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John Stogner, J. Mitchell Miller, Bonnie S. Fisher, Eric A. Stewart &
Christopher J. Schreck

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Peer Group Delinquency and Sexual Victimization: Does Popularity Matter?

JOHN STOGNER

*Department of Criminal Justice and Criminology, University of North Carolina at Charlotte,
Charlotte, North Carolina, USA*

J. MITCHELL MILLER

*Department of Criminal Justice, University of Texas at San Antonio, San Antonio,
Texas, USA*

BONNIE S. FISHER

School of Criminal Justice, University of Cincinnati, Cincinnati, Ohio, USA

ERIC A. STEWART

*Department of Criminology and Criminal Justice, Florida State University, Tallahassee,
Florida, USA*

CHRISTOPHER J. SCHRECK

*Department of Criminal Justice, Rochester Institute of Technology, Rochester,
New York, USA*

Though a large body of research has found that peer social network characteristics influence both offending and victimization, relatively little is known about the influence of social network characteristics on adolescent sexual victimization. Attractiveness and sociability largely indicate popularity for teenage females, which in turn leads to earlier onset of dating, greater dating options, and potential risk of sexual victimization—an observation not tested in the criminological and criminal justice literature. We suggest and evaluate 2 competing hypotheses: that popularity within a network insulates females from sexual victimization and that popularity may increase exposure to delinquent others and facilitate sexual victimization. Results suggest that popularity does not have a consistent effect but instead that its role is conditioned by

Address correspondence to J. Mitchell Miller, Department of Criminal Justice, University of Texas at San Antonio, 501 C. Chavez Blvd., San Antonio, TX 78207, USA. E-mail: jm.miller@utsa.edu

the deviance of the network. Popularity is associated with an increase in the likelihood of victimization when peer deviance is high but with a decrease when peer deviance is low. We further demonstrate that an interaction between a female's own drinking and the proportion of her friends that are male strongly affects her likelihood of sexual victimization. Implications for policy and future research are explored.

KEYWORDS alcohol use, gender homophily, peer networks, popularity, sexual victimization

INTRODUCTION

After early sociological attention to social network group effects on individuality in urban settings and the social geometry of groups (Moreno 1947; Simmel 1922), research on social networks extended to youth deviance and delinquency topics through differential association (Sutherland 1947), subcultural (Cloward and Ohlin 1960; Cohen 1955; Miller 1958), and social learning (Akers 1973; Akers et al. 1979; Burgess and Akers 1966) perspectives. By the mid-1970s, though, the rise of control theory (Hirschi 1969) and increased reliance on self-reported behavior facilitated individual- rather than group-centered delinquency research. Research on the nature of group delinquency rebounded in less than a decade, as evidenced by Krohn's (1985) network analysis perspective that integrated differential association and control theories to distinguish between individual contact-oriented *personal* networks and relationship-based *social* networks more capable of effecting constraint and conformity in individuals.

Subsequent research has affirmed and firmly established the peer group as a strong correlate of delinquency (Berndt and Keefe 1995; Haynie and Osgood 2005; Miller 2010; Thornberry et al. 1994; Warr and Stafford 1991). Criminologists and criminal justice scientists have utilized various theories to empirically demonstrate peer group effects on various delinquent and criminal behaviors, including property, violent, substance-related, and sex offenses. Most of the delinquent peer group literature features sociological theoretical frameworks composed of learning, self-control, and routine activities components, but genetic and biosocial perspectives also have been applied to account for predispositions to peer group type and susceptibility to peer influence. In general, researchers have found peer behavior to be more predictive of individual delinquency than the attitudes of delinquent friends, affirming the significance of opportunities for delinquency and the fact that peer norming results more from modeling than peer values and beliefs (Haynie 2002; Warr and Stafford 1991).

Although multiple studies have affirmed and extended the network perspective, perhaps Haynie's (2001) delinquent network theory is most

notable.¹ To address overreliance on the learning-based idea of exposure to delinquent peers, Haynie (2001) integrated social learning, social control, and routine activity theories to reconsider peer group effects on delinquency through group structural properties. The identification of three peer group characteristics (centrality, density, and popularity) proved predictive of delinquency, though these variables were found to both reduce and increase delinquent behavior depending on the nature of a group's initial delinquency and its delinquency severity. Researchers have found support for Haynie's delinquent network theory, particularly the density (group size) and centrality (individual's location in the group relative to other members) tenets, which, as objective raw counts and distance calculations, are more readily measured than the socially dynamic concept of popularity.

