Published in final edited form as:

Merrill Palmer Q (Wayne State Univ Press). 2009 January 1; 55(1): 1–25. doi:10.1353/mpq.0.0014.

Social Network Centrality and Leadership Status:

Links with Problem Behaviors and Tests of Gender Differences

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Abstract

Seventh-grade students ($N = 324$) completed social cognitive maps to identify peer groups and peer group leaders, sociometric nominations to describe their peers' behaviors, and questionnaires to assess their own behaviors. Peer group members resembled one another in levels of direct and indirect aggression and substance use; girls' cliques were more behaviorally homogenous than were boys' cliques. On average, leaders (especially if they were boys) were perceived as engaging in more problem behaviors than were nonleaders. In girls' cliques, peripheral group members were more similar to their group leader on indirect aggression than were girls who were more central to the clique. Peer leaders perceived themselves as being more able to influence peers but did not differ from nonleaders in their perceived susceptibility to peer influence. The findings contribute to our understanding of processes through which influence may occur in adolescent peer groups.

The importance of peer groups to young adolescents is well established. Belonging to a peer group provides children and adolescents with a sense of inclusion, enhancement of worth, instrumental aid, and companionship (Asher, Parker, & Walker, 1996; Bukowski & Hoza, 1989; Furman & Robbins, 1985; Ladd, Kochenderfer, & Coleman, 1997). Because of the important role that peer groups play, they have the potential to exert influence over the behavior of their members, particularly during early adolescence when susceptibility to peer influence peaks (Brown, 1990; Fergusson, Swain-Campbell, & Horwood, 2002; Saven-Williams & Berndt, 1990; Urberg, 1992). Although previous research has established that members of peer cliques resemble one another in behavioral characteristics such as deviancy, the processes through which behavioral similarities arise and the dynamics of peer group leadership are less well documented. The present study attempts to advance our understanding of how social

network centrality and peer leaders are related to adolescents' problem behaviors, susceptibility to peer influence, and ability to influence other peers to behave deviantly.

Sometimes peer influence is relatively benign (e.g., clothing or music preferences), and other times it is positive (e.g., academic achievement). In fact, one of the benefits of peer groups is that they provide a context in which youths learn behavioral norms that enable them to function adaptively in social situations (Parker & Gottman, 1989). However at times peer influence involves negative pressure to engage in deviant behaviors that are not sanctioned by adults (e.g., substance use, aggression, skipping school). One of the best-documented findings in the developmental literature is that deviant behavior is more likely to involve a group of peers acting together than to involve a single adolescent acting in isolation (e.g., Dishion, Andrews, & Crosby, 1995; Thornberry & Krohn, 1997; Warr, 1996). Indeed, the delinquency of an adolescent's peers has been found in several studies to be the strongest correlate of that adolescent's own delinquency (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Elliott, Huizinga, & Ageton, 1985; Elliott, Huizinga, & Menard, 1989; Pratt & Cullen, 2000; Warr, 1993a, 1993b), showing stronger associations than other family, school, and community correlates (Elliott & Menard, 1996). Furthermore, peer influence extends to a diverse set of problem behaviors including early and high-risk sexual behavior (Dishion, 2000), violent offenses (Elliott & Menard, 1996), and substance use (Dishion & Skaggs, 2000).

Although a large body of literature has shown that affiliations with deviant peers increase the risk that adolescents will engage in antisocial behavior, a question remaining is how deviant influence occurs once peers are in a group together. The potential mechanism that has received the most empirical attention is the process of deviancy training in which pairs of deviant youths positively reinforce one another's deviance by smiling, laughing, or chiming in with their own stories when a friend describes breaking a rule; in contrast, nondeviant youths are more likely to ignore friends' descriptions of rule breaking (e.g., Dishion & Owen, 2002; Dishion, Spracklen, Andrews, & Patterson, 1996; Patterson, Dishion, & Yoerger, 2000). Youths whose friends were observed reinforcing rule breaking were found to engage in higher levels of several types of subsequent deviant behaviors, including substance use (Dishion, Capaldi, Spracklen, & Li, 1995) and delinquency (Dishion et al., 1996).

Beyond the dyadic level, it is likely that deviant peer influence also occurs at the level of the broader peer group, making it important to understand social network structure and dynamics within groups. For example, it is likely that adolescents model their own behavior on the behavior of peers they deem to be important, especially peer leaders. Although a small number of studies has begun to identify different types of leaders within adolescent peer groups (e.g., Luthar & McMahon, 1996; Miller-Johnson et al., 2003; Rodkin, Farmer, Pearl, & VanAcker, 2000), this body of research has not examined how the behavior of the leaders is related to the behavior of peer group members. This process of leader emulation may be a key link in understanding one mechanism through which deviant peer influence may occur. That is, members of peer groups in which the leader is highly deviant may attempt to mimic or emulate the leaders of their cliques, who are presumably highly regarded and attractive within the peer group (see Moffitt, 1993).

