. D. and McGee, L. (1989). Adolescent alcohol use and other delinquent behaviors: a one year longitudinal analysis controlling for sensation seeking. *Criminal Justice and Behavior, 16*(3), 345-369.
- Newlin, D. B., Miles, D. R., van den Bree, M. B. (2000). Environmental transmission of DSM-IV substance use disorders in adoptive and stepfamilies. *Alcoholism: Clinical and Experimental Research, 24*, 1785-1794.
- Nichter, B., & Chassin, L. (2015). Separate dimensions of anxiety differentially predict alcohol use among male juvenile offenders. *Addictive Behaviors, 50*, 144-148.
- Nolen-Hoeksema, S. (1994). An interactive model for the emergence of gender differences in depression in adolescence. *Journal of Research on Adolescence, 4*(4), 519-534.
- Nolen-Hoeksema, S., & Girgus, J. S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin, 115*(3), 424-443.
- Nydick, A., & Cornelius, R. (1984). What we talk about when we talk about love. Paper presented at the Second International Conference on Personal Relationships. Madison, WI.
- Office of the Surgeon General. Press Release: "U.S. Surgeon General Releases Advisory on Alcohol Use in Pregnancy, February 21, 2005." Available at: www.hhs.gov/surgeongeneral/pressreleases/sg02222005.html.
- Olweus, D., & Endresen, I. M. (1998). The importance of sex-of-stimulus object: Age trends and sex differences in empathetic responsiveness. *Social Development, 7*, 370–388.
- O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1984). Period, age, and cohort effects on substance use among American youth, 1976-82. *American Journal of Public Health, 74*(7), 682-688.
- O'Malley, P. M., Johnston, L. D., & Bachman, J. G. (1998). Alcohol use among adolescents. *Alcohol, Health, & Research World, 22*, 85-93.

- Pardini, D., White, H. R., & Stouthamer-Loeber, M. (2007). Early adolescent psychopathology as a predictor of alcohol use disorders by young adulthood. *Drug and Alcohol Dependence*, 88, S38-S49.
- Patton, G. C., McMorris, B. J., Toumbourou, J. W., Hemphill, S. A., Donath, S., & Catalano, R. F. (2004). Puberty and the onset of substance use and abuse. *Pediatrics*, 114, 300–306.
- Paul, E. L., & White, K. M. (1990). The development of intimate relationships in late adolescence. *Adolescence*, 25, 375-399.
- Pearson, M., & West, P. (2003). Drifting smoke rings: Social network analysis and Markov processes in a longitudinal study of friendship groups and risk-taking. *Connections*, 25(2), 59–76.
- Quigley, B. M., & Collins, R. L. (1999). The modeling of alcohol consumption: a meta-analytic review. *Journal of studies on alcohol*, 60(1), 90-98.
- Raley, R. K., Crissey, S., & Muller, C. (2007). Of sex and romance: Late adolescent relationships and young adult union formation. *Journal of Marriage and Family*, 69(5), 1210-1226.
- Recklitis, C. J., & Noam, G. G. (1999). Clinical and developmental perspectives on adolescent coping. *Child Psychiatry and Human Development*, 30(2), 87-101.
- Richards, M. H., Crowe, P. A., Larson, R., & Swarr, A. (1998). Developmental patterns and gender differences in the experience of peer companionship during adolescence. *Child Development*, 69(1), 154-163.
- Rodgers, J. L. (1996). Sexual transitions in adolescence. In J. A. Graber, J. Brooks-Gunn, & A. C. Peterson (Eds.), *Transitions through adolescence: Interpersonal domains and context* (pp. 85-110). Mahwah, NJ: Lawrence Erlbaum Associates.
- Rohde, P., & Andrews, J. A. (2006). *Substance use disorders*. New York: Routledge/Taylor & Francis.
- Roosa, M. W., Sandler, I. N., Beals, J., & Short, J. T. (1988). Risk status of adolescent children of problem drinking parents. *American Journal of Community Psychology*, 16, 225 – 238.
- Roscoe, B., Kennedy, D., & Pope, T. (1987). Adolescents' views of intimacy: Distinguishing intimate from nonintimate relationships. *Adolescence*, 22, 511-516.
- Rose, A. J., & Asher, S. R. (2004). Children's strategies and goals in response to help-giving and help-seeking tasks within a friendship. *Child Development*, 75(3), 749-763.
- Rosenfield, S. (1999). Splitting the difference: Gender, the self, and mental health." In C. S. Aneshensel & J. C. Phelan (Eds.), *Handbook of the sociology of mental health* (Pp. 209-24). New York: Kluwer Academic/Plenum Publishers.
- Roth, M. A. & Parker, J. G. (2001). Affective and behavioral responses to friends who neglect their friends for dating partners: Influences of gender, jealousy, and perspective. *Journal of Adolescence*, 24, 281-296.
- Rothman, E. F., Reyes, L. M., Johnson, R. M., & LaValley, M. (2011). Does the alcohol make