Haynie's delinquent network theory also has been extended to account for victimization. In a study using data from the National Longitudinal Study of Adolescent Health (hereafter, "Add Health"), Schreck, Fisher, and Miller (2004) found that network density and centrality were positively related to the likelihood of violent victimization. Furthermore, Schreck et al. (2004) noted that the relationships of each of the three network characteristics (centrality, density, and popularity) with violent victimization were conditioned by group delinquency. Being centrally located and popular within a dense network was associated with lower levels of violent victimization in nondelinquent groups, whereas those same characteristics were associated with an increased likelihood of reporting violent victimization in delinquent groups (Schreck et al. 2004).

One may expect similar findings with respect to sexual victimization; however, whether social network characteristics have effects on sexual victimization and whether these potential effects are contingent upon the network's delinquency remain unexplored areas. Given recent heightened justice system and academic attention to sex offending, human trafficking, and commercial sexual victimization, it is surprising that only a handful of works in the criminological and criminal justice literature address juvenile sexual victimization (see Averdijk, Müller-Johnson, and Eisner 2011; Esbensen et al. 2011; McCormack, Janus, and Burgess 1986).

Although victimization is often examined through routine activities and lifestyles approaches (Fisher et al. 1998; Miethe and Meier 1994; Mustaine and Tewksbury 1998), the role of network structure has received less attention. Specifically, delinquent network theory provides a viable theoretical framework in which to better understand whether and how peer network structure affects vulnerability to personal victimization (Schreck et al. 2004). Currently it is unknown whether peer groups exert either a protective insulating or risk-heightening exposure effect on sexual victimization. Accordingly, this study extends delinquent network theory to female adolescent sexual victimization and utilizes a nationally representative sample to evaluate whether and how the network structure affects vulnerability to sexual victimization.

SEXUAL VICTIMIZATION AMONG ADOLESCENT FEMALES

Adolescence is characterized as a time when socializing with peers gains prominence, especially as youth mature and gain independence from the watchful eyes of their parent(s) or guardian(s). Social networks are expanding, old friends are replaced with new ones, infatuations come and go, romantic relationships flourish, and dating is common. There is strong national-level evidence to suggest that adolescence also is a time when females are at a heightened risk for being sexually victimized. Since its launch in the early 1970s, the National Crime Victimization Survey has shown that the rate of sexual assault perpetrated against females ages 12 to 17 years old is higher than for all other age groups (Planty et al. 2013). Results from the 2011 Youth Risk Behavior Surveillance System showed that 11.8 percent of females enrolled in Grades 9 through 12 in private and public schools in the United States had been physically forced to have sexual intercourse against their will (Centers for Disease Control and Prevention 2012). Further documenting young women's risk of sexual victimization, the National Intimate Partner and Sexual Violence Survey reported that nearly 30 percent of female victims of completed rape had experienced their first rape between 11 and 17 years old (Black et al. 2011). Collectively these findings are important because they document the large number of adolescent females who have experienced sexual victimization before they are legally considered adults.

Adding to the interest in the role social networks play in vulnerability to sexual victimization are two lines of inquiry. First, volumes of research suggest that the perpetrator of sexual victimization is more often someone with whom the victim is acquainted—that is, the victim has some type of peer acquaintance relationship with the perpetrator, such as romantic date or friend (see Meloy and Miller 2011). Acquaintance sexual assault against females is most likely committed by boyfriends, friends, or friends of friends, and peer victims often meet in a consenting social context (e.g., a party) prior to the assault (Young, Grey, and Boyd 2009). This is quite relevant to network structure and composition. Women directly and indirectly associated with deviant individuals are likely to have greater risk of victimization by someone known to them. The well-established offending–violent victimization link (Hunter and Figueredo 2000; Jennings et al. 2013) may even be extended to an offending–sexual victimization link in which a woman's offending and risk of sexual victimization are correlated because of each outcome's relationship with associating with male offenders.

Second, sexual victimization often coincides with alcohol consumption and/or drug use on the part of the victim and perpetrator, an activity that often takes place within adolescents' social settings (see Zweig et al. 2002). Alcohol consumption is routine for a number of adolescents, with the Youth

Risk Behavior Surveillance System reporting that 39 percent of students had had at least one drink of alcohol and 22 percent had engaged in binge drinking at least 1 day during the 30 days before the survey (Centers for Disease Control and Prevention 2011). According to Zweig and colleagues (2011), the association between alcohol use and sexual victimization may be due to several social processes. First, perpetrators may find ample opportunities to sexually victimize young women where alcohol is being consumed, which may include peer get-togethers. Second, males perceive young women who drink alcohol as more sexually available than those who do not drink alcohol (see also Schwartz and Pitts 1995). Third, being intoxicated may impair a woman's ability to detect risky situations and thwart unwanted sexual contact. Regardless of the social process, females' alcohol use, especially heavy consumption, often increases their risk of sexual victimization.

