Toxic Ties
Networks of Friendship, Dating, and Cyber Victimization

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Abstract

We examine instances of youth cyber aggression, arguing that the close relationships of friendship and romance substantially influence the chances of being targeted. We investigate networks of friendship, dating, and aggression among a sample of 788 eighth- to twelfth-grade students in a longitudinal study of a New York school. Approximately 17% reported some involvement in cyber aggression within the past week. LGBTQ youth were targeted at a rate over four times that of their heterosexual peers, and females were more frequent victims than males. According to an exponential random graph model, electronic attacks emerged far more frequently between current or former friends and dating partners, presumably due to competition, revenge, or attempts to fend off romantic rivals.

Aggression among school children and adolescents can pose serious problems for both its victims and perpetrators (e.g., Nansel et al. 2001). The unprecedented expansion of the Internet, mobile phones, and social media means that adolescent antagonism now extends beyond schools, continuing in electronic forms well after the academic day ends. A 2005 survey of 7,182 school-aged children found that 14% reported being bullied electronically at least once during the last two months (Wang, Iannotti, and Nansel 2009), and a meta-analysis found that 20-40% of all youth experience cyberbullying at least once during their lifetime (Tokunaga 2010). Electronic harassment is distinct not only in its pervasiveness but also by the ease with which others can join the harassment of victims. Perhaps for these reasons, victims often exhibit a wide range of negative emotions. Those targeted by electronic aggression reported more suicidal thoughts and were more likely to attempt suicide than those who had not been victimized (Hinduja and Patchin 2010). The widely publicized suicides of young people who were victims of humiliating electronic messages highlight the potential gravity of the problems stemming from this phenomenon.

Recent research has begun to investigate school cyberbullying (e.g. Kowalski et al. 2014), but studies tend not to consider the social networks in which this type of harassment arises. The purpose of this research is to outline and test several of the key processes by which cyber aggression develops, relying on a social network perspective. We conceptualize aggression relationally, as a negative tie that arises within an interconnected web of two significant, close social network relationships, those of friendship and dating. We hypothesize that harmful electronic acts are more likely to occur between individuals directly linked through the ties of friendship or romance, in part due to the competition and rivalry associated with the attainment of status and recognition. In addition, we expect that those viewed as challenging the traditional norms of heterosexuality, that is, youth identifying as lesbian, gay, bisexual, transgender, or queer/questioning/intersex, will be common targets. Our arguments build on formative theories of groups and networks that emphasize the fundamental nature of stratification and normative processes.

We examine our hypotheses by means of unique longitudinal data on overlapping networks of friendship, aggression, and romance, allowing for analysis at the level of the individual and the dyad. The data were collected from a New York school comprised of students in grades 8–12. To the best of our knowledge, this study represents the only investigation of school victimization to have access to network information on digital forms of aggression, friendships, LGBTQ identification, and romantic relationships. While a few studies have documented cyberbullying between dating partners (Zweig et al. 2013) and friends (Mishna, Wiener, and Pepler 2008), ours is the first to disentangle the effects of the complex and overlapping ties of romance and friendship from a social network perspective. Our data allow us to assess the risks posed by friends and dating partners, compared to each other and to other schoolmates, while controlling for individual and structural, network processes.

Background

Cyber Aggression

Cyber aggression refers to electronic or online behavior intended to harm another person psychologically or damage his or her reputation. Possible venues include email, cell phones, digital messaging, social media, and gaming websites. The term *cyber aggression* is useful because of its inclusion of a wide range of negative Internet behaviors (Grigg 2010) and because of its predominance in previous research (Kowalski et al. 2014; Tokunaga 2010). Following a recent shift in the study of aggression (Bauman, Underwood, and Card 2012; Slonje, Smith, and Frisen 2013), our definition departs from the strict definition of bullying, which requires that harmful behavior be repeated over time and target a less powerful victim (Olweus 1993).

Group Processes

Enforcing social norms

Early social psychological theorists (e.g., Homans 1950) stress that individuals in group situations engage in two main processes: (1) the establishment of common standards for behavior, or social norms, and (2) the unfolding of systems of stratification in which individuals are differentiated along dimensions of status. We argue that these two processes form the foundation for online aggression in school settings. The first of these, norm enforcement, likely drives certain types of school cyber aggression, particularly those cruel actions aimed at young people whose behavior or appearance is found "wanting" when it comes to the traditional expectations of U.S. adolescent culture. Therefore, aggressors who harass the most vulnerable members of the student body both pick on the easiest targets and, unwittingly or not, reinforce standards of what is considered appropriate. Research suggests that such "normative targeting" focuses on social isolates, the physically underdeveloped, and those with poor body image (Faris and Felmlee 2014).