- them do it? Dating violence perpetration and drinking among youth. *Epidemiologic Reviews*, 34(1), 103-119.
- Rubin K.H & Mills, R. S. (1988). The many faces of social isolation. *Journal of Consulting and Clinical Psychology* 56, 916-92.
- Rutherford, M. J., Cacciola, J. S., Alterman, A. I., McKay, J. R., & Cook, T. J. (1997). Young men's perceived quality of parenting based on familial history of alcoholism. *Journal of Child & Adolescent Substance Abuse*, 6(3), 43-56.
- Sartor, C. E., Lynskey, M. T., Heath, A. C., Jacob, T., True, W. (2007). The role of childhood risk factors in initiation of alcohol use and progression to alcohol dependence. *Addiction*, 102(2), 216-225.
- Sayette, M. A. (1999). Does drinking reduce stress? *Alcohol Research and Health*, 23(4), 250-255.
- Scheier, L.M., Botvin, G.J., Griffin, K.W., & Diaz, T. (2000). Dynamic growth models of self-esteem and adolescent alcohol use. *Journal of Early Adolescence*, 20, 178–209.
- Schell, T. L., Martino, S. C., Ellickson, P. L., Collins, R. L., & McCaffrey, D. (2005). Measuring developmental changes in alcohol expectancies. *Psychology of Addictive Behaviors*, 19(2), 217.
- Schmidt, A., Barry, K. L., & Fleming, M. F. (1995). Detection of problem drinkers: the alcohol use disorders identification test (AUDIT). *Southern Medical Journal*, 88(1), 52-59.
- Schulte, M. T., Ramo, D., & Brown, S. A. (2009). Gender differences in factors influencing alcohol use and drinking progression among adolescents. *Clinical psychology review*, 29(6), 535-547.
- Seiffge-Krenke, I. (2013). *Stress, coping, and relationships in adolescence*. Psychology Press.
- Selzer, M. L. (1971). The Michigan Alcoholism Screening Test: The quest for a new diagnostic instrument. *American journal of Psychiatry*, 127(12), 1653-1658.
- Sharabani, R., Gershoni, R., & Hofman, J. E. (1981). Girlfriend, boyfriend: Age and sex differences in intimate friendship. *Developmental Psychology*, 17, 800-808.
- Shaver, P. R., & Hazan, C. (1988). A biased overview of the study of love. *Journal of Social and Personal Relationships*, 5(4), 473-501.
- Shaver, P. R., Hazan, C., & Bradshaw, D. (1988). The integration of three behavioral systems. *The Psychology of Love*, 68-99.
- Sheppard, W., Nelson, E., & Andreoli-Mathie, V. (1995). Dating relationships and infidelity: Attitudes and behavior. *Journal of Sex and Marital Therapy*, 21, 202-212.
- Sher, K. J. (1991). *Children of alcoholics: A critical appraisal of theory and research*. Chicago: The University of Chicago Press.
- Schuckit, M. A., & Smith, T. L. (2001). The clinical course of alcohol dependence associated with a low level of response to alcohol. *Addiction*, 96(6), 903-910.

- Shulman, S., & Scharf, M. (2000). Adolescent romantic behaviors and perceptions: Age- and gender-related differences, and links with family and peer relationships. *Journal of Research on Adolescence*, *10*(1), 99-118.
- Shin, S. H., Edwards, E. M., & Heeren, T. (2009). Child abuse and neglect: Relations to adolescent binge drinking in the national longitudinal study of Adolescent Health (Add Health) Study. *Addictive Behaviors*, *34*(3), 277-280.
- Sieving, R. E., Perry, C. L., & Williams, C. L. (2000). Do friendships change behaviors, or do behaviors change friendships? Examining paths of influence in young adolescents' alcohol use. *Journal of Adolescent Health*, *26*(1), 27-35.
- Simon, V. A., Aikins, J. W., & Prinstein, M. J. (2008). Romantic partner selection and socialization during early adolescence. *Child Development*, *79*(6), 1676-1692.
- Simpson, J. A., Rholes, W. S., & Nelligan, J. S. (1992). Support seeking and support giving within couples in an anxiety-provoking situation: The role of attachment styles. *Journal of Personality and Social Psychology*, *62*(3), 434.
- Smetana, J. G., Crean, H. F., & Daddis, C. (2002). Family processes and problem behaviors in middle-class African American adolescents. *Journal of Research on Adolescence*, *12*(2), 275-304.
- Stark, L. J., Spirito, A., Williams, C. A., & Guevremont, D. C. (1989). Common problems and coping strategies I: Findings with normal adolescents. *Journal of Abnormal Child Psychology*, *17*(2), 203-212.
- Stattin, H., & Kerr, M. (2000). Parental monitoring: A reinterpretation. *Child Development*, *71*(4), 1072-1085.
- Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. *Developmental Review*, *28*(1), 78-106.
- Steinberg, L. (2010). A dual systems model of adolescent risk-taking. *Developmental Psychobiology*, *52*(3), 216-224.
- Stephoe, A., Wardle, J., Pollard, T. M., Cnaan, L., & Davies, G. J. (1996). Stress, social support and health-related behavior: a study of smoking, alcohol consumption and physical exercise. *Journal of Psychosomatic Research*, *41*(2), 171-180.
- Stevens, J. P. (1984). Outliers and influential data points in regression analysis. *Psychological Bulletin*, *95*(2), 334-344.
- Stice, E., & Gonzales, N. (1998). Adolescent temperament moderates the relation of parenting to antisocial behavior and substance use. *Journal of Adolescent Research*, *13*(1), 5-31.
- Substance Abuse and Mental Health Services Administration (SAMHSA) (2013). Results from the 2012 National Survey on Drug Use and Health: Summary of national findings. NSDUH Series H-46., HHS Publication No. (SMA) 13-4795. Rockville, MD.
- Sung, M., Erkanli, A., Angold, A., & Costello, E. J. (2004). Effects of age at first substance use and psychiatric comorbidity on the development of substance use disorders. *Drug and Alcohol Dependence*, *75*(3), 287-299.