THEORETICAL BACKGROUND: THE ROLE OF PEER SOCIAL NETWORKS

Friendship network commonly refers to a group of individuals who tend to know and maintain interaction with one another (Bott 1957). As youth transition from elementary to junior and senior high school, they experience a range of changes that affect their friendships. For most, this period includes a fear of being left out. The associated peer rejection is known to be a major factor contributing to adolescents' association with delinquent peers (Hawkins, Catalano, and Miller 1992; Patterson, Reid, and Dishion 1992). On a related note, studies have consistently suggested that the quality of school life is largely based on a sense of belonging and having friends (Corsaro and Eder 1990; Cusick 1973; Everhart 1983; Willis 1981). The concern over finding a position within the school hierarchy and gaining a sense of belonging among peers leads many students to adapt and accept different strategies to increase peer unity (Haynie 2001).

According to Eder and Enke (1991), some adolescents challenge negative assessments by individual peers, but group evaluations are tougher to challenge. Derogatory female and homosexual references challenging masculinity by teenage males have been observed to be a mechanism for asserting group norms and effecting compliance (Best 1983; Messerschmidt 2000). While students are searching for their fit within a group, they can easily give in to gossip, ridicule, and aggressive behavior that serves to keep group members in line and that pushes them toward or pulls them away from delinquent behavior (Best 1983; Bigelow, Tesson, and Lewko 1996; Messerschmidt 2000). During this process of jockeying for group acceptance and position, the concept of popularity becomes increasingly important.

Popularity and Behavior

Popularity can be formed through a positive reputation when several adolescents behave in a prosocial manner toward other peers (Adams 1983). Juveniles' personalities are affected by both their friendships and popularity, but friendship has the stronger effect of the two (Berndt and Das 1987). Popularity is often associated with dominance and group leadership, but the popular may not necessarily experience the degree of friendship satisfaction thought common. Those labeled as less popular, for example, have a greater number of friends, are less aggressive, and more dependable and kind (Parkhurst and Hopmeyer 1998).

Unfortunately, some adolescents use aggression as a means of achieving higher group status (Pellegrini and Smith 1998). These adolescents seek to increase their chances of realizing high status through public displays of dominance by targeting those who are physically weaker and, somewhat ironically, are often identified by their teachers as victims (Pellegrini 1995). Bullies are usually popular among the leaders of delinquent peer groups (Cairns et al. 1988) and tend to be rejected by conventional groups (Dodge 1991; Olweus 1993). Pellegrini, Bartini, and Brooks (1999) found that bullies tend to be popular among other bullies in their circle of friends, despite negative standing within the larger group. These bullies, however, are not immune to being bullied themselves by more popular others.

Popularity and Victimization

Haynie (2001) indicated that popularity will not always deter people from committing criminal activities, as conforming with criminal behavior serves to maintain one's popularity status while increasing the risk of victimization in terms of exposure and retaliation. Conventional and delinquent peer groups experience exposure to delinquency and victimization differently, especially in terms of exposure to opportunities for delinquency and thus the likelihood of victimization (Schreck et al. 2004). Research shows that offenders do not entirely trust fellow offenders (McCarthy, Hagan, and Cohen 1998; Tremblay 1993). To the extent that shared suspicion conditions interaction, expectations of guardianship are likely variable and may enhance perceptions of target suitability. Under such circumstances, victimization of same-group members is apt to increase (Schreck et al. 2004). Adolescents in conventional peer groups communicate more frequently and openly, minimizing distrust, which in turn facilitates guardianship and reduced victimization realized through both the group's protection and peer expectations regarding offending, manifesting in behavioral restraint.

Risk of sexual victimization may similarly be affected by constructs within delinquent network theory through two competing logical hypotheses. The popular are widely known and presumably well liked within their social

circles. If this is true, a larger number of peers might be more apt to intervene as guardians or protectors in the event of threat or danger. This insulation theory is pitted against a near opposite exposure theory that, for the phenomenon of female teenage sexual victimization, seems equally plausible. Inasmuch as teenage popularity is driven by ascribed definitions of attractiveness and accomplishment, teenage girls afforded popular status are apt to be in potentially vulnerable situations more often and at earlier ages than their lower status peers. Attractive teenage girls experience the onset of dating and sexual debut at earlier ages than do their less popular peers and also tend to date, likely because of increased options to do so, older males, who in turn are more likely to facilitate access to drugs, alcohol, and a range of partying behaviors wherein sexual contact is more age normative.