The possibility recognized in recent literature that aggressive and anti-social youths can provide skilled but deviant leadership represents a rather dramatic shift from the focus on peer rejection and skill deficits of aggressive youths that was the emphasis of much research during the 1970s and 1980s (see Parker & Asher, 1987, for a review). In an early paper, Cairns, Cairns, Neckerman, Gest, and Gariépy (1988) found that although highly aggressive fourth and seventh graders were less popular than other youths in the social network at large, highly aggressive and other youths did not differ in their likelihood of being nominated as being nuclear members of peer cliques, the number of times they were nominated by peers as being a best friend, or

the likelihood of having reciprocated friendships. This work represented a turning point in recognizing that peer rejection by the majority of peers in a social network could coexist with peer acceptance and support for antisocial behavior by a minority of peers who were members of the individual's own clique.

Understanding susceptibility to peer influence and how this may operate within peer cliques is important because youths who are more susceptible to peer influence are at greater risk for engaging in problem behaviors such as substance use (Abbey, Jacques, Hayman, & Sobeck, 2006), sexual activities (Allen, Porter, & McFarland, 2006), and other deviant behaviors (Chen & Dornbusch, 1998). It may be that leaders are less susceptible to peer influence than are other youths. The present study attempts to enhance our understanding of adolescent peer group leaders by examining their problem behaviors, their susceptibility to peer pressure, and their ability to influence peers to behave deviantly within the context of their peer group. Examining leaders and their peer group members within the structure of naturally occurring peer groups will be an important contribution to the literature because it may shed light on important processes through which peer influence occurs.

Another important dimension related to peer group influences is social network centrality (Gest, Graham-Bermann, & Hartup, 2001). Network centrality refers to a student's position (nuclear, secondary, peripheral) within her or his peer clique; centrality and leadership status are often, but not necessarily, correlated. An individual may have high centrality within the group in the sense of being recognized widely by peers as being a member of the group yet may not be the group's leader. For example, some research suggests that being more central in the peer group is related to higher levels of social aggression (Xie, Cairns, & Cairns, 2002). Other research suggests that boys who are either physically or verbally aggressive are more central to their peer groups than are nonaggressive boys and that girls who are relationally aggressive are more central than are nonaggressive girls (Xie, Farmer, & Cairns, 2003). Yet other research suggests that boys and girls who are nuclear members of their peer groups are more athletic, cooperative, popular, and studious and are more often leaders than are nonnuclear members (Farmer & Rodkin, 1996). Thus, an examination of network centrality offers the opportunity to understand how an individual fits into the broader peer group and relates to the leader as well as how this network structure is associated with risk-taking behaviors.

Many studies of aggression and other risk-taking behavior have focused exclusively or primarily on boys (e.g., Dishion, Capaldi, Spracklen, & Li, 1995; Loeber, Farrington, Stouthamer-Loeber, Moffitt, & Caspi, 1998). However, girls' aggressive and antisocial behaviors have recently become a focus of interest for researchers and policy makers alike (Garbarino, 2006; Moretti, Odgers, & Jackson, 2004; Pepler, Madsen, Webster, & Levene, 2005; Putallaz & Bierman, 2004; Underwood, 2003). A body of research describing indirect, relational, or social aggression has documented forms of aggression that may be more salient to girls than to boys (Grotzinger & Crick, 1996). Yet data from the juvenile justice arena also show an alarming increase in girls' delinquency. Girls' arrests have increased almost 50% in the last decade, and proportionally girls' arrests have risen from 20% to 29% (Snyder, 2005). In addition to being problematic for these aggressive girls themselves, aggressive and delinquent girls are also at increased risk for becoming teen mothers, who are twice as likely as older mothers to abuse or neglect their children (Maynard, 1996; Miller-Johnson et al., 1999; Underwood, Kupersmidt, & Coie, 1996).

Although historically boys' substance use has exceeded that of girls (e.g., Costello, Erkanli, Federman, & Angold, 1999), recent data indicate that girls' substance use is approaching that of boys, especially during early adolescence (National Center on Addiction and Substance Abuse, 2003; Substance Abuse and Mental Health Services Administration, 1997). Furthermore, although both boys and girls are starting to use substances at an earlier age than

in previous decades, the age of onset of substance use is dropping more rapidly for girls than for boys. For example, only 7% of girls ages 10–14 had used alcohol three decades ago, but in the last decade this rate rose to 30.9% of girls; the comparable rate of increase for boys was from 20.2% to 35.4% (National Center on Addiction and Substance Abuse, 2003).