- Svensson, R. (2003). Gender differences in adolescent drug use: The impact of parental monitoring and peer deviance. *Youth & Society, 34*(3), 300-329.
- Thomas, B. S., & Hsiu, L. T. (1993). The role of selected risk factors in predicting adolescent drug use and its adverse consequences. *Substance Use & Misuse, 28*(14), 1549-1563.
- Timberlake, D. S., Hopfer, C. J., Rhee, S. H., Friedman, N. P., Haberstick, B. C., Lessem, J. M., & Hewitt, J. K. (2007). College attendance and its effect on drinking behaviors in a longitudinal study of adolescents. *Alcoholism: Clinical and Experimental Research, 31*(6), 1020-1030.
- Tolpin, L. H., Cohen, L. H., Gunthert, K. C., & Farrehi, A. (2006). Unique effects of depressive symptoms and relationship satisfaction on exposure and reactivity to daily romantic relationship stress. *Journal of Social and Clinical Psychology, 25*(5), 565-583.
- Toumbourou, J. W., Stockwell, T., Neighbors, C., Marlatt, G. A., Sturge, J., & Rehm, J. (2007). Interventions to reduce harm associated with adolescent substance use. *The Lancet, 369*(9570), 1391-1401.
- Trost, M. R., Langan, E. J., & Kellar-Guenther, Y. (1999). Not everyone listens when you 'just say no': Drug resistance in relational context. *Journal of Applied Communication Research, 27*, 120-138.
- Tubman, J. G. (1993). A pilot study of school-age children of men with moderate to severe alcohol dependence: Maternal distress and child outcomes. *Journal of Child Psychiatry, 34*, 729 – 741.
- Tucker, C. J., Updegraff, K. A., McHale, S. M., & Crouter, A. C. (1999). Older siblings as socializers of younger siblings' empathy. *Journal of Early Adolescence, 19*, 176–198.
- UNC Carolina Population Center. Questions about Field Work. Retrieved from <http://www.cpc.unc.edu/projects/addhealth/faqs/aboutfieldwork>.
- US Surgeon General (1981). Advisory on alcohol and pregnancy. *FDA Drug Bulletin, 11*, 9--10.
- Van Tilburg, M. A. L., Unterberg, M. L., & Vingerhoets, A. J. J. M. (2002). Crying during adolescence: The role of gender, menarche, and empathy. *British Journal of Developmental Psychology, 20*, 77–87.
- Wallace Jr, J. M., & Bachman, J. G. (1991). Explaining racial/ethnic differences in adolescent drug use: the impact of background and lifestyle. *Soc. Probs., 38*, 333.
- Wechsler, H., Dowdall, G. W., Davenport, A., & Rimm, E. B. (1995). A gender-specific measure of binge drinking among college students. *American Journal of Public Health, 85*(7), 982-985.
- Weinberg, N. (2001). Risk factors for adolescent substance abuse. *Journal of Learning Disabilities, 34*(4), 343-351.
- Wells, J. E., Horwood, L. J., & Fergusson, D. M. (2006). Stability and instability in alcohol diagnosis from ages 18 to 21 and ages 21 to 25 years. *Drug and Alcohol Dependence, 81*(2), 157-165.

- Welsh, D. P., Grello, G. M., Harper, M. S. (2003). When love hurts: Depression and adolescent romantic relationships. In P. Florsheim (Ed.), *Adolescent romantic relations and sexual behavior: Theory, research, and practical implications* (pp. 185-211).
- Wills, T. A., & Shiffman, S. (1985). Coping and substance use: A conceptual framework. In S. Shiffman & T. A. Wills (Eds.), *Coping and substance use* (pp. 3-24). Orlando, FL: Academic Press.
- Wills, T. A., Vaccaro, D., & McNamara, G. (1992). The role of life events, family support, and competence in adolescent substance use: A test of vulnerability and protective factors. *American Journal of Community Psychology, 20*, 349-374.
- Wilson-Shockley, S. (1995). *Gender differences in adolescent depression: The contribution of negative affect*. Unpublished master's thesis. University of Illinois at Urbana-Champaign, Champaign, IL.
- Windle, M., & Davies, P. T. (1999). Depression and heavy alcohol use among adolescents: Concurrent and prospective relations. *Development and Psychopathology, 11*(4), 823-844.
- Windle, M., Spear, L. P., Fuligni, A. J., Angold, A., Brown, J. D., Pine, D., Smith, G. T., Giedd, J., & Dahl, R. E. (2008). Transitions into underage and problem drinking: Developmental processes and mechanisms between 10 and 15 years of age. *Pediatrics, 121*, 273- 289.
- Youth Risk Behavior Survey (YRBS). (2013). Trends in the prevalence of alcohol use, national YRBS: 1991-2013. Retrieved from http://www.cdc.gov/healthyyouth/data/yrbs/pdf/trends/us_alcohol_trend_yrbs.pdf.
- Zani, B (1993). Dating and interpersonal relationships in adolescence. In S. Jackson, & H. Rodriguez-Tome (Eds.), *Adolescence and its social worlds* (pp. 95–119). Hillsdale, NJ: Erlbaum.
- Zimmer-Gembeck, M. J., Siebenbruner, J., & Collins, W. A. (2001). Diverse aspects of dating: Associations with psychosocial functioning from early to middle adolescence. *Journal of Adolescence, 24*(3), 313-336.
- Ziyadeh, N. J., Prokop, L. A., Fisher, L. B., Rosario, M., Field, A. E., Camargo, C. A., & Austin, S. B. (2007). Sexual orientation, gender, and alcohol use in a cohort study of US adolescent girls and boys. *Drug and Alcohol Dependence, 87*(2), 119-130.
- Zucker, R. A. (1986). The four alcoholisms: A developmental account of the etiologic process. *Nebraska Symposium on Motivation: Vol. 34. Alcohol and Addictive Behavior* (pp. 27-83). Lincoln: University of Nebraska Press.
- Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensations seeking*. New York: Cambridge University Press.