METHODS

Data

Data collected as part of the first two waves of the Add Health were used to assess the relationship between social network characteristics and sexual victimization. Data collection for the Add Health study began in 1994, and the study was intended to be a representative sample of adolescents enrolled in Grades 7 through 12 in the United States. Eighty high schools were selected through a stratified systematic sampling of the more than 26,000 U.S. high schools and were representative of U.S. schools in terms of urbanicity, size, region, and ethnic composition. A feeder middle or junior high school was also added to the sample for each of the 52 schools that did not include all six grades. Brief in-school surveys were administered to 90,118 students at these schools. Approximately 17 male and 17 female students were randomly chosen from each grade at each school and included in the Wave I in-home sample along with oversamples for sibling pairs, persons with disabilities, and ethnic minorities. In total, 20,745 students were part of the in-home survey (Harris et al. 2009).

The present analysis used the public-use portion of the data, which is a random half of the random in-home sample and oversample for African Americans with at least one parent who had completed college ($N=6,504$). As our focus was females' sexual victimization during adolescence, we restricted our analysis to females ($N=3,354$) and to the in-school and in-home portions of the first wave of data and the second wave of data, which were collected in homes only. Although Add Health data collection included four waves, only in the first two are all respondents adolescents enrolled in school.

Dependent Variable

Sexual victimization was operationalized as a dichotomous variable representing the respondent's responses at Wave I and Wave II to the question "Were

you ever physically forced to have sexual intercourse against your will?" Participants reporting sexual victimization at either time were considered to have been victims of sexual assault. This means that some of the recorded assaults may have occurred well prior to the respondent's participation in the Wave I social networks measured here. However, it is likely that the majority of reported assaults occurred contemporaneously with or subsequent to the independent measures. Less than 5 percent of the sample would later (at Wave III) retrospectively report inappropriate sexual touching by parents or other adults prior to sixth grade. Given that this was a much broader question and that other studies have noted that only a minority of sexual assaults on children this age include penetration (Finkelhor, Hammer, and Sedlak 2008), it can safely be inferred that relatively few of those answering "yes" to the dependent variable items that used the word *intercourse* did so because of assaults prior to the sixth grade. Furthermore, most studies have noted that the majority of sexual assaults perpetrated against children occur after puberty (Vicary, Klingaman, and Harkness 1995), and most participants were either entering or experiencing puberty at the time of the initial measure. In addition, 27.9 percent of those reporting sexual assault reported at least one assault occurring between Wave I (when network characteristics were measured) and Wave II. Within the sample, 8.7 percent reported experiencing sexual victimization.

Independent Variables

PEER DELINQUENCY

Unlike many studies, which utilize a perceptual peer delinquency measure that potentially suffers from respondents projecting their own behaviors onto their perceptions of their peers (see Boman et al. 2012), we utilized a measure of peer delinquency originating from the peers' actual self-reports. During the in-school portion of the survey, respondents each nominated up to 10 friends and reported their own involvement in six minor forms of delinquency: cigarette smoking, alcohol use, drunkenness, truancy, racing vehicles, and doing risky things on dares/bets. Each of these six items was measured on an ordinal scale ranging from *never* (coded 0) to *nearly every day* (coded 6). A respondent's peer delinquency score for each behavior was computed as the average of the scores of each person the respondent nominated as a friend and each person who nominated the respondent as a friend. These six scores were then summed to create an overall peer delinquency measure.

CENTRALITY, DENSITY, POPULARITY

Measures of social network characteristics were also created from the in-school portion of the Add Health study (Wave I). Centrality was measured

using a Bonacich centrality index (Bonacich 1987), which is based on the number of ties necessary to connect the respondent to all others in the network but also incorporates the centrality of those with whom the respondent has a connection. Those more closely connected to others in the network are considered more central. Density was operationalized as the number of friendship ties existing for the respondent divided by the possible number of ties. A fully dense network is one in which each member is connected to all others, whereas a less dense network includes members connected only to a small number of others. The Add Health's restriction of respondents' nominations to five male and five female friends may have artificially limited estimates of network density. Therefore, we utilized an adjusted measure that corrected for the maximum number of ties (see Haynie 2001; Schreck et al. 2004). Those within the sample existed within loose networks ($\mu = 0.201$, $\sigma = 0.099$). Popularity was operationalized as the number of times a respondent was nominated as a friend by those in his or her school. Students were nominated on average by five classmates ($\mu = 4.93$, $\sigma = 3.55$).

PROPORTION OF MALE FRIENDSHIPS

To assess the respondents' interactions with male and female peers, we utilized a measure calculated as the number of friendships that were male (nominations sent, received, or both) divided by the total number of friendships. Scores closer to 1 indicate that the respondent had mostly male friends, whereas scores closer to 0 represent the fact that the respondent mainly associated with females. Although most female respondents had a larger number of female friendships, associations with males accounted for more than one third of females' friendships at Wave I ($\mu = 0.38$).

