Observations of Adolescent Peer Group Interactions as a Function of Within- and Between-Group Centrality Status

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Observations of adolescent ($n = 258$; *M* age = 15.45) peer group triads ($n = 86$) were analyzed to identify conversation and interaction styles as a function of within-group and between-group centrality status. Group members' discussions about hypothetical dilemmas were coded for agreements, disagreements, commands, and opinions. Interactions during a hypothetical decision were rated for openness, dominance, aggression, and prosocial behavior. Hierarchical linear modeling revealed that higher within-group status predicted more disagreements, commands, and less openness than lower within-group status. Interactions showed that prosocial and aggressive behavior varied as a function of individual status in low-status but not high-status groups. Boys, but not girls, engaged in more openness in higher status groups. Results provide insights into peer socialization.

For many years, researchers interested in studying the influence of children's peer relationships on behavior and adjustment have focused primarily on overall acceptance and dyadic friendships. However, recently, there has been a substantial increase in the empirical study of children's peer groups (Brown & Dietz, 2009; Veenstra & Dijkstra, 2011). Beginning in middle childhood and increasing during adolescence, most peer interactions take place in the context of groups (Crockett, Losoff, & Peterson, 1984; Rubin, Bukowski, & Parker, 2006). Furthermore, adolescents who identify with a peer group derive a sense of identity and personal autonomy from group affiliation (Brown & Lohr, 1987).

PEER GROUP SOCIALIZATION

Children's behavior within group settings differs dramatically from that of dyadic interaction. Even when groups are small in size, there is more competitive behavior and less interpersonal harmony in groups compared with dyads (Benenson, Nicholson, Waite, Roy, & Simpson, 2001). These interaction-based groups are often referred to as peer networks, or cliques (Brown, 1990; Dijkstra & Veenstra, 2011). A second type of peer group formed on the basis of reputation only is referred to as a crowd, which is typically larger than a clique and emerges during adolescence (Brown, 1990; Dijkstra & Veenstra, 2011). In the present study, we were interested in examining patterns of behavior in interaction-based groups; however, given the limited research on the specific interactions that take place in the context of adolescents' groups, we rely on research from both crowd and clique settings.

To date, many empirical investigations of peer groups have focused on documenting the socialization effects of specific group norms. Longitudinal research on adolescent peer groups and friendship networks reveals socialization of individual physical and social aggression (Espelage, Holt, & Henkel, 2003; Sijtsema et al., 2010), deviant behavior (Baerveldt, Völker, & Van Rossem, 2008; Burk, Steglich, & Snijders, 2007; Dijkstra et al., 2010; Kiesner, Cadinu, Poulin, & Bucci, 2002; Kiuru, Burk,

Laursen, Salmela-Aro, & Nurmi, 2010; Urberg, Degirmencioglu & Pilgrim, 1997), prosocial behavior (Ellis & Zarbatany, 2007), and school attitudes (Kindermann, 1993; Ryan, 2001). However, peer group influence is not uniform, and socialization effects vary considerably when individual or group differences are examined (e.g., Ellis & Zarbatany, 2007; Kiesner et al., 2002). For instance, social status has been identified as an important moderator of peer influence, with high-status groups holding the most power to influence members within their groups (Ellis & Zarbatany, 2007) and high-status individuals being the most influential (Cohen & Prinstein, 2006). Despite our growing knowledge of peer group effects, we know very little about the specific social-behavioral processes that embody peer group interactions and may underlie variations in group influence. Thus, the goal of the present study was to examine specific styles of interaction in adolescent peer groups.

WITHIN- AND BETWEEN-GROUP STATUS

Status has been measured in a variety of ways (e.g., peer acceptance or popularity), but when considering group level behaviors, *group* social status has often been examined by assessing the degree to which a group occupies a central location within the larger social network (e.g., Gest, Graham-Bermann, & Hartup, 2001). Similarly, individual social status can be measured by assessing the centrality of individuals within their peer groups (Gest et al., 2001). Both measures are indexed by the total number of times children in a group are named by classmates as group members. However, group status is the relative centrality of peer groups within the larger classroom (or grade) network and within group status is children's relative centrality compared with other peer group members. Therefore, every group, regardless of overall status, will have both high-status and lower status *individuals.*

Presumably, children who are nominated frequently as group members are noticed because their behavior has consequences for others (Gest et al., 2001). Group visibility may be a result of either positive or negative behavior, but often, a combination of both is evident in highly central groups (Adler & Adler, 1995; Rodkin, Farmer, Pearl, & Van Acker, 2000). Similarly, individual centrality status differs from peer acceptance because it is based on nominations of prominence and visibility within each group and may not be related to liking.

PEER GROUP STATUS AND PROCESSES OF INFLUENCE

Social Identity Theory (SIT) suggests that an individual's self-concept derives largely from social group membership (Tajfel & Turner, 1979). SIT proposes two underlying processes to account for observed group behavior: categorization of individuals and self-enhancement (Hogg, 1996). Between-group comparisons will motivate children to behave in ways to maintain, protect, or achieve a positive group identity. Clearly, some groups offer more rewards than others. For example, being in a high-status central group is generally more socially advantageous than belonging to a low-status peripheral group due to greater access to social recognition, relationships, and general resources (Eder, 1985; Hawley, 1999). According to Resource Control Theory (Hawley, 1999), these benefits and power associated with the most prestigious positions within the peer hierarchy are due to control of limited resources. More socially dominant youth are able to employ strategies and gain access to limited resources such as attention, space, and materials (Hawley, 2003; Hawley, Card, & Little, 2008). In line with these theoretical arguments, Ellis and Zarbatany (2007) found the strongest socialization effects for individuals in high-status peer groups in shaping early adolescent's prosocial, deviant, and aggressive behavior.