APPENDIX A

TABLES

Table 1

Descriptive information for study variables: Continuous/count variables

Continuous/Count Variables	Possible Range	Actual Range	Mean (SD)	Skew	Kurtosis
Mother-Adolescent Relationship Quality	1-5	1.50-5	4.66 (.55)	-1.96	4.30
Father-Adolescent Relationship Quality	1-5	1-5	4.45 (.73)	-1.78	3.64
Delinquency	0-15	0-15	3.24 (2.94)	1.12	.94
Peer Alcohol Use	0-3	0-3	1.41 (1.17)	.16	-1.46
Adolescent Age	14-18	14-18	16.09 (1.02)	-.09	-.59
Partner Age	N/A	10-44	16.89 (2.4)	3.40	27.71
Relationship Seriousness	0-8	0-8	6.82 (1.75)	-1.75	2.68
Drinking Consequences: Full Sample (Wave I)	0-9	0-9	1.28 (1.92)	1.48	1.44
Drinking Consequences: Non-Zeroes on Measure (Wave I)	1-9	1-9	3.14 (1.79)	.79	.14
Adolescent Binge Drinking: Full Sample (Wave I)	0-6	0-6	.82 (1.39)	1.75	2.26
Adolescent Binge Drinking: Non-Zeroes on Measure (Wave I)	1-6	1-6	2.37 (1.38)	.79	-.26
Drinking Consequences: Full Sample (Wave II)	0-9	0-9	1.25 (1.95)	1.68	2.30
Drinking Consequences: Non-Zeroes on Measure (Wave II)	1-9	1-9	3.09 (1.92)	1.00	.48
Adolescent Binge Drinking: Full Sample (Wave II)	0-6	0-6	.97 (1.47)	1.47	.84
Adolescent Binge Drinking: Non-Zeroes on Measure (Wave II)	1-6	1-6	2.48 (1.33)	.54	-.71

Note. Total N= 928, but varies across measures. N= 888 for Relationship Seriousness, N= 877 for Mother-Adolescent Relationship Quality, N= 636 for Father-Adolescent Relationship Quality, N=921 for Peer Alcohol Use, N= 928 for Adolescent Binge Drinking: Full Sample (Wave I), N= 321 for Adolescent Binge Drinking: Non-Zeroes on Measure (Wave I), N= 928 for Drinking Consequences: Full Sample (Wave I), N=379 for Adolescent Drinking Consequences: Non-Zeroes on Measure (Wave I), N= 920 for Partner Age, N= 928 for Adolescent Binge Drinking: Full Sample (Wave II), N= 363 for Adolescent Binge Drinking: Non-Zeroes on Measure (Wave II), N= 928 for Drinking Consequences: Full Sample (Wave II), N= 376 for Drinking Consequences: Non-Zeroes on Measure (Wave II),

Table 2
Descriptive information for study variables: Categorical variables

Categorical Variables	
Adolescent Gender	Male: 422 (45.9%) Female: 506 (54.1%)
COA Status	No biological parent was reported to have alcoholism: 598 (84.6%) One or both biological parents were reported to have alcoholism: 143 (15.4%)
Ethnicity	Hispanic: 103 (11.1%) Non-Hispanic: 825 (88.9%)
Race	White only: 591 (63.8%) Black only: 224 (24.2%) Multiracial: 41 (4.4%) Other: 71 (7.7%)
Parents' Marital Outcome	Biological parents married: 343 (47.1%) Biological parents divorced: 203 (27.8%) Biological parents other outcome: 183 (25.1%)
Household Composition	Both biological parents live in household: 407 (49.6%) Both biological parents do not live in household: 414 (50.4%)

Note. Total N= 928, but varies across measures. N= 928 for Adolescent Gender, N= 741 for COA Status, N= 928 for Ethnicity, N= 927 for Race, N= 729 for Parents' Marital Outcome, N= 821 for Household Composition.