Ethnographic work has shown that the characteristics leading to boys' and girls' social status differ (e.g., athletic ability, coolness, toughness, and social skills for boys and high socioeconomic status, physical attractiveness, social skills, and academic success for girls) (Adler, Kless, & Adler, 1992; Eder & Parker, 1987). The impact of social influences on problem behaviors for boys and girls may be different as well. For example, girls tend to use cigarettes as a way to obtain social approval from others or to appear more socially advanced. Boys, on the other hand, report using cigarettes to deal with feelings of insecurity (Best, Brown, Cameron, Manske, & Santi, 1995). Some studies also suggest that girls may be more susceptible to peer influences and pressures than are boys (Barber, Bolitho, & Bertrand, 1999; Simons-Morton et al., 1999). To understand girls' problem behaviors during early adolescence, it may be important to examine gender as a potential moderator of links between peer group characteristics and problem behaviors.

The present study will address four main research questions. First, how similar are peer group members to one another in terms of problem behaviors? As in previous research, which we seek to replicate, we hypothesize that there will be significant similarity among peer group members with respect to problem behaviors. We will also expand this line of inquiry by examining whether there are gender differences in the degree to which clique members resemble one another. Because girls may be more susceptible to peer influences than are boys (Barber et al., 1999; Simons-Morton et al., 1999), we hypothesize that girls' cliques will be tighter with respect to how similar the members are in problem behaviors than will boys' cliques.

Second, are peer group leaders more or less involved than their peer group members in problem behaviors? On the basis of research suggesting that enhanced status in the peer group is associated with more risk-taking behaviors in adolescence (Cillessen & Mayeux, 2004), we hypothesize that leaders will be more involved in problem behaviors than will other peer group members. However, girl leaders may be especially high in indirect aggression, whereas boy leaders may be especially high in direct aggression.

Third, is an individual's centrality within the peer group related to how similar that individual's deviance is to the deviance of the leader? This question expands on the second question by taking a more differentiated approach to examining the nonleaders by considering their social position within the clique (rather than including all nonleaders in a single group). The literature does not provide enough evidence to warrant a firm hypothesis, but we believe that there are two main possibilities for how centrality may be related to similarity to the leader. One possibility is that those peer group members who are more central to the group will be more similar to the leader by virtue of their closer proximity in the social hierarchy. An alternate possibility is that those peer group members who are more peripheral to the group will be more similar to the leader because they are less assured of their position within the group and therefore may have more to gain by establishing similarities with the leader.

Fourth, do leaders perceive themselves as being more or less susceptible to peer influence than do nonleaders, and do leaders perceive themselves as being more or less able to influence others to behave deviantly than do nonleaders? Our hypothesis is that not everyone within the peer group exerts equal influence over other adolescents but that peer leaders will perceive themselves as being less susceptible to peer influence and more able to influence peer group members than will nonleaders.

For each of these four research questions, we examined whether gender moderates the relations of interest. Although a number of researchers have reported gender differences in clique structures, evidence about whether gender is related to processes of deviant peer influence and leadership is lacking.

Method

Participants

All seventh-grade students in two consecutive years at a North Carolina public magnet school were invited to participate in the study (Cohort 1: $N = 203$; Cohort 2: $N = 195$). Students were paid \$5 for returning consent forms, regardless of whether their parents gave consent for them to participate. Consent and assent forms were returned by 377 students; of these, 324 students (81% of all of the seventh-grade students) agreed to complete the survey. The participants included 183 girls and 141 boys who ranged in age from 11 to 14 years ($M = 12.23$). African Americans (43%) and European Americans (40%) were almost equally represented, followed by multiethnic students (9%), Hispanics (6%), and members of other races (2%). Students who completed the survey did not differ from their classmates in terms of gender ($\chi^2[1, 398] = .20, ns$), but African Americans were under-represented in the participating students compared to those who did not participate ($\chi^2[1, 398] = 9.00, p < .005$).

Procedure and Measures

The survey was administered to students in one 100-minute period during the students' science class in their regular classroom. The science teachers remained in the room along with the project staff but were in a different part of the room and were not involved in the administration of the survey. Students who did not consent to participate completed homework at their desks. The students received a small incentive (\$5 in cash) for completing the survey. All of the measures in the present study were completed by the students and were embedded within a larger assessment battery.