Among the myriad, fluctuating norms governing adolescent culture, however, heterosexuality is likely to be one of the most demanding. LGBTQ adolescents often face the most brutal levels of torment and ostracism on the part of their schoolmates (e.g., Katz-Wise and Hyde 2012). Recent research finds that non-heterosexuals are more frequent targets of cyberbullying than heterosexuals (Hinduja and Patchin 2011). According to a national survey by the Gay, Lesbian, Straight Education Network (GLSEN 2013), LGBT youth were close to three times as likely as non-LGBT youth to report being bullied online and twice as likely to be victimized via text messages.

Our study will be one of the first to use multivariate, network, statistical models to examine whether LGBTQ youth are at greater risk of electronic aggression over time. We hypothesize that LGBTQ young people are apt to be overrepresented over time as targets of cyber aggression even after controlling for other network and dyadic factors.

> To evaluate social vulnerability: *Hypothesis 1*: LGTBQ students are more likely to be the victims of cyber aggression than heterosexuals.

Rivalry among friends

Friendship is particularly important during adolescence as youth begin to distance themselves from parental control. These affiliation bonds improve academic outcomes (Vaquera and Kao 2008) and the stability of romantic relationships (Felmlee 2001).At the same time, friendships can be problematic. Social norms governing friendship can be unclear, for example, particularly when friendship and romance overlap, which can lead to serious misunderstandings (Felmlee, Sweet, and Sinclair 2012). Moreover, relational and physical victimization can occur between young friends (Mishna et al. 2008). Some evidence suggests that cyberbullying can transpire among friends or acquaintances (Juvonen and Gross 2008), although other surveys fail to reach the same conclusion (Li 2007; Wolak, Mitchell, and Finkelhor 2007).

We argue that there are many reasons to believe that victims of electronic aggression are more likely to be targeted by someone who is considered a friend or a former friend. First, friends are often competitors for the admiration and respect of friends they share in common. Assuming that adolescents are contending for status within the school setting, they are likely to vie with those to whom they are tightly connected. For example, friends typically belong to the same extracurricular activities (Schaefer et al. 2011) and may find themselves competing for identical positions. According to Gould (2002), the result is a subtle struggle for dominance where even trivial disagreements or social slights have the potential to boil over into serious conflict and be expressed digitally.

Furthermore, friends share vulnerabilities and secrets that could be devastating if publicized online. Finally, friends have more opportunities to harm one another; they routinely interact via text and social media, and frequent interaction sets the stage for aggressive incidents.

Research on stratification processes shows that interaction among group members inevitably leads to the development of informal status hierarchies (e.g., Berger, Cohen, and Zeldich 1972; Homans 1950). Recent studies suggest that general aggression in schools is often, if not always, motivated by the desire for status (Sijtsema et al. 2009) and can be effective for that purpose, boosting the social prospects of aggressors while marginalizing their victims (Faris 2012). If this is the case, then we argue that particular dimensions of friendship—rivalry and face-saving—should generate high levels of aggression, which is especially likely to be expressed online.

We expand on prior work by (1) investigating the friendship and electronic victimization networks of a school and (2) using network analysis (ERGM) to account for possible links between the friendship and victimization networks. Our hypothesis is as follows:

  Hypothesis 2: Youth friendships increase the likelihood of cyber aggressive ties.

Romantic relationships

Two-thirds of U.S. adolescents report experiencing a romantic relationship during their teen years (Carver, Joyner, and Udry 2003). Yet establishing such ties is not always smooth. The "dating market," similar to the "marriage market," can be a competitive venue in which people vie for the same highly valued potential partners. Once forged, romantic relationships entail the same sharing of intimacies and insecurities as friendships. So with each budding relationship comes the potential for humiliation and disgrace.

We argue that former dating partners constitute a particularly central source of romantic threat for both young men and women engaged in the dating game. Past boyfriends and girlfriends represent people who have engaged in activities together, which increases the chances that the two will experience jealousy or resentful feelings that result in hurtful behavior. Furthermore, romantic partners, as with close friends, are likely to know how to most effectively wound the other. Unsurprisingly, adolescents engaged in romantic relationships reported experiencing more conflict, and those who became romantically involved in the past year reported greater levels of depression (Joyner and Udry 2000) and aggression (Faris and Felmlee 2011). According to a recent Massachusetts survey (Englander 2008), one of the most common justifications for cyberbullying concerned who the target dated or befriended. In addition, approximately 26% of youth in a recent relationship from a northeast sample reported being a victim of electronic dating abuse (Zweig et al. 2013).