Table 3

Correlations among study variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Romantic Relationship Seriousness														
2. Ethnicity														
3. Mother-Adolescent Relationship Quality														
4. Father-Adolescent Relationship Quality														
5. Household Composition														
6. Delinquency														
7. Peer Alcohol Use														
8. Drinking Consequences (Wave 1)														
9. Binge Drinking (Wave 1)														
10. Adolescent Age														
11. Partner Age														
12. COA Status														
13. Adolescent Gender														
14. Drinking Consequences (Wave 2)														
15. Binge Drinking (Wave 2)														

Note. Total N= 928, although *n* varies across measures (See Table 1). **** $p < .001$, *** $p < .01$, ** $p < .05$, † $p < .1$. Ethnicity is coded 0=Non-Hispanic, 1= Hispanic. Household composition is coded 0= both biological parents do not live in household, 1= both biological parents live in household. COA Status is coded 0= no parent participants reported to have an alcohol problem, 1= 1-2 parent participant(s) reported to have an alcohol problem. Gender is coded 0= male, 1=female.

Table 4

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, and Relationship Seriousness

Measure	<i>B(SE B)</i> Poisson	<i>B(SE B)</i> Logistic
Delinquency	.01 (.01)	-.17** (.06)
Black v. White Race	.34** (.13)	1.63*** (.33)
Multiracial v. White Race	-.17 (.21)	.50 (.60)
Other Race v. White Race	.14 (.15)	.58 (.43)
Peer Alcohol Use	.08 (.06)	-.50** (.16)
Wave I Binge Drinking	.12*** (.03)	-.79* (.32)
Partner Age	0 (.02)	.03 (.04)
Adolescent Age	.09* (.04)	-.32* (.14)
Gender	-.16 † (.08)	.14 (.28)
COA Status	-.06 (.12)	.35 (.41)
Relationship Seriousness	-.04† (.02)	-.01 (.06)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 5

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Delinquency Interaction

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.01 (.01)	-.18** (.06)
Black v. White Race	.33* (.13)	1.65*** (.34)
Multiracial v. White Race	-.20 (.22)	.48 (.63)
Other Race v. White Race	.11 (.15)	.57 (.42)
Peer Alcohol Use	.09 (.06)	-.49** (.16)
Wave I Binge Drinking	.12*** (.03)	-.78* (.33)
Partner Age	0 (.02)	.03 (.04)
Adolescent Age	.08* (.04)	-.32* (.14)
Gender	-.16† (.09)	.16 (.28)
COA Status	-.04 (.11)	.39 (.40)
Relationship Seriousness	-.05* (.03)	-.02 (.06)
Relationship Seriousness by Delinquency	.01 (.01)	-.02 (.02)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 6

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Race (Black v. White) Interaction

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.01 (.01)	-.17** (.06)
Black v. White Race	.34** (.13)	1.65*** (.33)
Multiracial v. White Race	-.16 (.21)	.52 (.59)
Other Race v. White Race	.13 (.15)	.59 (.44)
Peer Alcohol Use	.09 (.06)	-.48** (.15)
Wave I Binge Drinking	.12*** (.03)	-.83* (.33)
Partner Age	.01 (.02)	.04 (.04)
Adolescent Age	.09* (.04)	-.31* (.14)
Gender	-.16† (.08)	.14 (.27)
COA Status	-.07 (.11)	.33 (.43)
Relationship Seriousness	-.04 (.02)	.02 (.08)
Relationship Seriousness by Race	0 (.08)	-.22 (.24)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 7

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Peer Alcohol Use Interaction

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.02 (.01)	-.17** (.05)
Black v. White Race	.34** (.12)	1.61*** (.31)
Multiracial v. White Race	-.20 (.21)	.50 (.61)
Other Race v. White Race	.15 (.14)	.62 (.45)
Peer Alcohol Use	.14* (.07)	-.42** (.14)
Wave I Binge Drinking	.10** (.03)	-.90* (.36)
Partner Age	0 (.02)	.04 (.04)
Adolescent Age	.09† (.04)	-.31* (.15)
Gender	-.14† (.09)	.20 (.27)
COA Status	-.03 (.11)	.37 (.45)
Relationship Seriousness	-.07** (.02)	-.02 (.07)
Relationship Seriousness by Peer Alcohol Use	.03* (.01)	.08 (.09)

*** p < .001; **p < .01; *p < .05; †p < .10

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 8

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Wave I Binge Drinking Interaction

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.01 (.01)	-.17** (.06)
Black v. White Race	.33* (.14)	1.60*** (.35)
Multiracial v. White Race	-.18 (.22)	.46 (.63)
Other Race v. White Race	.11 (.15)	.55 (.43)
Peer Alcohol Use	.07 (.06)	-.51** (.16)
Wave I Binge Drinking	.13*** (.04)	-.78 (.38)
Partner Age	0 (.02)	.04 (.04)
Adolescent Age	.08† (.05)	-.32* (.15)
Gender	-.16† (.09)	.11 (.31)
COA Status	-.06 (.10)	.32 (.39)
Relationship Seriousness	-.06* (.02)	-.04 (.07)
Relationship Seriousness by Wave I Binge Drinking	.01 (.01)	-.06 (.09)