Social Cognitive Map

We utilized the Social Cognitive Map (SCM) procedures developed by Cairns and colleagues (Cairns, Leung, Buchanan, & Cairns, 1995; Cairns, Perrin, & Cairns, 1985; Cairns et al., 1988) to identify social groups within the seventh grade. The students were first asked "Are there some kids here in seventh grade who hang around together a lot?" The students were then instructed to list together the names of the children who hang around together and to name all of the groups of seventh graders that they could. For each group that they generated, the students were instructed to circle the name of the leader of that group. The students were not presented with any class lists to prompt their memory. Although only the participating students completed the measure, they reported on all of the students in the seventh grade. A composite SCM of the peer group network was then formed by using a computer program to combine the information across all students. The software (SCM version 4.0) was used to find groups within a social network based on the SCM procedure. This program uses a co-occurrence matrix of the number of nominations that each student received for being members of a clique along with other particular peers to define individuals' level of centrality within the group (ranging from the peripheral members who are infrequently nominated as being a member of the clique to the nuclear members who are frequently nominated as being members of the clique). The members could be central to the peer group by virtue of being nominated by many of their classmates as being a core member of the clique without being nominated as being the group's leader.

Popularity, direct aggression, and indirect aggression

The students were provided with a roster of all of the seventh-grade students in their school and asked to make unlimited nominations of peers who fit various behavioral and social influence descriptors. To assess sociometric popularity (social preference and liking), students were instructed to name students whom they “liked the most” and “liked the least.” A social preference score was created by taking the standardized difference between the standardized like-most nomination score and the standardized dislike-most nomination score. Using the procedures described by Coie, Dodge, and Coppotelli (1982), students were assigned to one of five mutually exclusive peer status groups: average, popular, rejected, controversial, and neglected; the first three categories were analyzed in the present study. To assess perceived popularity, students were instructed to name students who are the most popular in the seventh grade.

Direct aggression was based on nominations for the descriptor “fights a lot, hits others, or says mean things to them.” Nominations of indirect aggression were based on the item “leaves other kids out on purpose or talks about them behind their backs.” We utilized a packaged computer program (Sociometric Collection and Analysis [SCAN] version 5.0.5; DeRosier & Thomas, 2003) to enter the data and to create standardized scores for individual items.

Substance use

A substance use index was constructed from 11 variables asking students if they had ever used tobacco, alcohol, or marijuana and if so how much they had consumed at any single time and in the past 30 days. Items were collapsed as necessary and then submitted to a one-factor ordinal data confirmatory factor analysis in Mplus v.3.12.

Susceptibility to peer pressure and ability to influence peers

We assessed students’ perceptions of the likelihood that they would succumb to peer pressure to engage in deviant behavior using a seven-item scale developed by Lochman and Wells (2002). Each item (e.g., “If a friend dares you to smoke a cigarette and your parents don’t want you to smoke, would you smoke it?”; “If your best friend was skipping school, would you skip too?”) was rated on a five-point scale ranging from 1 = definitely not to 5 = definitely would. Items were summed to create a scale reflecting susceptibility to peer pressure ($M = 13.59$, $SD = 5.53$, $\alpha = .82$). Each item was also reworded to reflect the students’ perceptions of their ability to pressure their peers into engaging in deviant behavior (e.g., “If you dare a friend to smoke a cigarette and his/her parents don’t want him/her to smoke, would your friend smoke it?”; “If you were skipping school, would your best friend skip too?”). These items were also summed to create a scale ($M = 17.29$, $SD = 7.00$, $\alpha = .88$).

Results

Cliques Derived from the SCM Procedure and Descriptive Data

The SCM procedure resulted in 54 cliques (29 in Cohort 1, 25 in Cohort 2) that ranged in size from 2 to 17 members ($M = 6.85$, $SD = 3.49$, $Mdn = 6$); 32 (8%) of the students were not identified as being members of any group. The cliques were predominantly composed of adolescents of the same gender. There were 107 boys (29% of total sample) in 19 all-male cliques and 174 girls (47%) in 23 all-female cliques. However, a substantial minority of the youths—89 students (24%) in 12 cliques—were in mixed-gender groups (that had at least 1 member of each gender). Using the criterion of having at least three peer nominations as being a leader, 96 leaders and 274 nonleaders were identified. Of the 54 cliques, 16 were leaderless, and 8 were composed of at least 50% leaders (although none included more than 67% leaders). We also imposed a more stringent requirement of having at least four peer nominations as

being a leader; this change made little difference in the substantive findings, so the results below use the three nominations criterion. Table 1 shows the correlations among the individual-level variables, and Table 2 shows correlations among the clique-level variables. As would be expected, at both the individual level and the group level the indicators of problem behaviors, susceptibility to peer influence, and ability to influence peers were positively correlated. Being a leader and highly central to the group were also positively correlated with engaging in more problem behaviors.