HEAVY DRINKING

Heavy drinking was assessed using an item from the Wave I in-school survey that asked respondents "During the past twelve months how often did you get drunk?" This item was measured ordinally, with responses ranging from *never* (coded 0) to *nearly every day* (coded 6).

CONTROL VARIABLES

A dichotomous race variable (1 = Black, 0 = non-Black) and age were included as controls. Similarly, a measure of time spent with peers was included. At Wave I, respondents were asked "During the past week, how many times did you just hang out with friends?" and offered response options ranging from *none* (coded 0) to *more than five times* (coded 3). A dichotomous measure of sneaking out and spending a night away from home without permission was also included. Finally, measures of physical attractiveness

(as judged by the interviewer) and relative pubertal development (as viewed by the respondent) at Wave I were incorporated as controls. Each of these was a five-option ordinal measure; higher scores represent more attractiveness and more advanced pubertal development, respectively. Descriptive statistics for each measure and bivariate correlations with sexual victimization are presented in Table 1.

Analytic Strategy

After exploring the bivariate relationship between each of the independent variables and sexual victimization, we estimated a series of logistic regression models. As models including all three social network measures and their interactions with peer deviance suffered from high levels of multicollinearity, we estimated separate models for centrality, density, and popularity. First sexual victimization was regressed on peer deviance, a network characteristic, the proportion of male friends, self-reported heavy drinking, and the six control variables. A multiplicative interaction term of that network characteristic and peer deviance was then added to each model to determine whether the effects of social ties were moderated by peer deviance. Each of these models utilized the preconstructed survey weights to appropriately adjust for the selection process and accounted for the clustering of the data at the school level. Additional models were estimated that incorporated an interaction between heavy drinking and the proportion of male friendships along with the interaction between each network characteristic and peer deviance and are presented in the final table.²

TABLE 1 Descriptive Statistics

Variable	<i>M</i>	<i>SD</i>	Min	Max	Correlation with sexual victimization
<i>Independent variables</i>					
Peer deviance	5.63	3.46	0	23	.13*
Centrality	0.87	0.60	0	4.19	-.06*
Density	.20	.10	.05	.80	-.06*
Popularity	4.93	3.55	0	24	-.03
Proportion of male friendships	.38	.22	0	1	.01
Heavy drinking	0.53	1.08	0	6	.19*
<i>Controls</i>					
Age	15.90	1.71	13	20	.14*
Race (1 = Black)	.27	.44	0	1	.01
Time with peers	1.92	1.00	0	3	.08*
Sneaking out	.10	.30	0	1	.15*
Physical attractiveness	3.72	0.91	1	5	.02
Relative pubertal development	3.32	1.05	1	5	.06*
<i>Dependent variable</i>					
Sexual victimization	.09	.28	0	1	

* $p < .05$.

RESULTS

Table 1 displays the correlations between each potential predictor variable and sexual victimization in the rightmost column. Several of these variables have significant bivariate associations with sexual assault. Leaving home without permission, being older, spending more time with peers, associating with delinquent peers, being relatively more developed physically, and consuming alcohol in excess are all positively and significantly related to sexual victimization. What is surprising is that physical attractiveness, race, popularity, and the proportion of friends who are male are unrelated to sexual assault independent of controls. Two of the network variables, however, do have significant correlations with the outcome. Network density and centrality are each negatively associated with sexual victimization, indicating that sexual assault is less commonly reported by those in dense networks or those located centrally in their network.

Sexual victimization is regressed onto peer deviance, network centrality, heavy drinking, the proportion of male friendships, and controls in the initial model of Table 2. Associating with deviant peers is significantly related to an increase in the odds of sexual victimization (odds ratio [OR] = 1.09, $p = .003$), whereas centrality is related to a decrease in the odds (OR = 0.70, $p = .001$). Of the controls, age (OR = 1.25, $p < .001$), being Black (OR = 1.80, $p = .004$), time with peers (OR = 1.26, $p = .021$), and relative pubertal development (OR = 1.22, $p = .014$) have significant coefficients. To clarify: When other variables are controlled, older adolescents, African Americans, those more physically similar to adults, and those who spend more time with peers are more likely to report being sexually assaulted. Each of these variables remains significant after an interaction between centrality and peer deviance is added to the model. The interaction term, however, fails to reach significance (OR = 1.03, $p = .457$).

The third and fourth models replace centrality with network density. Peer deviance (OR = 1.09, $p = .004$), age (OR = 1.26, $p < .001$), being Black (OR = 1.67, $p = .004$), time with peers (OR = 1.26, $p = .021$), and relative pubertal development (OR = 1.23, $p = .011$) have significant relationships with sexual victimization, as was the case in the centrality models. The coefficient for network density approaches the traditional cutoff for significance (OR = 0.12, $p = .055$). After the interaction between network density and peer deviance is added to the model, peer deviance is found to be nonsignificant, whereas age, race, time with peers, and pubertal development remain significant. Network density emerges as a significant predictor (OR = 0.01, $p = .17$) in this model, with the interaction term being marginally significant (OR = 1.49, $p = .095$). This suggests that sexual assault is less common in dense networks with low deviance but more common within densely connected networks in which deviance is common.