Social Identity Perspective proposes that people cognitively represent groups in terms of prototypes, and judgments are made about group members based on these representations (Hogg, 1996). Group prototypes are likely to be the most high-status (central) members of the group. Thus, higher status group members should exemplify the group norms and hold the most power (or control over the behaviors of others) within the group (Hogg, 2005). Duffy and Nesdale (2009) showed that compared with peripheral group members, prototypical members were more likely to embody group norms for bullying, and they suggest that prototypes are responsible for maintaining group norms. Furthermore, Dijkstra, Lindenberg, and Veenstra (2008) demonstrated that popular youth play an important role in establishing classroom norms; when more popular youth engage in bullying behaviors, the associated negative social outcomes (peer rejection and low acceptance) are attenuated. On the basis of these findings and theoretical arguments, we expect the interactions between members of higher status groups and those strategies used by

higher status group members to differ substantially from their lower status counterparts.

Despite mixed evidence for the use and function of peer pressures (Ungar, 2000), ethnographic observations of adolescent peer groups have documented that coercive tactics such as aggression, direct instruction, and dominance are often used to control the behavior of others (Adler & Adler, 1995). Both dominance (e.g., controlling resources, making group decisions) and aggression (e.g., hitting, name-calling or teasing) can be used in a playful manner to limit individual expression, communicate behavioral limits and keep relationships intact (Dishion, Spracklen, Andrews, & Patterson, 1996; Walcott, Upton, Bolen, & Brown, 2008). Adolescents who pair their aggressive behavior with prosocial tendencies are self-rated and peer-nominated as the most effective resource controllers and are considered popular by their peers (Hawley, 2003; Hawley et al., 2008).

Studies have shown that both individual and group centrality has prosocial and aggressive correlates (Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988). Membership in high-status groups is uniquely associated with teacher and peer nominations of leadership and prosocial behavior (Cairns, Gariepy, Kindermann, & Leung, unpublished data). Within group centrality status has also been correlated with relationally aggressive behavior (Hoff, Reese-Weber, Schneider, & Stagg, 2009). The pairing of positive (i.e., prosocial) and negative (i.e., aggressive, antisocial) behavior, or a bi-strategic approach to resource control (Hawley, 2003), is also reported by high-status groups and individuals (Adler & Adler, 1995; Dijkstra, Lindenberg, Verhulst, Ormel, & Veenstra, 2009; Hoff et al., 2009; Rodkin et al., 2000). Thus, group norms may be maintained through behaviors that include dominance, aggression, and prosocial behavior. These behaviors may communicate a lack of openness or freedom for individual differences and aid in maintaining a cohesive group identity (Hogg, 2005), ultimately keeping the group intact.

However, peer group norms can also be maintained through subtle expressions of approval, disapproval, and opinions. In a study involving formal observations of peer group influence, Sage and Kindermann (1999) showed that members of highly academically motivated groups experienced peer group approval for on-task efforts, whereas members of less motivated peer groups did not. Comparable strategies were noted by Berndt, Laychak, and Park (1990) in an observational study of friend dyads. In their study, strategies used to influence friends' decisions during a hypothetical dilemma task included verbal agreements, expression of opinions, and reasoning of opinions. Thus, conversation styles that emphasize positive or negative reinforcements, or expressing one's agreement, disagreement or opinions, may be persuasive techniques for guiding group expectations.

THE CURRENT STUDY

In the current study, we hope to advance understanding of peer group processes by observing the specific interactions of naturally occurring adolescent peer triads. Although we examine status as a predictor of specific behaviors, it is quite likely that interaction styles also reinforce status. In the present study, our goal was not to imply causal effects, but to examine the links between status and observed behavior in peer groups.

Information on adolescents' group membership and within- and between-group status was collected using self-report questionnaires, and a subset of participants completed two tasks during a 20-min observational assessment in self-nominated triads. One task was designed to assess realistic conversation styles during a group discussion of hypothetical relationship dilemmas similar to the methods used by Berndt et al. (1990). Four behaviors were coded from this discussion task: agreements, disagreements, expression of opinions, and commands.

In the second task, group members first independently selected three items to bring if stranded on a deserted island and then made a collective decision on three items to bring as a group. This task was designed to simulate competitive group situations and provided more opportunities to observe peer group social dominance than a naturalistic group discussion. This task was coded to assess global dimensions of socially dominant behavior. Four constructs were assessed: openness to group members' opinions, dominance, aggression, and prosocial behavior.

Based on the ideas discussed above that group identity and norm-adherence are of the utmost importance in higher status groups and individuals (Duffy & Nesdale, 2009; Hogg, 1996), the conversation and interaction styles in these groups and by high-status group members should reflect more of those behaviors that aid in maintaining group behavior and boundaries compared with their lower status counterparts. In group conversations, we expected to see specific behaviors that direct and reinforce group members' ideas in these

high-status groups and by high-status group members (Berndt et al., 1990; Sage & Kindermann, 1999). Moreover, when making group decisions, we also expected high-status groups and individuals to use the most socially dominant behaviors including dominance, aggression, and prosocial behavior, as well as a lack of openness to others' opinions (Dijkstra et al., 2009; Hawley, 2003; Hogg, 2005).

Our first set of hypotheses was that higher group and individual centrality status would predict (1) more agreements, (2) more disagreements, (3) more commands, and (4) fewer expressions of individual opinions in the group discussion task, compared with lower status groups and individuals. Our second set of hypotheses concern the group decision task. We hypothesized that higher group and individual centrality status would predict (1) less openness, (2) more dominance, (3) more aggression, and (4) more prosocial behavior compared with lower status groups and individuals. We also examined the interaction between individual status within the group and overall group status. We expected that high-status members of high-status groups would have the largest investment in monitoring and enforcing group identity, and as a result show the most evidence of the behaviors outlined above.

Researchers have often failed to note gender- and age-differentiated group socialization effects (Ellis & Zarbatany, 2007; Espelage et al., 2003; Ryan, 2001). Nevertheless, gender differences in peer experiences and interactions have been documented (Rose & Rudolph, 2006). Although no specific hypotheses were formulated, moderating effects of gender and age were also considered.