Similarity of Clique Members in Problem Behaviors

The first set of findings addresses the research question regarding the overall similarity in problem behaviors within cliques, controlling for ethnicity, gender, and cohort. We estimated multilevel models (MLM) with students nested within cliques to generate intraclass correlations (ICCs) for direct aggression, indirect aggression, and substance use. Not surprisingly, youths who were high in direct aggression were more likely to hang around with other youths high in direct aggression. The results were similar for indirect aggression and substance use. Overall, 33% of the variance in an individual adolescent's problem behavior was accounted for by clique membership for direct aggression, 29% for indirect aggression, and 15% for substance use.

To examine whether deviant peers affiliate regardless of sociometric popularity or whether these groups are composed of youths who are similar in sociometric popularity, we tested a sociometric popularity (popular vs. average, rejected vs. average) $\times$ individual deviance (continuous) interaction predicting clique deviance (excluding self), controlling for race, gender, and cohort. None of these interactions were statistically significant, suggesting that deviant peers are affiliating regardless of sociometric popularity. However, a comparable set of analyses with perceived popularity showed that perceived popularity significantly interacts with individual deviance to predict clique deviance for aggression and relational aggression but not for substance use. Taken together, these findings suggest that perceived-popular deviant leaders aggregate but that sociometric-popular leaders do not.

We also examined the degree of similarity within cliques separately by gender. Because separate analyses were needed to obtain the ICC for boys and girls, we could not test an equality constraint to determine whether boys and girls significantly differed. However, the girls' cliques appeared to be tighter than boys' cliques in that more variance in their individual direct aggression was accounted for by clique membership for the girls (49%) than the boys (29%). The findings were similar but more modest for indirect aggression (34% for girls vs. 28% for boys) and for substance use (24% for girls vs. 14% for boys). This finding suggests that the girls high in direct aggression, indirect aggression, and substance use were more likely than the boys high in these problem behaviors to associate with one another.

Problem Behaviors of Leaders versus Nonleaders

The second set of findings compared the level of problem behaviors between the peer group leaders and the peer group members. For each of the outcomes (direct aggression, indirect aggression, and substance use), we fit a regression model that tested the prediction from leadership status, controlling for ethnicity, gender, cohort, the cohort by status interaction, and the gender by leadership status interaction. The peer group leaders were significantly more likely than the nonleaders to be perceived by their peers as being high in direct aggression ($F[1, 364] = 30.20, p < .001; M = .34$ and $-.12$ for leaders and nonleaders, respectively). This effect is qualified, however, by a significant interaction with gender ($F[1, 361] = 15.07, p < .001$). Figure 1 shows that the male peer group leaders are especially likely to show high levels of direct aggression. Male and female peer group leaders were both more likely to be perceived as being high in indirect aggression than were their clique members ($F[1, 364] = 34.88, p < .$

001; $M = .38$ and $-.13$ for leaders and nonleaders, respectively). The leaders were neither more nor less likely to use substances than other clique members ($F[1, 287] = 1.46, p > .10$).

We supplemented these analyses with additional analyses designed to determine whether leaders' higher levels of aggression, which may be used to establish or maintain dominance and influence in the social structure, may be simultaneously related to power on the one hand but to dislike on the other hand. Leaders ($M = .86$) were significantly higher than nonleaders ($M = -.23$) on perceived popularity (based on sociometric z-scores) ($F[1, 365] = 112.49, p < .001$). Leaders ($M = .48$) also had significantly higher social preference scores (sociometric popularity) than did nonleaders ($M = -.05$) ($F[1, 365] = 24.44, p < .001$). Therefore, we would conclude that the youths identified as leaders in our study were, on average, perceived as being popular and well liked despite their higher levels of aggression.

Similarity to the Leader as a Function of Network Centrality

The third set of findings expanded on the second set by taking a more differentiated approach to examining the nonleaders by considering their social position within the clique (rather than including all of the nonleaders in a single group). Specifically, we examined the association between individuals' centrality within the clique and the similarity between their own problem behaviors and the problem behaviors of their clique leader.