TABLE 2 Logistic Regression Models Exploring Sexual Victimization and Social Network Characteristics

Variable	Centrality				Density				Popularity									
	<i>b</i>	<i>SE</i>	OR	<i>b</i>	<i>SE</i>	OR	<i>b</i>	<i>SE</i>	OR	<i>b</i>	<i>SE</i>	OR	<i>b</i>	<i>SE</i>	OR			
Peer deviance	0.09	0.03	1.09*	0.07	0.04	1.07†	0.09	0.03	1.09*	0.02	0.06	1.02	0.09	0.03	1.09*	0.05	0.04	1.05
Centrality	-0.35	0.11	0.70*	-0.54	0.24	0.58*												
Centrality × Peer Deviance				0.03	0.04	1.03												
Density							-2.14	1.11	0.12†	-4.96	2.08	0.01*						
Density × Peer Deviance										0.40	0.24	1.49†						
Popularity													-0.03	0.03	0.97			
Popularity × Peer Deviance																-0.11	0.06	0.89*
Proportion of male friendships	-0.13	0.41	0.88	-0.11	0.41	0.90	-0.23	0.42	0.79	-0.20	0.42	0.82	-0.27	0.46	0.76	0.01	0.01	1.01†
Heavy drinking	0.02	0.01	1.02†	0.02	0.01	1.02†	0.02	0.13	1.02†	0.02	0.01	1.02†	0.02	0.01	1.02	0.02	0.01	1.02
Age	0.22	0.05	1.25*	0.22	0.05	1.25*	0.23	0.05	1.26*	0.22	0.05	1.25*	0.23	0.05	1.26*	0.23	0.05	1.26*
Race (1 = Black)	0.59	0.19	1.80*	0.55	0.19	1.73*	0.51	0.18	1.67*	0.50	0.17	1.65*	0.56	0.18	1.75*	0.57	0.18	1.77*
Time with peers	0.23	0.09	1.26*	0.22	0.10	1.25*	0.23	0.10	1.26*	0.22	0.10	1.25*	0.23	0.10	1.26*	0.21	0.10	1.23*
Sneaking out	0.41	0.32	1.51	0.40	0.32	1.49	0.42	0.35	1.52	0.40	0.33	1.49	0.42	0.35	1.52	0.42	0.35	1.52
Physical attractiveness	0.05	0.13	1.05	0.04	0.13	1.04	0.05	0.12	1.05	0.045	0.12	1.05	0.04	0.12	1.04	0.05	0.12	1.05
Relative pubertal development	0.20	0.08	1.22*	0.20	0.08	1.22*	0.21	0.08	1.23*	0.212	0.08	1.24*	0.21	0.08	1.23*	0.22	0.08	1.25*
Constant	-7.67			-7.52			-7.62			-7.09			-7.97			-7.60		
Model χ^2	135.69			136.58			139.52			140.95			136.97			138.34		
Pseudo- R^2	.08			.08			.08			.08			.08			.08		

Note: OR = odds ratio.

† $p < .10$, * $p < .05$.

The relationship between popularity and sexual victimization is examined in the final two models of Table 2. Popularity does not reach significance prior to the inclusion of an interaction term ($OR = 0.97$, $p = .291$). As was the case previously, peer deviance ($OR = 1.09$, $p = .003$), age ($OR = 1.26$, $p < .001$), being Black ($OR = 1.75$, $p = .002$), time with peers ($OR = 1.26$, $p = .026$), and relative pubertal development ($OR = 1.23$, $p = .012$) are all found to be significantly related to sexual victimization. With the exception of peer deviance ($OR = 1.05$, $p = .295$), each of these remains significant after the addition to the model of an interaction between popularity and peer deviance. In this model, popularity is significantly related to sexual victimization ($OR = 0.89$, $p = .47$), and the interaction term nears significance ($OR = 1.01$, $p = .052$). To elucidate this relationship, we graph the predicted probability of sexual victimization Figure 1. In this figure, the x -axis is the valid range of popularity scores, and each line represents the predicted probability for an individual with the labeled level of peer deviance and mean scores for all other predictors. It appears that popularity increases the likelihood of sexual victimization when peer deviance exceeds the mean by more than 1.5 SD .