METHOD

Participants

Grade 9, 10, and 11 students from two public high schools in a mid-sized Canadian city were invited to participate. Only those students who provided documentation of parental consent and youth assent participated in data collection. Consent was calculated by grade and ranged from 60% to 77% (M consent rate = 69%). The initial sample consisted of 1,070 students (522 girls; 14–17 years of age, M_{age} = 15.45). There were 340 Grade 9 students (32%), 379 Grade 10 students (35%), and 351 Grade 11 students (33%). Most participants were White (80.1%), and others self-identified as Asian Canadian (9.4%), Arab Canadian (2.3%), or other

(8.3%). Census data on socioeconomic characteristics of the school neighborhoods revealed that the sample was middle to lower-middle class. Students of classes that brought back all of their parental consent and youth assent forms, regardless of the decisions made, received a class pizza party (approximately 40% of classes).

Following initial data collection, participants were invited to take part in an observational session with two of their peer group members. Participating peer group triads (n = 86 groups; 258 participants) consisted of 26% of the original sample. A Chi-squared test revealed no differences in gender or grade distribution between adolescents who participated in the observational session and the original sample, $\chi^2(1)$ = .01, p = .95 and $\chi^2(1)$ = 5.53, p = .06, respectively. Despite asking children to nominate same-grade peers, there were eight mixed-grade groups and 17 mixed-gender groups. These were retained in our sample to maintain the authenticity of naturalistic peer groups. To assess whether the inclusion of these mixed-grade and mixed-gender groups altered our findings, all data were reanalyzed after removing these groups. Findings remained virtually identical for the discussion task. For the decision task, significant findings remained, with the exception of the interaction between individual and group status for aggression. Therefore, we remain confident that this mix of ages and genders represents naturalistic peer groups.

Measures

Individual- and group-level centrality status. The Social Cognitive Mapping (SCM) technique is a widely used method for detecting naturally occurring groups within a social network based on peer nominations (Cairns et al., unpublished data). SCM identifies group centrality status within the social network and individual centrality status within each group. Participants were asked: "Do you have a group (of three or more members) that you hang around with a lot? Who are they?" and "Are there other people (of three or more members) who hang around together a lot? Who are they?" Participants were asked to nominate only students from their own school in their own grade.

To derive centrality scores for each participant, data were analyzed in SCM 4.0 according to Cairns et al. (unpublished data). First, a recall matrix was created that contained all participants' group nomination information. Second, a co-occurrence matrix was created that revealed peer group affiliation

trends for each participant. Specifically, the co-occurrence matrix provides the number of times each participant was nominated as being affiliated with every other participant in the social network. Finally, a correlation matrix was created from the co-occurrence matrix, which contained Pearson product-moment correlation values between all possible pairs of participants. As a guideline, pairs of participants who received a correlation value of $r \geq .50$ were assigned to the same peer group.

Individual- and group-level centrality statuses were determined based on frequency of individual nominations into a peer group and the overall number of peer group nominations, respectively (Cairns et al., unpublished data). First, a centrality index (CI) was created for each peer group by calculating the mean frequency nomination score from the two peer group members who received the most nominations. For group-level centrality status, peer groups were identified as "nuclear" if their CIs were $\geq 70\%$ of the CI of the highest scoring group. Peer groups were identified as "secondary" if their CIs were between 30% and 70% of the CI of the highest scoring group. Finally, peer groups were identified as "peripheral" if their CIs were $\leq 30\%$ of the CI of the highest scoring group. For individual-level centrality status, participants were identified as "nuclear" group members if their frequency of nominations score was $\geq 70\%$ of their peer group's CI. Participants were identified as "secondary" group members if their frequency of nominations score was between 30% and 70% of their peer group's CI. Finally, participants were identified as "peripheral" group members if their frequency of nominations score was $\leq 30\%$ of their peer group's CI. Both group and individual centrality status were ordinal variables with three levels, coded 1 = low status (peripheral), 2 = average status (secondary), and 3 = high status (nuclear). For the purpose of our analyses and interaction effects, status was treated as a continuous score as has been done in previous research (see Ellis & Zarbatany, 2007). Each individual received a group status score and an individual status score. For individual status, 8.7% participants were peripheral, 43.7% were secondary, and 47.5% were nuclear. For group status, 40.4% were peripheral, 36.6% were secondary, and 23% were nuclear.

For the observational component of the study, we used participants' self-nominated peer group triads given that self-reported groups overlap considerably with SCM aggregate reports (Cairns, Leung, Buchanan, & Cairns, 1995; Rodkin & Ahn, 2009). To create a group status score for the obser-

vational group, we computed the average group status score across the three individual group scores. For 86% of the observation groups, all members had the same group status score. In the remaining cases, observation group members were placed in different groups according to the SCM program and thus had different group status scores. In all these cases, only one group member differed. There were no cases where members had differences greater than one (for example a status score of 1 and a status score of 2 on the three-point scale). Furthermore, individual status differed within the observation groups so that no group had three members with the same individual status score.

High test–retest reliability for individual- and group-level status has been shown across a 3-week period (Cairns et al., 1995), and thus we did not expect any significant changes in status between the self-report assessment and the observational assessment 1 month later. Finally, two ANOVAs revealed no significant differences between participants who participated in the observational tasks and those who did not on individual ($F(1, 1067) = .36$, $p = ns$), or group-level status ($F(1, 1067) = 2.30$, $p = ns$).

Observational tasks and coding. As we were interested in specific conversation styles as well as more global interaction styles, two tasks were designed specifically for this study, and coding systems were designed or adapted to test our hypotheses. In the group discussion task, participants were given a set of six cue cards, each of which contained a dilemma and four possible plans of action. Participants were required to discuss the problem and possible solutions as a group. These dilemma topics were created by adolescents after a series of focus groups. All six examples involved a relationship conflict, either between dating partners or friend and parents. The discussion task lasted between 6 and 8 min and ended when all six dilemmas were discussed or 8 min had elapsed.