For each outcome, we calculated the mean score on that outcome for those members of each clique identified as leaders (recall that cliques could have more than one leader). For the remaining members, we took the absolute value of the difference between the nonleader student's score and the leader mean score for that clique. Each of the outcomes was modeled separately in an MLM controlling for cohort, ethnicity, and gender and testing interactions with gender. There were no main effects of centrality on any of the outcomes. However, as shown in Figure 2, there was a significant interaction between centrality and gender on perceived indirect aggression ($F[1, 162] = 4.12, p < .015$). Specifically, the girls who were less central to their clique were more similar to their clique leader on indirect aggression than were the girls who were more central to the clique. For boys, similarity to the leader did not vary as a function of centrality within the group.

Susceptibility to Peer Influence and Ability to Influence Peers

The fourth set of findings addressed the hypotheses that leaders would perceive themselves as being less susceptible to peer influence and more able to influence peers to behave deviantly. Each of these two questions was evaluated in a one-way ANCOVA, controlling for student ethnicity, gender, and cohort. Leadership status was positively associated with self-reported ability to influence peers [$F[1, 284] = 6.91, p < .01$; adjusted means 19.02 [leaders] versus 16.62 [nonleaders]]. Leadership status did not significantly predict self-reported susceptibility to peer influence ($F[1, 291] = 3.22, p = .074$). These results were not significantly moderated by gender ($ps > .07$).

Discussion

The purpose of this study was to examine the associations between peer social influences and problem behaviors. We relied on peer ratings of their social networks and behavioral characteristics, thereby avoiding the bias associated with self-reports of one's own peer groups. In addition, we addressed important questions related to whether influence processes within peer groups vary for boys and girls. In this way, the study was able to elucidate processes through which influence may occur in adolescent peer groups.

For our first research question we replicated findings from other studies showing that the members of peer groups resemble one another in behavioral characteristics such as substance use and overt aggression (Aseltine, 1995; Dishion & Owen, 2002; Ennett & Bauman, 1994; Fisher & Bauman, 1988; Matsueda & Anderson, 1998). Our study adds to this literature base by addressing issues that may be of particular salience to the role of peer groups in girls' risk-taking behavior. First, we found that the members of peer cliques resembled each other on socially aggressive behaviors. Although this effect was evident for both genders, girl cliques were somewhat tighter on indirect aggression than were boy cliques. Although purely speculative, it may be that social aggression attracts youths to each other and serves as a useful behavior to direct at others outside their peer group in order to maintain cohesion in the social network. For example, Parker and Gottman (1989) suggest that gossip (which often is a form of indirect aggression) may play an important role in friendships by leading to self-disclosure and a sense of group solidarity. Given its subtle, covert nature, indirect aggression may be a particularly effective magnet to attract youths to each other, as indirect aggression does not easily come under the radar of teachers or parents. Further observational and longitudinal study is needed to better understand the role of social aggression in peer influence and peer selection processes.

We also found that girls' cliques resembled each other more so than boys' cliques on direct aggression. Although we were not able to conduct a statistical comparison, the intraclass correlation for the girls was nearly twice that of the boys. Although most studies of physical aggression have been conducted with boys, there is an increasing recognition of these behaviors among girls (Moretti et al., 2004; Pepler et al., 2005; Putallaz & Bierman, 2004). We speculate that as girls enter early adolescence, overtly aggressive behaviors (which are quite uncommon in childhood) become more salient as peer norms begin to shift and as rule-breaking tendencies become more of a sign of status. Cillessen and Mayeux (2004), in their longitudinal study of linkages between risk taking and peer status, found that problem behaviors became increasingly associated with enhanced status as youths entered the teen years and suggested that early adolescence brings with it a lessening of censures against risk-taking behaviors. It may be that physically aggressive girls seek out like-minded companions because these behaviors now have newfound appeal and status. In addition, as cross-gender boundaries begin to break down, girls may use physically aggressive behaviors as a way to seek out and attract boys (Pepler & Craig, 1999; Thorne, 1993).

An alternate possibility is that because physical aggression is rarer among girls than boys (and therefore reputationally salient), it may become more distinctive mark of similarity related to relationship formation in girls. That is, the more salient and unique a behavior is, the more it may attract those who possess it to bond with those who share the behavior. For girls, instead of a decline in social sanctions against direct aggression as proposed above, an alternate explanation would be that an increase in social sanctions against direct aggression might make it necessary for girls exhibiting such behaviors to affiliate because they have been isolated from less directly aggressive female peers. For boys, physical aggression might be a way of establishing hierarchy so that boys who are similarly physically aggressive may not necessarily aggregate because they compete (i.e., boys more similar in being highly aggressive might at times fight rather than join with one another). The higher base rate of direct aggression and lower homophily for boys may also suggest weaker sanctions against direct aggression and less salience in its role in the organization of peer networks. Furthermore, the composition of peer groups is complex. Although there is evidence for behavioral homophily, there is also evidence for diversity in the characteristics of group members, and group members influence one another over time (e.g., Dishion & Owen, 2002; Hogue & Steinberg, 1995). Social synchrony and complementary social relationships within peer groups may be as important as behavioral homophily. Our results suggest the need for further study of peer relationships and social influence processes and how they are related to aggressive behaviors.