Romance is implicated in school aggression via a number of processes. First, cyber aggression may serve as a strategy for preventing potential partners from becoming involved with a current girlfriend or boyfriend. Second, aggression may be employed to hurt and ridicule people who become involved with one's former partner as a form of revenge or as a method to discourage their involvement and win back the former mate. In addition, aggression may be used to punish one's former partner for becoming involved with another person, to humiliate him or her in order to save face, or in an attempt to dominate and control that person's behavior, possibly with the intention—no matter how ill-formulated—to reunite. Finally, it is likely that sexual harassment and violence that occur within ongoing romantic relationships will be expressed through cyber aggression. Electronic forms of communication may facilitate attempts to gain power and control over a romantic partner. We hypothesize, therefore, that victims are at higher risk to be targeted by former or current romantic partners than by those whom they have never dated.

  Hypothesis 3: Cyber aggressive ties are more likely to develop between youth who have dated.

Methods

Data

The data set derives from the Long Island School study, a study conducted in the spring of 2011 on a single public school in a wealthy suburb of New York. The school of 788 students includes grades 8 – 12. The student body is disproportionately white (70%) and largely from upper-class backgrounds, with 72% of fathers and 56% of mothers employed in professional or managerial occupations.

Students were given questionnaires in which they were asked to identify up to ten of their closest friends, up to eight current and former dating partners, and also up to eight students "who picked on you or were mean to you" and who "you picked on or were mean to" during the previous week; students were then asked whether the behavior occurred via the Internet or text message. Participants were instructed to disregard playful teasing and focus on seriously harmful actions. Students were asked to provide a brief description of the incident(s) in a short, open-ended format.

The survey was administered early in the spring term with three closely spaced follow-ups over a period of four weeks at the end of the school year. In order to reduce missing cases, instances of victimization were combined from those three data collections to form the second time point. The response rate was approximately 94% for the merged Time 2 data, with rates of 74%, 58%, and 48%, respectively, for the individual waves. We used multiple imputation to handle missing data.

Dependent variables

We generated cyber aggression networks (matrices of ties produced by harmful email, texting, or Internet communication) based on the nominations provided by victims and aggressors at two time points. The two networks (the network according to victims and the network according to the aggressors) were merged such that an aggressive link from A to B was considered present if either A nominated B as a victim or B nominated A as an aggressor. We combined these networks because of possible underreporting concerns and also because previous research (Ladd and Kochendorfer-Ladd 2002) demonstrates the utility of collecting multiple sources of information, such as self-report and peer report, for measures of bullying or aggression.[1] For the ERGM, we use a dichotomized version of the matrix of cyber victimization (0 = never a victim, 1 = a victim at least once during the study).

Independent variables

We include several control variables in the ERGM to account for both individual and dyadic factors. Our controls include a measure of *edges*, which represents the total number of edges (or ties) in the network; *reciprocity*, which accounts for mutual ties; *female* (1 = female, 0 = male); *LGBTQ* (1= lesbian/gay/bisexual/transsexual/queer/questioning/intersex, 0 = heterosexual); and a measure for each *grade* level. We also include several dyadic variables that measure the degree to which homophily drives victimization ties. These include *same gender, same sexuality*, and a measure for each grade level (*same grade*). Our key dyadic variables include *friends* (1 = friends at some time, 0 = never friends) and *dating partners* (1 = dating partners at some time, 0 = never dated).

Exponential Random Graph Model

We use an exponential random graph model (ERGM) to examine our hypotheses (e.g., Hunter et al. 2008; Wasserman and Pattison 1996). The ERGM allows for testing of dyadic associations as well as for nodal and structural tendencies. The coefficients in our model reflect the log-odds of obtaining the observed network of victimization ties, conditional on the matrix of covariates. Our goal is to examine the relationship between two dyadic variables (e.g., whether a friendship or a dating tie is associated with a victimization tie) while controlling for individual and other dyadic and network properties.

Descriptive Results

The student body consists predominately of whites (70%), with 18% Asians and 6% African Americans, Latino(a)s, and other ethnic groups (see Table 1). Somewhat less than half (43%) have dated another adolescent in the school. About 24 students (3.3%) identified their sexuality as not heterosexual. The large majority of students have at least one parent who attended college, and only a small proportion live in a single family home. However, family structure, parent occupation, parent education, and race do not have significant relationships to cyber victimization, and we do not include these variables in our final models.