To code the discussion, we used a modified version of the Berndt et al. (1990) observational coding scheme. The coding scheme was modified to reduce the number of categories and capture major verbal statement types evident in our pilot observations. The codes allowed us to examine peer group members' conversation styles by categorizing members' statements into one of the following: *agreements, disagreements, commands,* and *expressions of opinions* (see Table 1 for definitions, examples, and interrater reliability information). Furthermore,

TABLE 1
Statement Types, Definitions, Examples, and Kappa Scores for Discussion Task

Statement type	Definition	Example statements	K
Agreement	A direct or indirect statement of consensus with a group member's opinion.	"I agree"; "That would solve the problem."	.89
Disagreement	A direct or indirect statement of discrepancy with a group member's opinion.	"No, I don't want to do that"; "But that would make people mad."	.81
Expressions of opinion	An expression of what one would do in a discussion-related situation.	"I'd talk to a friend about the problem."	.84
Command	A verbal delegation of a discussion-related task.	"You read the questions."	.75

total duration scores ($M = 6.50$ min; $SD = 1.43$) were recorded to use as covariates in all analyses.

In the second task, peer groups engaged in a group decision-making task. Participants were asked to imagine that they were stranded alone on a desert island for 1 month. Independently at first, participants choose 3 of 15 possible necessities (e.g., axe, pots) that they would bring with them to the island. Once participants had selected their three items, they were asked to chose three items as a group and justify their choices. The goal of the group decision task was to identify interaction styles used by group members to come to a group decision when they had already made individual selections. The group discussion task lasted 3–5 min and ended when group members agreed on the three items or when 5 min had elapsed.

For the group decision task, we created a global coding scheme based on operational definitions (e.g., Hawley, 1999, 2003) and ethnographic descriptions (Adler & Adler, 1995) of adolescents' influential behaviors. This global coding scheme allowed us to measure broad dimensions of peer-group members' interaction styles, including *openness to others' opinions, dominance, aggression,* and *prosocial behavior* (see Table 2 for definitions, examples, and interrater reliability information). These styles were measured using a global scale to accurately represent both verbal and nonverbal behaviors in one index. In addition, frequency counts would be difficult because there were no clear start and end times for the behaviors. The consistency with which participants exhibited each of these behaviors during the group decision task was coded using 3-point scales, from, for example, "no demonstration of prosocial behavior" to "frequent demonstration of prosocial behavior." Total duration scores for the length of each session ($M = 4.50$ min; $SD = 1.40$) were used as covariates in analyses.

TABLE 2
Behavior Types, Definitions, Examples, and Kappa Scores for Decision Task

Behavior	Definition	Examples	Scale points	K
Openness to others' opinions	Degree to which teens acknowledged and treated opinions of peers as equal in value to their own.	Listening attentively, attentive body language (e.g., eye contact), attentive verbal cues (e.g., "okay")	Consistently not open (1); open to only some of peers' opinions (2); consistently open (3)	.88
Dominance	Degree of coercive behavior that involves exerting power or control over others.	Demands, interruptions, or physically removing pen/paper from peer to write own selections.	No demonstration (1); infrequent demonstration (2); frequent demonstration (3)	.71
Aggressive behavior	Behavior that involved criticizing or insulting other peer group members or their item selections.*	Preemptive or reactive name calling, and mocking or sarcastic words and facial expressions.	No demonstration (1); infrequent demonstration (2); frequent demonstration (3)	.77
Prosocial behavior	Acts that served to help group members or that demonstrated care for group members.	Ensuring group members agreed on item selections, resolving or mediating group conflicts.	No demonstration (1); infrequent demonstration (2); frequent demonstration (3)	.89

Note. *Virtually no instances of physical aggression occurred in the pilot or experimental observations.

Four undergraduate researchers coded the observational data, two independent coders per task. Undergraduate coders were trained over 2 months by the first and second authors with the use of four peer triad observations from our pilot study. For both tasks, each rater coded approximately 40% of the data separately (25–26 groups) and 20% of the data (17 groups) for the purposes of interrater reliability. Discrepancies in interrater reliability coding were resolved by the raters before data were analyzed. Coding took place over a 10-month time frame.

Procedure

In June 2007, two public high school principals consented to have their school participate. In April 2008, participants completed a questionnaire package containing the Social Cognitive Map and several self-report measures not included in this study. Undergraduate and graduate student researchers supervised participants' completion of the questionnaire package within their classrooms. Next, participants completed a form on which they were asked if they wanted to complete a videotaped discussion with two other members of their peer group. Interested participants listed the names of their peer group members. In May and June 2008, peer group triads were contacted and observation sessions were scheduled. We limited the group size to three because of time and space constraints and to ensure that raters could effectively observe and transcribe all social interactions during the group tasks. Criteria for peer triad selection were first based on maintaining an equal number of participants from each school, gender, and grade. Romantic partners were excluded from the same group. Within these limits, groups were selected at random.

Observation sessions occurred in a classroom during lunch time and after school for approxi-mately three weeks. Peer group members sat at three neighboring desks that faced a video camera resting on a tripod. Two researchers supervised the observation session; one researcher read instructions while the other monitored the video camera. When peer group triads were engaged in discussion, researchers moved out of participants' field of vision and appeared occupied (e.g., by reading a book in the back of the classroom). Ethical guidelines at each school required one researcher to remain in the classroom.

The observation session lasted approximately 20 min. Prior to the two main tasks, the participants completed a 3–5 min warm-up task to familiarize themselves with the testing environment. In the warm-up task, peer group members were asked to discuss six "what if" questions (for example, "If you had to choose between Love and Money what would you choose?"). The group discussion task preceded the group decision tasks for all participants. After completion of the tasks, each peer triad member received $20.