*** p < .001; **p < .01; *p < .05; †p < .10

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 9

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Partner Age Interaction

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.01 (.01)	-.18** (.06)
Black v. White Race	.34** (.13)	1.65*** (.33)
Multiracial v. White Race	-.18 (.20)	.48 (.60)
Other Race v. White Race	.14 (.14)	.59 (.43)
Peer Alcohol Use	.08 (.06)	-.49** (.16)
Wave I Binge Drinking	.12*** (.03)	-.82** (.30)
Partner Age	.01 (.01)	.03 (.05)
Adolescent Age	.08† (.04)	-.32* (.14)
Gender	-.17* (.08)	.15 (.28)
COA Status	-.09 (.12)	.29 (.45)
Relationship Seriousness	-.04 (.02)	0 (.08)
Relationship Seriousness by Partner Age	-.02 (.01)	-.01 (.03)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 10

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Adolescent Age Interaction

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.01 (.01)	-0.17** (.06)
Black v. White Race	.34** (.13)	1.63*** (.33)
Multiracial v. White Race	-.18 (.21)	.49 (.61)
Other Race v. White Race	.12 (.15)	.58 (.43)
Peer Alcohol Use	.08 (.06)	-0.49** (.16)
Wave I Binge Drinking	.12*** (.03)	-0.81* (.34)
Partner Age	0 (.02)	.04 (.04)
Adolescent Age	.08* (.04)	-0.32* (.14)
Gender	-0.16 † (.08)	.14 (.27)
COA Status	-.08 (.12)	.30 (.45)
Relationship Seriousness	-.04 (.03)	0 (.07)
Relationship Seriousness by Adolescent Age	-.02 (.03)	.02 (.08)

*** p < .001; **p < .01; *p < .05; †p < .10

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 11

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Adolescent Age by Partner Age Interaction

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.01 (.01)	-.17** (.06)
Black v. White Race	.34* (.13)	1.65*** (.33)
Multiracial v. White Race	-.16 (.21)	.47 (.62)
Other Race v. White Race	.14 (.14)	.56 (.42)
Peer Alcohol Use	.08 (.06)	-.50** (.16)
Wave I Binge Drinking	.12*** (.03)	-.78* (.31)
Partner Age	0 (.02)	.04 (.04)
Adolescent Age	.08* (.04)	-.33* (.14)
Gender	-.16† (.09)	.12 (.28)
COA Status	-.07 (.12)	.36 (.41)
Relationship Seriousness	-.04 † (.02)	-.04 (.07)
Relationship Seriousness by Adolescent Age	0 (.01)	.04 (.03)
Relationship Seriousness by Partner Age		

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 12

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Gender Interaction

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.01 (.01)	-.17** (.06)
Black v. White Race	.33* (.13)	1.6*** (.33)
Multiracial v. White Race	-.16 (.20)	.47 (.60)
Other Race v. White Race	.13 (.15)	.57 (.43)
Peer Alcohol Use	.08† (.06)	-.50** (.16)
Wave I Binge Drinking	.12*** (.03)	-.81* (.32)
Partner Age	0 (.02)	.04 (.04)
Adolescent Age	.08* (.04)	-.32* (.14)
Gender	-.16† (.08)	.15 (.28)
COA Status	-.06 (.11)	.36 (.40)
Relationship Seriousness	-.04 (.03)	.06 (.10)
Relationship Seriousness by Gender	0 (.04)	-.12 (.14)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 13

Poisson and Logistic Regressions of Binge Drinking on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by COA Status Interaction

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.01 (.01)	-.17** (.06)
Black v. White Race	.33* (.13)	1.63*** (.33)
Multiracial v. White Race	-.18 (.22)	.51 (.60)
Other Race v. White Race	.14 (.15)	.57 (.44)
Peer Alcohol Use	.09 (.06)	-.49** (.16)
Wave I Binge Drinking	.12*** (.03)	-.80* (.35)
Partner Age	.01 (.02)	.04 (.04)
Adolescent Age	.08* (.04)	-.31* (.13)
Gender	-.16† (.09)	.15 (.28)
COA Status	-.04 (.12)	.38 (.40)
Relationship Seriousness	-.05* (.02)	.01 (.06)
Relationship Seriousness by COA Status	.05 (.05)	-.15 (.27)

*** p < .001; **p < .01; *p < .05; †p < .10

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 14

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, and Relationship Seriousness.

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.04** (.01)	-.10** (.04)
Black v. White Race	-.04 (.16)	.67*** (.19)
Multiracial v. White Race	.06 (.22)	.54 (.55)
Other Race v. White Race	-.25† (.15)	-.13 (.42)
Peer Alcohol Use	.01 (.05)	-.34** (.12)
Wave I Drinking Consequences	.11*** (.02)	-.45*** (.09)
Partner Age	0 (.02)	.06 (.04)
Adolescent Age	-.02 (.04)	-.33** (.10)
Gender	-.04 (.09)	.04 (.23)
COA Status	-.04 (.12)	.19 (.33)
Relationship Seriousness	-.03† (.02)	.03 (.06)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 15

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Delinquency Interaction.