Table 1.

Descriptive Statistics

	Females	Males	Overall	SD	Min	Max
Internet Victimization, Time 2	0.12	0.08	0.095	0.48	0	5
Internet Aggression, Time 1	**0.06**	**0.04**	0.05	0.26	0	3
Internet Victimization, Time 1	**0.09**	**0.02**	0.05	0.34	0	6
Female				0.48	0.5	0	1
LGBTQ	0.04	0.04	0.03	0.18	0	1
Grade 9	0.22	0.2	0.21	0.41	0	1
Grade 10	0.18	0.2	0.19	0.39	0	1
Grade 11	0.19	0.21	0.2	0.4	0	1
Grade 12	0.2	0.19	0.19	0.4	0	1
Dated another student	0.42	0.43	0.43	0.5	0	1
Single parent home	**0.14**	**0.1**	0.1	0.3	0	1
Parent did not attend college	0.11	0.08	0.08	0.27	0	1
Caucasian	**0.73**	**0.67**	0.7	0.46	0	1
Asian	0.17	0.19	0.18	0.39	0	1
African American/Latino	0.06	0.06	0.06	0.24	0	1

Note: N =788   **Bold** = statistically significant gender difference (p<.05)

Descriptions of Cyber Aggression Incidents

In a minimum of one survey, 17.2% of the participants reported involvement in cyber aggression "in the past week," either solely as an aggressor (9.1%), a victim (5.8%), or both (2.3%). The most common type of reported cyber aggression (41%) involved the social networking site Facebook, with typical incidents consisting of mean, hurtful comments. Damaging cell phone text messages comprised the second most frequent (38%), and Instant Messaging (12%) the third.

In open-ended descriptions, several individuals recounted incidents in which someone posted humiliating photos or nasty rumors on Facebook. One young woman reported a criminal incident in which someone stole her identity on Facebook and created a fake account under her name. In another case, a boy printed out on paper a fight between him and a girl that transpired on Instant Messenger in order to show it to her current boyfriend. People also communicated damaging rumors (e.g., a supposed pregnancy), texted vulgarities and personal threats. Finally, a popular girl pretended to "friend" a lonely, young classmate on a social network site, and he was then treated badly by others on the site.
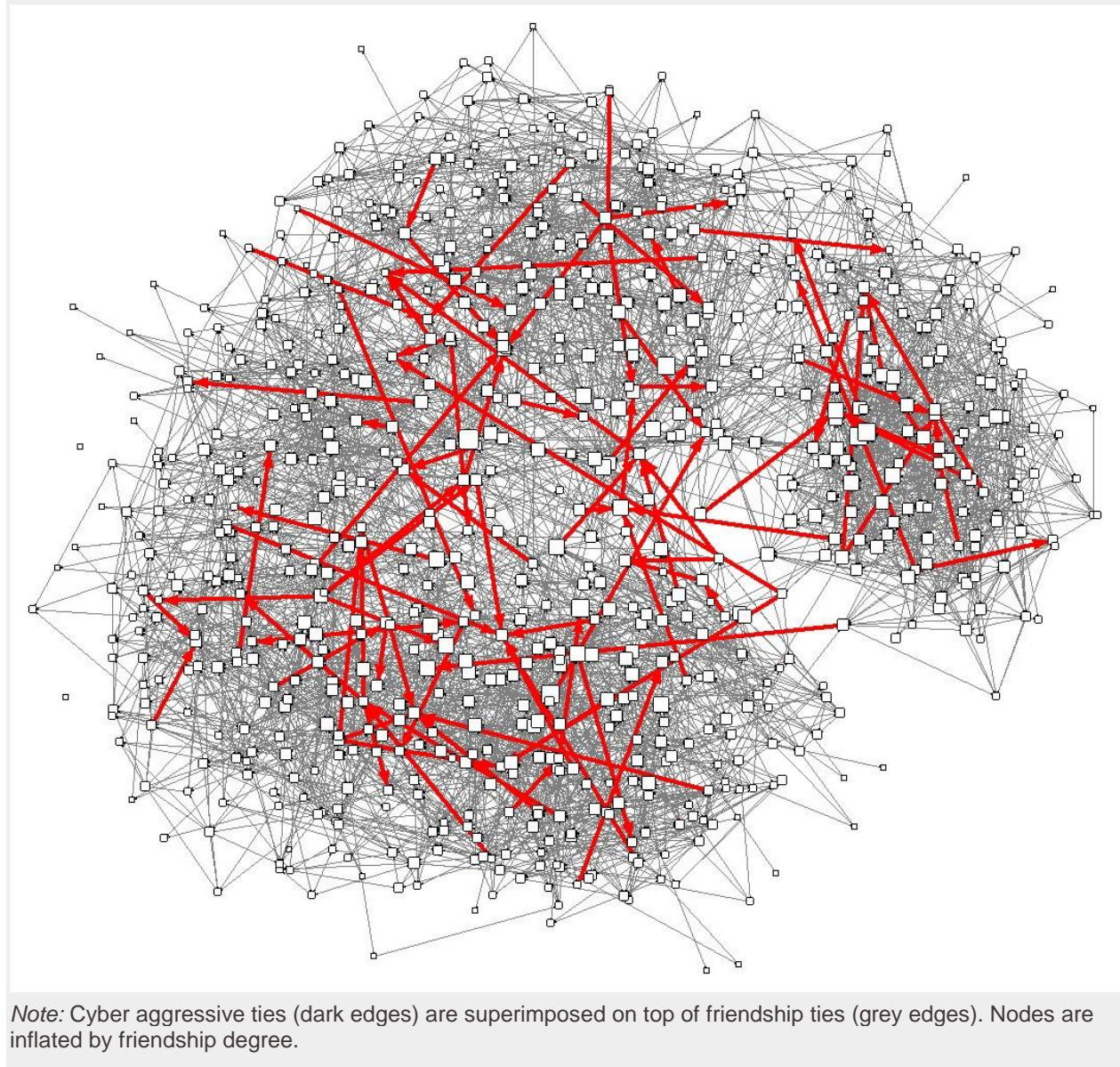
Participants wrote about the harmful results of these aggressive actions for the victims, noting that in some cases self-esteem "was destroyed." Students reported that they were "hurt," "depressed," "lonely," and/or had "lost friends" because of untrue gossip and other forms of aggression aimed at them. In one case, a student chose to change schools to escape repeated badgering regarding her alleged sexual conduct.