Our findings on differences between leaders and nonleaders on problem behaviors further illuminate peer group influence processes. For both genders, the leaders were perceived by their peers as being more indirectly aggressive than the nonleaders. These results underscore the functionality of this type of aggression (see Pelligrini & Long, 2003; Vaillancourt, 2005). Covert behaviors such as excluding other youths on purpose or talking about them behind their back may be effective interpersonal strategies to navigate one's role as a leader and to influence the clique culture. For example, leaders may use these behaviors to maintain dominance hierarchies and to influence who is permitted to join the group. These findings emphasize the need to recognize that although these behaviors can have a negative impact on others, their use can also have adaptive aspects for both boys and girls.

We also saw that for the boys, leaders were perceived as being more directly aggressive than the nonleaders. Again, these results underscore the adaptive function of aggressive behaviors. For males, direct aggression may be a useful strategy to achieve and maintain dominance in the male peer group hierarchy. Aggressive behaviors may also be an attractive quality to girls and enhance males' social capital as a potential boyfriend (Miller-Johnson et al., in press; Pelligrini & Long, 2003). As peer group norms shift to promote risk-taking behavior, both males and females may be attracted to male leaders in that their physically aggressive behaviors can be a symbol of status and maturity. Indeed, Bukowski, Sippola, and Newcomb (2000) found that aggressive boys increased in attractiveness for both girls and boys after the transition to middle school.

Despite the potential adaptiveness of antisocial behavior and its emerging attractiveness in adolescent peer groups, it is important not to overstate this perspective. Clearly, nonantisocial youths also hold leadership positions within adolescent peer cliques. Furthermore, even if antisocial youths become peer leaders, this does not necessarily mean that antisocial behavior is not associated with skill deficits that are problematic in other peer contexts (e.g., with peers not in the youth's own clique) or in later behavioral or socioemotional adjustment. Given our nomination procedure for classifying leaders, it is also possible that our leadership measure references general dominance but not actual group leadership.

We found that gender was a significant moderator of the association between clique centrality and leader similarity for indirect aggression. Girls who were the most peripheral in the peer clique were also the most similar to the group leader. These findings suggest that girls who are on the fringe of peer networks may be clique wannabees and are attempting to emulate the leader as a way to assure themselves of continued group affiliation. Such girls may be more vulnerable to being excluded and less confident of their social position in the clique. Adler and Adler's (1995) work using participant observation and interviews with fourth through sixth graders elucidates these processes nicely. They found that clique leaders maintained positions of influence by initially admitting other peers to their inner circle of power and popularity but then turning the group against those peers, reducing them to positions of less power and status. This led to cycles of power and influence that were manipulated by the clique leaders who changed the clique members' relative inclusion and exclusion in the inner circle of the group (Adler & Adler, 1995). Eder's (1985) observations of and interviews with middle school girls provide the additional nuanced finding that although peer status was derived through friendships with popular girls, these girls tended to become disliked and resented over time because of their tendency to avoid interacting with girls of lower status (and perhaps also because of their manipulateness, as described by Adler & Adler, 1995; see also Merten, 1997).

Further support for the authority role of a leader comes from our findings on perceived ability to influence. As hypothesized, the leaders rated themselves as having more ability to influence others to engage in problem behaviors. Typically, we conceptualize leadership as a positive

attribute that involves adult-sanctioned prosocial activities, such as involvement in student government or athletics. However, these and other recent findings demonstrate the salience of a more cool trendsetter leadership style. Miller-Johnson et al. (2003) found two types of leaders in a sample of urban African American seventh graders. Conventional positive leaders (who were often leaders of adult-sanctioned groups such as student government and other extracurricular activities) were not involved in problem behaviors, but unconventional leaders (who were trendsetters in leading informal groups) were involved in problem behaviors. In their sample of inner-city adolescents, Luthar and McMahon (1996) also found that peer influence was associated with two patterns of behavior (i.e., one prosocial, one deviant). Rodkin et al. (2000) identified two types of leaders in peer groups of fourth through sixth graders; both types of leaders were identified by peers and teachers as being popular. Model leaders described themselves as nonaggressive and academically competent, whereas tough leaders described themselves as aggressive and physically competent.