Analytic Procedure

Multilevel models were constructed using the software program HLM 6.0. This analytic technique allowed us to test group-level variables (i.e., group status) and cross-level interaction effects (individual status at Level 1 and group status at Level 2), while accounting for the interdependence of participants within the same observation group. Four steps were necessary to construct the final models. One model was created for each of the eight behavioral variables. The first step of the analysis involved calculating the intraclass correlation (ICC) based on the proportion of the total variance between groups relative to the variance within groups. Significant between-group variance was evident for all outcome variables (see Tables 4 and 5). The second

TABLE 3
Means, Standard Deviations, and Correlations Among the Observational Outcome Variables

		Mean (SD)	Skewness/Kurtosis	1	2	3	4	5	6	7
1	Agreements	7.57 (4.50)	1.11/1.14	—						
2	Disagreements	2.16 (2.50)	2.03/5.47	−.01	—					
3	Commands	0.19 (0.51)	3.06/8.64	−.07	.23**	—				
4	Expression of opinion	3.84 (2.70)	1.13/2.58	.22**	.21**	.22**	—			
5	Openness	2.48 (0.70)	−1.01/−0.31	.04	−.17*	−.24**	−.11	—		
6	Dominance	1.71 (0.74)	0.54/−1.03	.03	.23**	.15**	.14*	−.46**	—	
7	Aggression	1.34 (0.57)	1.47/1.16	.09	.22**	.24**	.14*	−.51**	.32**	—
8	Prosocial behavior	1.12 (0.45)	−0.09/−0.28	.11	-.04	-.03	.05	.20**	−.16**	−.08

Note. $*p < .05$; $**p < .01$.

TABLE 4
Hierarchical Linear Models Predicting Conversation Styles During the Group Discussion Task

Observed variable	ICC	Coefficient (B)	Standard error (SE)	t-ratio
Agreements	.52**			
Individual status (Level 1; β_{2j})		−0.06	.07	−0.90
Intercept (Level 2; γ_{00})		1.99	.05	36.03**
Group status (Level 2; γ_{01})		−0.02	.07	−0.35
Task duration (Level 2; γ_{02})		0.002	.001	4.44**
Disagreement	.61**			
Individual status (Level 1; β_{2j})		0.25	.11	2.25*
Intercept (Level 2; γ_{00})		0.56	.11	5.01**
Group status (Level 2; γ_{01})		−0.00	.14	−0.07
Task duration (Level 2; γ_{02})		0.01	.001	5.01**
Commands	.01*			
Gender (Level 1; β_{1j})		3.22	.62	5.23**
Individual status (Level 1; β_{2j})		1.25	.26	4.86**
Intercept (Level 2; γ_{00})		−2.41	.20	−11.93**
Group status (Level 2; γ_{01})		0.53	.18	2.92**
Task duration (Level 2; γ_{02})		−0.001	.002	−0.46
Individual status X group status (γ_{21})		−2.03	.33	−6.14**
Expression of opinion	.13**			
Individual status (Level 1; β_{2j})		−0.02	.11	−0.21
Intercept (Level 2; γ_{00})		1.29	.05	26.95**
Group status (Level 2; γ_{01})		−0.19	.06	−2.95*
Task duration (Level 2; γ_{02})		0.002	.001	3.92**

Note. Male = .5, Female = −.5.
*p < .05; **p < .001.

TABLE 5
Hierarchical Linear Models Predicting Interaction Styles During the Group Decision Task

Observed variable	ICC	Coefficient (B)	Standard error (SE)	t-ratio
Openness	.19**			
Gender (Level 1; β_{1j})		−0.02	.19	−0.10
Individual status (Level 1; β_{2j})		−0.17	.08	−2.11*
Intercept (Level 2; γ_{00})		2.42	.07	35.04**
Group status (Level 2; γ_{01})		0.05	.10	0.48
Individual Gender X group status (γ_{21})		−0.43	.18	−2.45**
Dominance	.27**			
Individual status (Level 1; β_{2j})		−0.14	.11	0.18
Intercept (Level 2; γ_{00})		1.73	.06	24.47**
Group status (Level 2; γ_{01})		−0.07	.07	−0.90
Aggression	.17**			
Individual status (Level 1; β_{2j})		.11	.09	1.23
Intercept (Level 2; γ_{00})		1.39	.05	28.84**
Group status (Level 2; γ_{01})		−0.03	.06	−0.55
Individual status X group status (γ_{21})		−0.24	.12	−2.01*
Prosocial Behavior	.02*			
Individual status (Level 1; β_{2j})		−0.07	.11	−0.73
Intercept (Level 2; γ_{00})		2.45	.06	39.23**
Group status (Level 2; γ_{01})		−0.08	.11	−0.07
Individual status X group status (γ_{21})		0.30	.15	1.94*

Note. Male = .5, Female = −.5.
*p ≤ .05; **p < .001.

step of the analysis was to create the Level 1 model, which examined the relationship between individual status and gender on each outcome variable. The third step in creating the final model involved testing the group effect of status in a Level 2 model. Grade and task duration were also entered in Level 2 models to control for any significant effects of these variables. Corresponding coefficients for nonsignificant predictors are not reported below. In the fourth step, we tested the cross-level interaction between individual status and group status in the Level 2 model. In this model, the dependent variables become the slope of individual status. This cross-level interaction term was subsequently removed from the final models for all nonsignificant outcome variables to maintain parsimony and improve model fit (West, Welch, & Gałecki, 2007). Finally, interactions between individual gender and group-level grade and individual and group status were examined in cross-level and group-level interactions. Equations for the level 1 and level 2 models are summarized below:

$$\beta_{ij} = \beta_{0j} + \beta_{1j}(Gender) + \beta_{2j}(IndividualStatus) + r_{ij}$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(GroupStatus) + \gamma_{02}(Grade)$$
$$\qquad + \gamma_{03}(TaskDuration) + u_{0j}$$
$$\beta_{2j} = \gamma_{20} + \gamma_{21}(GroupStatus)$$

Significant interactions were analyzed according to the guidelines outlined by Aiken and West (1991) and simple slopes were tested following the procedures outlined by Preacher, Curran and Bauer (2006). Individual status scores at Level 1 were group-mean centered and all Level 2 variables were grand-mean centered as recommended for the interpretation of each coefficient (Raudenbush & Bryk, 2002).