Results

Friendship, Dating, and Victimization Networks

Next, we examine in more detail the extent to which cyber victimization occurs between young people who had close relationships. As depicted visually in Figure 1, harmful Internet relations and friendships often appear to be interconnected. The network of cyber aggressive ties is superimposed on the friendship network, and considerable electronic harassment ensues within dense areas of the graph that are characterized by many mutual friendships; little aggression extends toward the periphery.

Figure 1.

Friendship and Cyber Aggressive Ties

Note: Cyber aggressive ties (dark edges) are superimposed on top of friendship ties (grey edges). Nodes are inflated by friendship degree.

Furthermore, an extremely dense network of dating relations exists, with a chain of connections that extends throughout the network from one point to the other (Figure 2). Only a handful of pairs remains unconnected to

the central group, not unlike findings from another high school setting in which a long chain of ties connected many sexually involved adolescents (Bearman, Moody, and Stovel 2004). The light colored edges highlight the heavily concentrated set of interconnections among actively dating young people, connections that may lead to jealousy, misunderstandings, and other disputes that incite online aggression. The dark edges in Figure 2 represent cyber aggressive links that are superimposed on top of the lighter dating relationships. The electronic ties tend to center largely in the densest areas of dating ties, which suggests that Internet aggression frequently occurs between individuals linked by the bonds of past romance.

Figure 2.