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.04** (.01)	-.09* (.04)
Black v. White Race	-.05 (.16)	.67*** (.19)
Multiracial v. White Race	0 (.22)	.50 (.56)
Other Race v. White Race	-.28† (.15)	-.16 (.43)
Peer Alcohol Use	.04 (.05)	-.32** (.11)
Wave I Drinking	.11*** (.02)	-.46*** (.09)
Consequences		
Partner Age	.01 (.02)	.06 (.04)
Adolescent Age	-.02 (.04)	-.34** (.10)
Gender	-.05 (.09)	.04 (.22)
COA Status	.02 (.11)	.21 (.33)
Relationship Seriousness	-.06** (.02)	.01 (.05)
Relationship Seriousness	.01* (.01)	.01 (.02)
by Delinquency		

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 16

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Race (Black v. White) Interaction

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.04** (.01)	-.10** (.04)
Black v. White Race	-.04 (.15)	.67*** (.19)
Multiracial v. White Race	.06 (.22)	.53 (.55)
Other Race v. White Race	-.26† (.15)	-.12 (.42)
Peer Alcohol Use	.02 (.05)	-.34** (.12)
Wave I Drinking	.11*** (.02)	-.45*** (.09)
Consequences		
Partner Age	0 (.02)	.05 (.04)
Adolescent Age	-.01 (.04)	-.32** (.10)
Gender	-.04 (.09)	.05 (.23)
COA Status	-.02 (.12)	.20 (.33)
Relationship Seriousness	-.03 (.02)	.02 (.06)
Relationship Seriousness	-.03 (.09)	0 (.14)
by Race		

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 17

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Peer Alcohol Use Interaction

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.04** (.01)	-.10** (.04)
Black v. White Race	-.06 (.16)	.65** (.19)
Multiracial v. White Race	.04 (.21)	.52 (.54)
Other Race v. White Race	-.22 (.16)	-.10 (.43)
Peer Alcohol Use	.07 (.05)	-.29** (.10)
Wave I Drinking	.10*** (.02)	-.48*** (.09)
Consequences		
Partner Age	0 (.02)	.05 (.04)
Adolescent Age	-.01 (.04)	-.33** (.10)
Gender	-.02 (.08)	.07 (.23)
COA Status	.04 (.12)	.23 (.33)
Relationship Seriousness	-.07** (.02)	.01 (.06)
Relationship Seriousness by Peer Alcohol Use	.04** (.01)	.04 (.05)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 18

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Wave I Drinking Consequences Interaction

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.04** (.01)	-.10** (.04)
Black v. White Race	-.03 (.16)	.68*** (.19)
Multiracial v. White Race	.12 (.21)	.55 (.55)
Other Race v. White Race	-.27† (.15)	-.15 (.44)
Peer Alcohol Use	.02 (.05)	-.33** (.11)
Wave I Drinking Consequences	.11*** (.02)	-.46*** (.08)
Partner Age	.01 (.02)	.06 (.04)
Adolescent Age	-.02 (.04)	-.34** (.10)
Gender	-.06 (.09)	.03 (.23)
COA Status	-.05 (.12)	.17 (.33)
Relationship Seriousness	0 (.03)	.04 (.06)
Relationship Seriousness by Wave I Drinking Consequences	-.02† (.01)	-.01 (.06)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 19

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Partner Age Interaction

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.04* (.01)	-.10** (.04)
Black v. White Race	-.03 (.16)	.68*** (.19)
Multiracial v. White Race	.05 (.22)	.53 (.55)
Other Race v. White Race	-.25† (.14)	-.10 (.42)
Peer Alcohol Use	.01 (.05)	-.34** (.12)
Wave I Drinking Consequences	.12*** (.02)	-.45*** (.10)
Partner Age	.01 (.02)	.06 (.05)
Adolescent Age	-.02 (.04)	-.33** (.10)
Gender	-.05 (.09)	.04 (.23)
COA Status	-.04 (.12)	.18 (.33)
Relationship Seriousness	-.02 (.02)	.03 (.06)
Relationship Seriousness by Partner Age	-.02 (.01)	.01 (.02)

*** p < .001; **p < .01; *p < .05; †p < .10

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 20

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Adolescent Age Interaction

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.04** (.01)	-.10** (.04)
Black v. White Race	-.05 (.17)	.65** (.19)
Multiracial v. White Race	.07 (.21)	.53 (.56)
Other Race v. White Race	-.25 (.15)	-.10 (.42)
Peer Alcohol Use	.01 (.05)	-.34** (.12)
Wave I Drinking Consequences	.11*** (.02)	-.45*** (.09)
Partner Age	0 (.03)	.06 (.04)
Adolescent Age	-.01 (.04)	-.32** (.10)
Gender	-.04 (.09)	.05 (.23)
COA Status	-.03 (.12)	.17 (.33)
Relationship Seriousness	-.03 (.02)	.04 (.06)
Relationship Seriousness by Adolescent Age	.01 (.02)	.07 (.06)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 21

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Adolescent Age by Partner Age Interaction.