Means and skewness and kurtosis estimates for the two tasks are shown in Table 3. According to Kline (2005), these data meet the criteria for univariate normality in both instances (absolute values less than 3.0 for skew and less than 8.0 for kurtosis), with the exception of commands. Nevertheless, considering that the dependent variables for the discussion task were count-based measures, we used the Poisson function in the HLM program for each of the four dependent variables in this task.

RESULTS

Correlations Among Observational Scores

These results indicate modest correlations between the conversation styles in the discussion task and

the interaction styles in the decision task (see Table 3). Moderate-to-strong correlations involved command statements, which were positively correlated with aggression and dominance, and negatively correlated with openness. Disagreements also were correlated positively with aggression and dominance and negatively with openness. The modest overlap between the two coding schemes validates our examination and interpretation of these two tasks separately.

Within-task correlations are also shown in Table 3. There were significant correlations among the variables within both tasks. For the discussion task, there was modest but consistent overlap between variables. For the decision task, there was moderate-to-strong overlap, particularly between openness and dominance (negative) and openness and aggression (negative).

Multi-Level Analysis: Conversation Styles in the Discussion Task

HLM models were first computed for the discussion task following the steps outlined above. Results for the Level 1 and Level 2 models are summarized in Table 4. The model for total frequency of agreements showed no significant effects at Level 1 or Level 2. The model for number of disagreements revealed that individual status was a significant predictor of total number of disagreements in Level 1 (see Table 4). Specifically, individuals with higher centrality status expressed more disagreements compared with individuals with lower status. Group status was not a significant predictor of disagreements.

The Level 1 model for commands indicated that individual status was a significant predictor, with higher centrality status related to more commands
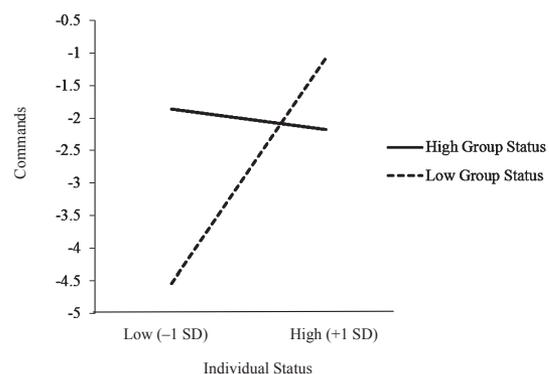

FIGURE 1   The cross-level interaction between individual status and group status in predicting commands in the group discussion task.

compared with lower centrality status (see Table 4). Group level status entered at Level 2 was a significant positive predictor of commands. The interaction between individual and group status was also significant and is shown in Figure 1. Simple slope tests revealed that within high-status peer groups, there was no difference between high- and low-status members ($b = -0.25$, $t = -1.08$, $p = .28$.), but within low-status groups, individual status was positively related to more commands ($b = 2.75$, $t = 6.17$, $p = .001$).

The model for expression of opinion had nonsignificant Level 1 predictors. However, the Level 2 analyses revealed that group status was a significant predictor of expressions of opinion (see Table 4). Individuals in higher status groups expressed their own opinions less frequently than individuals in lower status groups.

Multi-Level Analysis: Interaction styles in the Decision Task

Results for the Level 1 and Level 2 models are summarized in Table 5. Individual status entered at Level 1 was a significant predictor of openness. Higher individual status was related to less individual expression of openness during the task (see Table 5). There was also a significant cross-level interaction effect between gender and group status. Simple slope analysis revealed that girls did not differ in their openness behaviors as a function of group status ($b = -0.17$, $t = -1.17$, $p = .25$.), but boys in high-status groups engaged in significantly more open behaviors than boys in lower status groups ($b = 0.27$, $t = 2.22$, $p = .03$). The model for dominance showed no significant effects at Level 1 or Level 2.
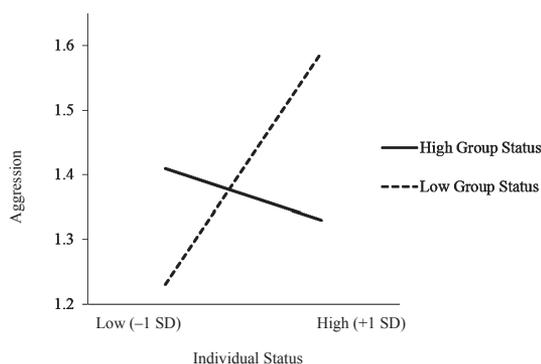

FIGURE 2   The cross-level interaction between individual status and group status in predicting aggression in the group decision task.
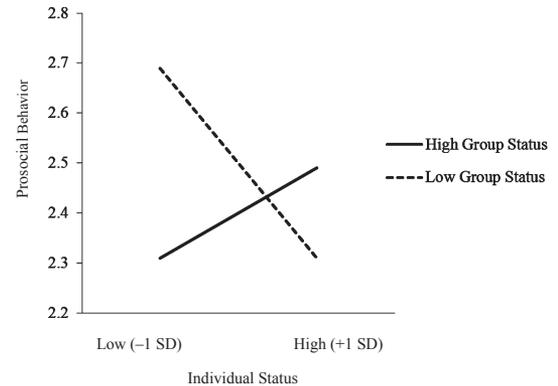

FIGURE 3   The cross-level interaction between individual status and group status in predicting prosocial behavior in the group decision task.

There were no significant main effects of individual or group-level status on aggression. A significant cross-level interaction between individual and group status was found (see Table 5) and is depicted in Figure 2. The significant interaction reflects different effects of group status depending on group centrality. High-status individuals in low-status groups showed the highest levels of aggression. However, simple slope tests revealed that individual status was not significantly related to aggression in both high-status groups ($b = -0.07$, $t = 0.91$, $p = .36$) and low-status groups ($b = 0 .29$, $t = 1.77$, $p = .08$.).