Dating and Cyber Aggressive Ties
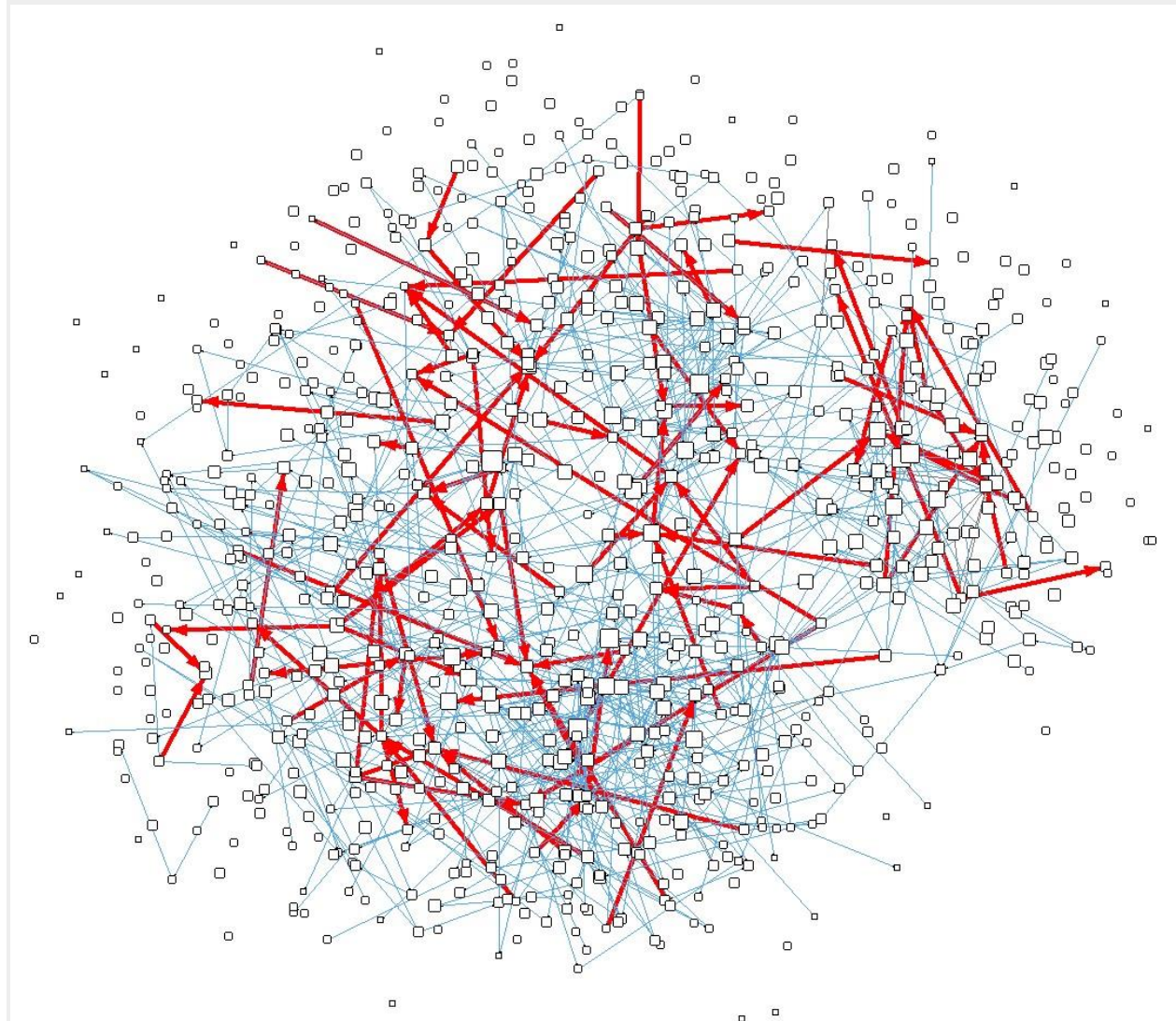
Note: The network of cyber aggressive ties (dark edges) superimposed on the network of dating relationships (light edges). Nodes inflated by friendship degree.

Exponential Random Graph Model: Friendship and Dating

The sociograms discussed previously indicate that friendship, dating, and cyber victimization overlap substantially, but such an inference needs to be tested formally. In order to test our hypotheses while controlling for dyadic independent and dyadic dependent processes, we estimate an ERGM of the victimization network.

As shown in Model 1 of Table 2, both individual and dyad factors contribute significantly to the observed pattern of ties in the victimization network. As expected, non-heterosexuals (i.e., LGBTQ) are significantly overrepresented as victims of cyber aggression at a rate of over four times that of their heterosexual peers (odds ratio = 4.44). Females also are targeted more often (odds ratio = 2.05), and students in all grades except for twelfth are more likely to be victimized as compared to eighth graders. There is evidence of significant reciprocity, or mutuality, in digital forms of victimization as well, indicating that the network is characterized by more mutual ties than would be expected by chance. In addition, within-grade homophily is common, with eighth graders, being picked on by other eighth graders, ninth graders by other ninth graders, and so on. On the other hand, there is no significant evidence of homophily on the basis of gender or sexual orientation.

Table 2.