Contrary to our hypothesis, we did not find that leaders perceived themselves as being less susceptible to peer influence than nonleaders. A substantive interpretation of this finding would be that leadership is a precarious position; to retain power in a group, one must be accessible and responsive to the group members. A methodological interpretation would be that some of the questions used to assess susceptibility to peer influence did not imply unwillingness to go along with what the peers wanted to do, so, for example, deviant leaders might have been agreeing that they would sometimes engage in deviant behavior that was suggested by others (but not necessarily against their will). Indeed, Merten (2005) described findings from a two-year ethnographic study of privileged European American girls transitioning between grade school and, junior high and found that engaging in deviant behavior became a rite of passage during this transition.

If deviant behavior becomes normative during adolescence, this raises the question of what being deviant really means. We have been using the term “deviant” in the sense that these behaviors go against adult conventions regarding what would be desirable behaviors for youths. However, high levels of direct and indirect aggression and substance use may not be deviant in the sense of challenging the norms of adolescent peer culture; instead of being deviant, these behaviors may be regarded as being cool. How adolescents construct their conceptions of what is cool is likely linked to behaviors and preferences they see modeled by high-status peers.

This study had some limitations. First, our data were concurrent, and therefore we faced the limitation inherent in cross-sectional data of not being able to make any conclusions about the direction of effects between peer and problem behavior variables. Furthermore, peer networks may change quickly over time. We would need longitudinal data to know about the flow of influence and changing group structures. In addition, measures of leadership were derived from reports of youths both within and outside of each clique; future research could ensure that leaders were perceived as such by their group members by assessing leadership only within the context of a particular peer group. The present analyses also focused on same-age school-based peer groups. It is possible that influence operates differently in mixed-age groups (e.g., the older youths may exert more influence) or in groups established outside of school (e.g., in neighborhoods or extracurricular activities). Although we had multiple informants' input on network structure, leadership, direct aggression, and indirect aggression, we had only a single informant for substance use, susceptibility to peer pressure, and ability to influence peers. We also did not have observational data that would have allowed for a more in-depth and rich analysis of social interactions and influence within peer cliques. Allen et al. (2006) found modest, but marginally significant or significant, associations between seventh and eighth graders' observed susceptibility to peer influence between pairs of friends in a neutral laboratory task and reports by friends of their ability to influence one another to engage in

antisocial behavior in real-life situations. Future research with observational data could provide important new insights into processes of peer influence.

Despite these limitations, the study includes a number of strengths, including the availability of peer ratings of their social groups and a large mixed-race sample of early teens. Taken as a whole, the findings elucidate important peer group processes that may impact involvement in risk-taking activities and highlight the important role that peer group leaders may play in promoting and supporting such involvement.

Acknowledgments

This work was funded by grant 1 P20 DA017589-02 from the National Institute of Drug Abuse. Portions of these results were presented at the biennial of the Society for Research on Child Development, Atlanta, Georgia, 2005.

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Figure 1.

Gender as a moderator of the relation between leadership status and direct aggression.

Figure 2.
Gender as a moderator of the relation between clique centrality and indirect aggression.

Table 1

Correlations among Individual-Level Variables

	1	2	3	4	5	6	7	8
1. Direct aggression	.66*							
2. Indirect aggression	.27*	.30*						
3. Substance use	.27*	.34*	.61*					
4. Susceptibility to peer pressure	.19*	.29*	.40*	.64*				
5. Ability to pressure peers	.31*	.40*	.13	.11*	.17*			
6. Leader (0 = nonleader, 1 = leader)	.08	.18*	.02	.03	.03	.33*		
7. Centrality	.23	-.17*	-.04	-.04	-.06	-.13	.02	
8. Gender (0 = girl, 1 = boy)	.37	.30*	.05	.06	.12*	.06	.00	-.03
9. African American (0 = non-A. A., 1 = A. A.)								

*
p < .05

Table 2

Correlations among Clique-Level Variables

	1	2	3	4	5	6	7	8
1. Average direct aggression	.71 *							
2. Average indirect aggression	.35 *	.33 *						
3. Average substance use	.44 *	.43 *	.63 *					
4. Average susceptibility to peer pressure	.39 *	.46 *	.39 *	.72 *				
5. Average ability to pressure peers	.01	.13 *	.10	-.04	-.03			
6. Clique size	.21	-.31 *	-.05	-.04	-.04	-.23		
7. Proportion boys			.32 *	.25	.22	-.12		
8. Proportion African American	.57 *	.56 *					-.14	

* $p < .05$.