There were no significant Level 1 or Level 2 effects predicting prosocial behavior. However, a significant cross-level interaction between individual status and group status emerged (see Table 5). This interaction is plotted in Figure 3. The simple slope test of the relationship between individual status and prosocial behavior was not significant within high-status groups ($b = 0.14$, $t = 1.40$, $p = .16$) or low-status groups ($b = -0.30$, $t = -1.55$, $p = .12$.). Low-status individuals in low-status groups and high-status individuals in high-status groups showed the highest levels of prosocial behavior.

In a final step of the analysis, we re-ran our analyses using the ordinal function in HLM. All significant results remained the same with the exception of the interaction between individual and group status for aggression.

DISCUSSION

Our observations of peer group triads during two different hypothetical tasks revealed clear differences in the conversation and interaction styles of

higher-status group members and higher-status groups compared with their lower-status counterparts. We found that individual higher-status group members, regardless of overall group status, adopted more direct and controlling styles than lower-status members. Furthermore, significant interactions revealed that in high-status groups, there was little difference in behavior based on individual status. Instead, high-status members of low-status groups showed the most aggressive behavior and commands. Interestingly, low-status individuals in low-status groups and high-status individuals in high-status groups exhibited the most prosocial behavior. Finally, there were fewer expressions of opinions in higher-status groups compared with lower-status groups. These results were generally in line with our expectations that higher-status peers and peer groups would demonstrate the most frequent use of controlling behaviors. These findings provide some of the only research on the conversation and interaction styles that are used in adolescents' naturalistic peer groups.

Within-Group Status and Conversation and Interaction Styles

Individuals who are in positions of power within their group appear to use specific conversation styles in group discussions. Consistent with our hypotheses, higher-status group members uttered more disagreements and gave more commands to peers than lower-status group members. Contradicting group members' ideas and giving direct instructions can be used to ensure conformity to a specific idea or attitude. Commands such as dictating who is responsible for writing down answers may also be used to enforce the group hierarchy. In adolescent's day-to-day lives, direct instruction for behavior and the division of roles may occur frequently, for instance, when the group is working on school assignments or participating in sports. However, using commands or expressing disagreements comes with the risk of rejection and therefore these behaviors may be used by members who anticipate compliance. Given that higher-status group members make decisions about who enters or exits the group, as well as about the norms of the group (Adler & Adler, 1995), other members may accept their role as the group director or leader.

We also found that higher-status members were generally less tolerant or open to individual differences and opinions. By discouraging other members' opinions, central group members may play a pivotal role in influencing final group decisions. Although we did not find a direct link between aggression and status, lower openness may be communicated in a nonthreatening way and thus be the most successful way to assure power. In the present observations, there was significant overlap in recordings of openness and aggression, which may suggest that teasing or criticizing and inequality go hand in hand.

In sum, our results reveal that, within their peer groups, higher-status group members demonstrate more directive, controlling behavior than lower-status group members. This finding supports the Social Identity Perspective (Hogg, 1996), which suggests that central group members are afforded leeway to act in a controlling manner toward peer group members with the goal of preserving the group identity. During the hypothetical scenarios, higher-status group members may have directed the outcome of the tasks by telling group members what to do, disagreeing, and showing little consideration for others' ideas.

Between-Group Status and Conversation and Interaction Styles

Although we expected that the group status would predict the similar use of directive and coercive conversation and interaction styles that we observed for individual status, there were only two significant effects of group status. Consistent with our findings for individual status, all members of high-status groups were more likely to use commands compared with low-status groups. Furthermore, in group discussions, members of higher-status groups engaged in fewer expressions of opinions than members of lower-status groups. Perhaps this is a reflection of established group norms. In highly central groups, there may already be clearly defined expectations of appropriate behaviors and all members have learned that individual freedom is not acceptable. It is also possible that this finding is specific to the scholastic nature of the task, and observed group differences may have been simply due to task motivation. Higher-status children and youth (especially boys) are encouraged to show a "cool" or nonchalant attitude to academics (Rodkin et al., 2000) and the group identity may be threatened if they appear too keen in academic-related activities (Adler & Adler, 1995).

We also found that the relationship between peer group status and open behavior differed as a

function of individual gender. Regardless of group status, girls engaged in similar levels of openness to peers' opinions; however, boys in high-status groups demonstrated significantly more open behaviors than boys in lower-status peer groups. Girls' behavior is often characterized by sensitivity and empathy (Rose & Rudolph, 2006) and is perhaps seen as similar across groups. For boys, there may be greater variation in open behaviors. Research suggests that some popular boys have strong interpersonal skills, and tend to be more cooperative than other boys (Rodkin et al., 2000). Perhaps our finding of openness is reflective of the cooperative nature of popular boys (i.e., a willingness to listen to others' opinions and work together on the group task). Rodkin et al. (2000) also found that unpopular boys were the least cooperative in their sample.

Between-Group Status as a Moderator of Within-Group Status

Adolescents who attain positions in the upper echelons of the social status hierarchy (i.e., central members of high-status peer groups) have influence over others and control over scarce resources (Eder, 1985; Hawley, 1999), and probably possess a set of keen social skills, which include aggressive and prosocial behaviors (Hawley, 1999). The findings of our study were in partial support of these expectations. Members in both the highest (high individual status in high-status groups) and especially the lowest (low individual status in low-status groups) ring of the social hierarchy engaged in the most prosocial behavior. In the present study, when individual group member status was similar to the overall group climate, members showed the most prosocial behavior. Prosocial behaviors such as resolving conflicts and ensuring agreement between members may have a different purpose in each context. As stated previously, high-status adolescents may use prosocial behavior to manipulate and control others. In low-status positions, prosocial behavior may be used as a courtesy to those in superior positions. Although subordinate children are not rated favorably by themselves or other peers, teachers see this group in a positive light (Hawley, 2003). Our observations may have captured the politeness of the low-status individuals without noting other social deficits. Furthermore, because our sample included only those children who belonged to peer groups, the most isolated or socially rejected children are not represented here.