Coefficients for ERGMs of Aggression Victimization by Time 2; (Standard Errors in parentheses)

Time 1 Variables	Model 1	Model 2
Edges	-11.84*** (.94)	-11.75*** (.86)
Reciprocity	4.82*** (.67)	4.50*** (.57)
Female	0.72*** (.20)	0.69*** (.20)
LGBTQ	1.49** (.64)	1.43** (.58)
Grade 9	1.44* (.80)	1.46** (.74)
Grade 10	1.36* (.82)	1.39* (.77)
Grade 11	1.56* (.79)	1.58 ** (.75)
Grade 12	0.92 (.85)	0.94 (.81)
Same Gender	0.30 (.19)	0.15 (.20)
Same Sexuality	0.37 (.58)	0.36 (.53)
Same Grade 8	3.61*** (.75)	3.34*** (.71)
Same Grade 9	1.85*** (.41)	1.64*** (.41)
Same Grade 10	2.33*** (.45)	2.14*** (.44)
Same Grade 11	2.06*** (.41)	1.82*** (.40)
Same Grade 12	1.22* (.67)	1.03 (.66)
Friends		1.91*** (.25)
Dating		1.94*** (.46)
AIC	1947	1903
BIC	2117	2096

*p<.05, **p<.01, ***p<.001

As expected, we find strong support for both of our interpersonal, dyadic hypotheses in Model 2 while controlling for all the significant individual and dyadic factors included in Model 1.[2] Having a friendship at Time 1 significantly predicts tie formation, for instance, with the odds of victimization over six times more likely between original friends than between those who were never friends (odds ratio = 6.75). An early romantic connection also significantly and substantially boosts the risk of victimization. A dating tie increases the chances of a cyber aggression link by a factor of approximately 7 (odds ratio = 6.96). Model 2 also represents a significant improvement in fit over the baseline model, and the effects of the baseline covariates remain relatively stable. [3]

Discussion

Cyber aggression embroils many students in the school we studied, which consists largely of college-bound whites. Approximately 17.2% of the student body in our sample was involved in cyber aggression in some way, with roughly 8.1% victimized by cyber aggression within a short timeframe. Victimization is unrelated to a host of demographic and family background factors—factors that are normally strong predictors of behaviors and outcomes. Here we addressed the question as to whether cyber aggression occurs between those who are closely linked within the social stratosphere of a high school. Online aggression in our study is significantly more likely among those who have been closely and intimately tied as compared to among those relegated to distant connections. Friendships increase rather than decrease the likelihood of future incidents of electronic aggression, even while controlling for previous dating relations and victimization. Friendships are significantly associated with at least one incident of victimization while controlling for several significant individual and dyadic predictors. Comments on the part of participants underscore the crucial role of friendship. Two people taunted each other on the Internet, according to one student, "because they used to be friends." Another youth laments: "Sometimes your own friends bully you . . . I don't understand why, why my friends do this to me."

Aggressive electronic acts are shaped by the pattern of romantic relationships in the school. Controlling for prior friendship ties and past victimization, the network of past dating relationships is positively and significantly associated with the subsequent network of harmful electronic ties. Past romantic partners thus are at disproportionate risk of online attacks. These harmful acts may be intended to increase the status of the aggressor and at the same time reduce the likelihood that a possible rival threatens the viability of a romance. In an illustration of such competition, one young woman reports: "A group of girls harassed me this year because I was talking to one of their ex-boyfriends." In another case that involved direct dating violence, a senior male punched his girlfriend in the face outside the school and then posted about it on Facebook, possibly in an attempt to control her.

Our findings demonstrate that the strong ties of friendship and romance are heavily implicated in online and electronic harassment among adolescents. Several possible explanations exist for this pattern. In the first place, well connected people have more information with which to injure the other than do those who are weakly tied. People interact more frequently with these tight connections, which creates opportunities for misunderstandings and discord. Moreover, friends can find themselves in direct competition for the same club (Schaefer et al. 2011) or for attention from a similar set of acquaintances, and this struggle may lead to conflict and aggression. In addition, an adolescent may badger a former romantic partner in order to avenge an unwanted breakup, prevent an ex from dating, or "save face" among friends. These findings also underscore the argument that much of what is significant in social life is directly relational, and that close relationship ties are a key to understanding a range of social phenomenon (Felmlee and Sprecher 2000).

Note that these results do not imply that strangers never engage in cruel online actions toward adolescents. Indeed, such cases do occur and sometimes with tragic consequences. Moreover, we do not doubt that many of the young people with whom students are intimately acquainted play a beneficial role in their lives when it comes to negative online interactions. Friends and loved ones likely attempt to protect those close to them from electronic and other forms of maltreatment, and most do not themselves commit aggressive, digital acts. Yet here we also see evidence of the perils associated with intimacy. These risks are not unlike those regarding violent crime, whereby the likelihood of being victimized by a close tie or acquaintance greatly exceeds that of

being targeted by a stranger (Harrell 2012). Ironically, general fears regarding cyber victimization may focus on the risky stranger, and only rarely does one expect the perpetrator to be among one's most intimate associates.