An interaction between the proportion of male friends and heavy drinking is incorporated into a model with each of the network characteristics in Table 3. In each model, age, race, time with peers, and relative pubertal development are significant, but several other findings warrant attention. First, the Proportion of Male Friendships \times Heavy Drinking interaction term

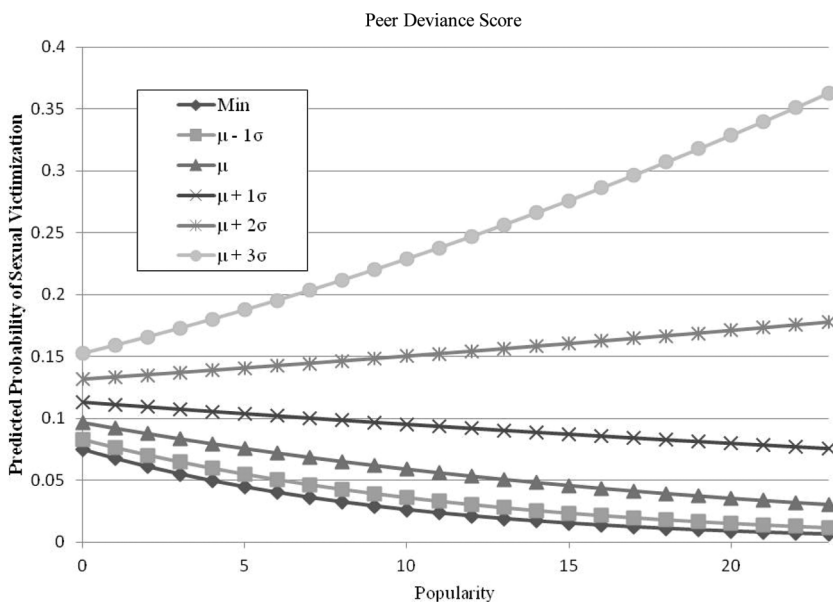


FIGURE 1 Predicted probability of reporting sexual victimization by popularity and peer deviance.

TABLE 3 Logistic Regression Models Exploring the Interaction Between Drinking and Male Friendships

Variable	Centrality			Density			Popularity		
	<i>b</i>	<i>SE</i>	OR	<i>b</i>	<i>SE</i>	OR	<i>b</i>	<i>SE</i>	OR
Peer deviance	0.72	0.05	2.05	0.04	0.06	1.04	0.047	0.05	1.05
Centrality	-0.28	0.26	0.76						
Centrality × Peer Deviance	-0.01	0.04	0.99						
Density				-3.53	1.96	0.03 [†]			
Density × Peer Deviance				0.19	0.24	1.21			
Popularity							-0.07	0.05	0.93
Popularity × Peer Deviance							0.01	0.01	1.01
Proportion of male friendships	-0.81	0.47	0.44 [†]	-0.84	0.47	0.43 [†]	-0.88	0.52	0.41 [†]
Heavy drinking	-0.06	0.15	0.94	-0.05	0.15	0.95	-0.05	0.16	0.95
Proportion of Male Friendships × Drinking	0.81	0.30	2.25*	0.75	0.30	2.12*	0.75	0.31	2.12*
Age	0.21	0.05	1.23*	0.21	0.05	1.23*	0.21	0.05	1.23*
Race (1 = Black)	0.55	0.18	1.73*	0.51	0.17	1.67*	0.57	0.17	1.77*
Time with peers	0.22	0.10	1.25*	0.21	0.10	1.23*	0.21	0.10	1.23*
Sneaking out	0.32	0.25	1.38	0.32	0.27	1.38	0.33	0.28	1.39
Physical attractiveness	0.04	0.13	1.04	0.04	0.12	1.04	0.04	0.12	1.04
Relative pubertal development	0.18	0.08	1.20*	0.19	0.09	1.21*	0.20	0.09	1.22*
Constant		-7.15			-6.80			-7.21	
Model χ^2		149.18			148.56			147.21	
Pseudo- R^2		.10			.10			.09	

Note: OR = odds ratio.

[†] $p < .10$, * $p < .05$.

reaches significance in each model. Thus, the interaction between proportion of male friendships and heavy drinking has an effect even network density, popularity, and centrality are controlled. Second, the inclusion of the Proportion of Male Friendships × Heavy Drinking interaction term renders each of the network variables and their interaction with peer deviance nonsignificant. Finally, each of the pseudo- R^2 values presented in this table represent an approximately 25 percent increase over the corresponding model's score in Table 2, and model comparison tests indicate significantly better fit with this interaction term. It appears that the addition of the interaction term improves explanatory power and that one of the strongest predictors of sexual victimization is the combination of a female's own drinking with participation in social groups composed of a large proportion of men.