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.04** (.01)	-.10** (.04)
Black v. White Race	-.05 (.16)	.67*** (.19)
Multiracial v. White Race	.09 (.22)	.54 (.55)
Other Race v. White Race	-.25† (.15)	-.14 (.43)
Peer Alcohol Use	.01 (.05)	-.34** (.12)
Wave I Drinking	.11*** (.02)	-.46*** (.09)
Consequences		
Partner Age	.01 (.02)	.06 (.04)
Adolescent Age	-.01 (.04)	-.33** (.10)
Gender	-.05 (.09)	.03 (.23)
COA Status	-.04 (.12)	.18 (.34)
Relationship Seriousness	-.04† (.02)	.01 (.06)
Relationship Seriousness	.02 (.02)	.02 (.04)
by Adolescent Age		
by Partner Age		

*** p < .001; **p < .01; *p < .05; †p < .10

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 22

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by Gender Interaction

Measure	<i>B</i> (<i>SE B</i>) Poisson	<i>B</i> (<i>SE B</i>) Logistic
Delinquency	.04** (.01)	-.10* (.04)
Black v. White Race	-.04 (.16)	.67*** (.19)
Multiracial v. White Race	.08 (.21)	.52 (.54)
Other Race v. White Race	-.26† (.14)	-.13 (.43)
Peer Alcohol Use	.02 (.05)	-.34** (.12)
Wave I Drinking Consequences	.11*** (.02)	-.46*** (.09)
Partner Age	.01 (.02)	.06 (.04)
Adolescent Age	-.02 (.04)	-.33** (.10)
Gender	-.05 (.09)	.04 (.22)
COA Status	-.02 (.12)	.20 (.33)
Relationship Seriousness	.01 (.03)	.06 (.10)
Relationship Seriousness by Gender	-.07* (.03)	-.07 (.10)

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

Table 23

Poisson and Logistic Regressions of Drinking Consequences on Covariates, Wave I Controls, Moderators, Relationship Seriousness, and the Relationship Seriousness by COA Status

Interaction

Measure	<i>B(SE B) Poisson</i>	<i>B(SE B) Logistic</i>
Delinquency	.04** (.01)	-.10** (.04)
Black v. White Race	-.05 (.16)	.67*** (.19)
Multiracial v. White Race	.05 (.22)	.53 (.55)
Other Race v. White Race	-.25† (.15)	-.12 (.42)
Peer Alcohol Use	.03 (.05)	-.33** (.12)
Wave I Drinking	.11*** (.02)	-.45*** (.09)
Consequences		
Partner Age	.01 (.02)	.06 (.04)
Adolescent Age	-.02 (.04)	-.33** (.10)
Gender	-.04 (.09)	-.05 (.23)
COA Status	-.01 (.12)	.20 (.33)
Relationship Seriousness	-.04* (.02)	.02 (.07)
Relationship Seriousness	.07 (.07)	0 (.17)
by COA Status		

*** p < .001; **p < .01; *p < .05; †p < .10

Note. Race is dummy coded such that White is the reference group (i.e., White= 0). Gender is coded male= 0, female= 1.

APPENDIX B

RELATIONSHIP SERIOUSNESS: ORIGINAL SCALE

Instructions provided to participants: "Please look at the cards given to you earlier, and first take out all the cards that describe things that have NOT happened in your romantic relationship with {INITIALS}. Type in their letters just as the interviewer did earlier, and then set these cards aside."

Responses:

0= Card Rejected

1= Card Kept

- A. We went out together in a group.
- B. I met my partner's parents.
- C. I told other people that we were a couple.
- D. I saw less of my other friends so I could spend more time with my partner.
- E. We went out together alone.
- F. We held hands.
- G. I gave my partner a present.
- H. My partner gave me a present.
- I. I told my partner that I loved him or her.
- J. My partner told me that he or she loved me.
- K. We thought of ourselves as a couple.

APPENDIX C

RELATIONSHIP SERIOUSNESS: MODIFIED SCALE

- A. We went out together in a group.
- B. I met my partner's parents.
- C. I told other people that we were a couple.
- D. We went out together alone.
- E. We held hands.
- F. I gave my partner a present and/or my partner gave me a present.
- G. I told my partner that I loved him or her and/or my partner told me that he or she loved me.
- H. We thought of ourselves as a couple.

APPENDIX D
DELINQUENCY

Response Scale:

0= never

1= 1 or 2 times

2= 3 or 4 times

3= 5 or more times

1. In the past 12 months, how often did you paint graffiti or signs on someone else's property or in a public place?
2. In the past 12 months, how often did you deliberately damage property that didn't belong to you?
3. In the past 12 months, how often did you lie to your parents or guardians about where you had been or whom you were with?
4. How often did you take something from a store without paying for it?
5. How often did you get into a serious physical fight?
6. How often did you hurt someone badly enough to need bandages or care from a doctor or nurse?
7. How often did you run away from home?
8. How often did you drive a car without its owner's permission?
9. In the past 12 months, how often did you steal something worth more than \$50
10. How often did you go into a house or building to steal something?
11. How often did you use or threaten to use a weapon to get something from someone?
12. How often did you sell marijuana or other drugs?
13. How often did you steal something worth less than \$50
14. In the past 12 months, how often did you take part in a fight where a group of your friends was against another group?
15. How often were you loud, rowdy, or unruly in a public place?

APPENDIX E
DRINKING CONSEQUENCES

Response Scale:

0= never

1= once

2= twice

3= 3-4 times

4= 5 or more times

Over the past 12 months, how many times has each of the following things happened?

1. You got into trouble with your parents because you had been drinking.
2. You've had problems at school or with school work because you had been drinking.
3. You had problems with your friends because you had been drinking.
4. You had problems with someone you were dating because you had been drinking.
5. You did something you later regretted because you had been drinking.

Over the past 12 months, how many times...

6. Were you hung over?
7. Were you sick to your stomach or threw up after drinking?
8. Did you get into a sexual situation you later regretted because you had been drinking?
9. Did you get into a physical fight because you had been drinking?