Furthermore, the risk of being victimized by electronic means emerged as alarmingly high for vulnerable, non-heterosexual youth. LGBTQ young people were targeted at over four times the rate of heterosexual students. Illustrations include one openly gay boy who was called "fag" and other slurs on Facebook and a girl whose cell phone was taken by a boy who sent a mass message to her contacts saying "I am gay," causing the girl to "tear up, and nobody said anything." Although the numbers of LGBTQ youth in the sample remain small, the large effect size highlights the significance of the finding.

Several underlying group processes likely contribute to the development of cyber aggressive relations. For example, social norms prevalent in U.S. society that enforce heterosexuality can be involved in acts that target gay, lesbian, or bisexual youth. Adolescents who are in the beginning stages of developing their sexuality may reflect such norms as they attempt to establish their own sexual identities. Additionally, girls were frequent victims of electronic harassment, at about twice the rate of boys, which also may signify normative pressures (Underwood 2003).

Furthermore, the association between romance and electronic victimization highlights an additional group mechanism implicated in aggression: that of intimate relationship formation. A primary goal of many adolescents is to establish romantic relationships, yet this process is also intensely competitive, with young people inevitably vying for the most valued partners. One way to deter potential challengers may be to humiliate and scare them via a nasty, threatening text message or an embarrassing photo posted online. Additionally, dating in high school can be conflictual, and distressing breakups are not uncommon. Posting a cruel comment on an ex's Facebook page may be one approach to avenge a wrong or to shame and coerce a former partner into reuniting.

Strengths of the research presented include the use of networks of friendship, dating relationships, and cyber aggression, which allows us to examine the relational nature of victimization in more detail than before. In particular, networks of romantic relationships are rare. In addition, our data set was longitudinal, enabling us to track changes in the likelihood of becoming a target over time. The use of an ERGM framework enabled us to control simultaneously for several nodal and dyadic factors that contribute to electronic victimization. Nevertheless, additional work is needed to expand this research to other settings and longer time periods. Future research should consider differences between public humiliation and private harassment, a distinction we are unable to make with our data. Another crucial task remains to extend this investigation to consider possible interventions that might reduce victimization, especially for the most severe cases, such as the use of highly networked, salient students to alter patterns of school harassment (e.g., Paluck and Shepherd 2012).

In sum, a series of complex social relationship processes contribute to the development of school cyber aggression. Moreover, electronic and Internet threats to young people are disproportionately sent from those once held near and dear, friends and romantic partners. Thus, camaraderie and courtship do not always provide a safety net for young people when it comes to intentional, harmful behavior via electronic means. Instead, aggressive online actions commonly spread within a web of familiar relational ties that comprise a school's dynamic social system.

Acknowledgments

Notes

- ↵1 Conclusions regarding trends in school aggression victimization have been shown to be robust to the decision to analyze network data compiled from victims only, aggressors only, or the combined networks used here (Faris and Felmlee 2014).

- ↵2 In analyses not shown here, we controlled for a number of other network structural factors, such as variables to examine triadic effects. These models either failed to converge or had fit problems. Note that we do not anticipate, theoretically, that triadic tendencies would be common in electronic aggression. It seems unlikely that an aggressor will target the victim of a victim, that is, target the "enemy" of an "enemy."

- ↵3 Goodness of fit plots for Model 2 (not shown here) for edge-wise shared partners and degree indicate that the simulated model provides a very good, although not perfect, representation of the observed data.

Bios

Diane Felmlee is a professor of sociology at Pennsylvania State University. Her research focuses on social networks, dynamic modeling, and the processes involved in the relationship ties of friendship, romance, and aggression. Her research on aggression (with Robert Faris) has been featured on CNN Anderson Cooper and in an off-Broadway play, "Towards the Fear: An Exploration of Bullying, Social Combat, and Aggression." Recent publications have appeared in the *American Sociological Review, Social Networks, Social Psychology Quarterly*, and *Sex Roles*.

Robert Faris is an associate professor of sociology at the University of California at Davis. His research uses social network analysis to examine the emergence of conflict, aggression, and other social problems, particularly among adolescents. His research (with Diane Felmlee) on school aggression received the James Short Jr. Best Article Award from the American Sociological Association, Crime, Law, and Deviance Justice Section. Recent publications have appeared in *American Sociological Review, Social Networks, Journal of Adolescent Health*, and *Aggressive Behavior*.

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