DISCUSSION

Past researchers have paid little attention to potential peer effects on sexual victimization despite a robust literature affirming that associating with delinquents jeopardizes an individual's own delinquency and personal safety. As an extension of Schreck et al. (2004), wherein delinquent peer theory was

shown to account for juvenile violent victimization, this study considered adolescent peer network effects on juvenile female sexual victimization. The main objective was to extend delinquent network theory and to determine whether peer network characteristics, particularly popularity, affect whether female adolescents are sexually victimized within their friendship groups. The analysis suggested that popularity was more predictive of sexual victimization in larger groups in which delinquency was more prevalent than in smaller conventional groups. Whereas popularity may confer a small degree of insulation in nondeviant peer groups, it appears to greatly exacerbate risk in deviant groups. Adolescent females in a delinquent peer group were found to be more than twice as likely to be sexually victimized if they were popular, suggesting that popularity serves as a risk factor for forced sex. As would be expected, socialization with a more delinquent peer group was also a risk factor in itself that increased the likelihood of victimization; this relationship is likely linked to exposure to motivated offenders (Lauritsen, Sampson, and Laub 1991; Schreck, Wright, and Miller 2002).

Popularity, then, appears to serve as a risk factor for sexual victimization in delinquent contexts in which youth presumably are impulsive and uncertain about protecting vulnerable friends (Gottfredson and Hirschi 1990). However, popularity seems to serve as an insulator in more conventional peer groups—perhaps as much a function of a lack of motivated offenders as elevated guardianship. Although the Add Health data allowed for exploration of the effects of peer group structural characteristics on juvenile sexual victimization, closer examination of the topic requires additional data more reflective of the qualitative nature and setting of juvenile sexual activity. The situational nature of the phenomenon both is difficult to capture through survey data collection and, as a microlevel event, lacks symmetry with the peer networks approach. Although it is logical that popularity might elevate guardianship or risk through earlier and more intense forms of exposure, it is unknown, though ostensibly unlikely, that actual sexual victimization customarily transpires in settings different from consensual juvenile sexual activity.

To the extent that juvenile sexual victimization results from consensual activity that has progressed too far, it is reasonable to assume that such events transpire in private or quasi-private settings. If so, then peer group characteristics may be irrelevant, as would-be protectors are likely removed from the immediacy of sexual victimization events and thus unable to intervene in a protective role. It may be that qualitative inquiry is necessary to examine the situational context of juvenile sexual victimization in order to identify additional relevant factors and to more closely examine the roles of rationality and self-control regarding individual situational placement in risky situations.

The breadth of the dependent variable may further be a limitation in that the items encompass sexual assault perpetrated by family members and in the workplace. Both of these settings may operate in isolation from school-based peer networks, and it is unlikely that adolescent networks

affect the likelihood of familial assaults and workplace sexual coercion. It would be beneficial to evaluate the effect of networks only on assaults that have the potential to be affected by networks, but the Add Health measures do not allow for such a distinction.

Our secondary analysis seems to have revealed a risk factor more influential than any of the primary network characteristics. Though having a peer group that contains more men in itself is not a risk factor, and a woman's drinking is only marginally related to sexual victimization, these two factors appear to operate in concert to significantly alter the odds of enduring an assault. Women who engaged in heavy drinking frequently and had a largely male peer group were much more likely than other respondents to have experienced victimization (see also Schwartz and Pitts 1995). This suggests that male companions may capably serve as guardians for their female friends when sober (or at the very least do not increase risk) but become poor guardians or even potential assailants when alcohol is consumed.

It is perhaps this portion of the analysis that renders the most clear, manageable, and potentially effective policy implications. Educational campaigns directed toward females may benefit from incorporating the message that having female companions when consuming alcohol may confer a degree of protection that having largely male friendship groups does not. The message that being included in a largely male group of friends when drinking is as much a risk factor as a protective one should clearly be stressed. The simple ideas that mixed-gender groups are most protective and that females may wish to avoid being in the minority in a peer group may additionally assist young women. Also, as the finding implies that male-heavy groups uninhibited by alcohol consumption are most likely to fail to prevent sexual assault from occurring, young males should be informed that the likelihood of sexual assault increases when few females are present in order to encourage them to become more attentive to their peers' behaviors and more likely to intervene in a problematic situation prior to the potential victim being isolated with a potential offender.

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NOTES

1. As of January 20, 2013, Haynie's 2001 *American Journal of Sociology* article "Delinquent Peers Revisited: Does Network Structure Matter?" had been cited in the academic literature 480 times according to Google Scholar.

2. As the portion of respondents reporting victimization was small and just exceeded the level that would necessitate a correction to avoid biased standard errors, we replicated all analyses using King and Zeng's (1999, 2001) correction for rare events. No substantive differences were found between the rare-event models and those presented here.

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