We also found that use of aggression was moderated by individual and group status. Aggressive behaviors were most common among higher-status members of low-status groups. This was not the case for high-status groups, in which members exhibited similar levels of aggression, regardless of individual status. A similar pattern emerged for the use of commands in the peer discussion task. Although there appeared to be more commands in high-status groups compared with low-status groups, this was unrelated to individual status. The norms in high-status groups may allow for the use of these directive statements for all members. Members of high-status groups have secured a position in a powerful, prestigious group and therefore hold some power, even if it is outside their group (Hawley, 2003; Hawley et al., 2008). In line with our finding that members of higher status groups engaged in fewer expressions of opinions than members of lower-status groups, this within-group similarity in high-status groups may signal well-established group norms. However, high-status individuals in low-status group used the most commands and showed the most aggressive behavior. In these groups there was a clear difference among members' use of high-power tactics. Even in low-status groups, high-status group members have successfully ascended the group hierarchy and must possesses leadership and dominance strategies. On the other hand, the least socially dominant youth will occupy the least powerful positions (Hawley, 2003).

Study Limitations and Future Directions

Several limitations of this study must be noted. We restricted the size of observed peer groups to three members because of time and space constraints, and to ensure that raters could effectively observe and transcribe all social interactions during group interaction. Nevertheless, past research suggests that naturalistic peer groups have an average of five to six members (Brown & Dietz, 2009). The potential exclusion of group members, and in particular high-status members, may have had an effect on the observed group dynamic. Despite this limitation, we believe that important facts of peer group dynamics were captured. Research on children's peer groups demonstrates a significant difference between interactions in dyads versus small groups (Benenson et al., 2001). Moreover, adults feel pressure to restrain aggressive behaviors and coercive forms of persuasion during dyadic interaction, but not in triadic interactions (Bales & Borgatta,

1955). Even during dyadic interactions between peer group members, group norms may still play an important role in governing behavior (Rubin et al., 2006).

The present study illustrated several styles of interactions that adolescents display in their peer groups; however, we are not aware of the intent of these behaviors, their success rate, or anything about the cause-and-effect pattern of these behaviors. For reasons of the present study's cross-sectional design and the correlational nature of our data, we are unable to make causal claims. It remains unclear as to whether high within-group status encourages teens to adopt a more directive and coercive interaction style, if more domineering teens are particularly apt at achieving high statuses within their peer groups, or if a reciprocal relationship exists between status and interactions style. Longitudinal research that tracks changes in teens' social status and within-group conversation and interaction styles may help shed light on causal patterns in peer group hierarchy and intragroup dynamic. Finally, given the number of observational variables and their potential interactions, many analyses were computed in this study. Several of the significance levels were modest and as such, our results must be interpreted with some caution. A valuable extension to confirm these effects would be to examine if the interaction styles identified in the present study do instigate changes in behavior or moderate the rate of peer group member socialization over time. In addition, future consideration of nonbehavioral characteristics might add to our understanding of peer group influence. For example, aggressive strategies may be more successful or acceptable when used by attractive teens compared with less attractive teens (e.g., Dijkstra et al., 2009).

To conclude, a wealth of research points to the peer group as a major socialization agent of both positive and negative behaviors in adolescence (e.g., Espelage et al., 2003; Kindermann, 1993). By conducting an observational study of adolescents' peer groups, we have extended this research by identifying the specific interaction and conversation styles evident in naturally occurring peer groups and in particular those linked to high-status positions. Our results demonstrate that behaviors of high-status group members are similar regardless of individual status, whereas behaviors of low-status group members show more variability based on within-group status. This supports the notion that adherence to group norms is strongest in high-status groups. Our results also shed light on the

probable process of peer group influence and suggest that being in a high status, powerful position is linked to directive, controlling, and prosocial styles (e.g., Berndt et al., 1990; Hawley, 1999). It is likely that these behaviors may contribute to peer-group socialization effects and the heightened susceptibility to peer influence documented in high-status groups (Ellis & Zarbatany, 2007) and by high-status individuals (Cohen & Prinstein, 2006).

REFERENCES

Adler, P. A., & Adler, P. (1995). Dynamics of inclusion and exclusion in preadolescent cliques. *Social Psychology Quarterly*, *58*, 145–162. doi:10.2307/2787039

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.

Baerveldt, C., Völker, B., & Van Rossem, R. (2008). Revisiting selection and influence: An inquiry into the friendship networks of high school students and their association with delinquency. *Canadian Journal of Criminology and Criminal Justice*, *50*, 559–587. doi:10.3138/cjccj.50.5.559

Bales, R. F., & Borgatta, E. F. (1955). Size of group as a factor in the interaction profile. In A. P. Hare, E. F. Borgatta, & R. F. Bales (Eds.), *Small groups: Studies in social interaction* (pp. 495–512). Toronto, Canada: Random House.

Benenson, J. F., Nicholson, C., Waite, A., Roy, R., & Simpson, A. (2001). The influence of group size on children's competitive behavior. *Child Development*, *72*, 921–928. doi:10.1111/1467-8624.00324

Berndt, T. J., Laychak, A. E., & Park, K. (1990). Friends' influence on adolescents' academic achievement motivation: An experimental study. *Journal of Educational Psychology*, *82*, 664–670. doi:10.1037/0022-0663.82.4.664

Brown, B. B. (1990). Peer groups and peer cultures. In S. S. Felman & G. R. Elliot (Eds.), *At the threshold: The developing adolescent* (pp. 171–196). Cambridge, MA: Harvard University Press. doi:10.1037/0022-3514.52.1.47

Brown, B. B., & Dietz, E. L. (2009). Informal peer groups in middle childhood and adolescence. In K. H. Rubin, W. M. Bukowski, & B. Laursen (Eds.), *Handbok of peer interactions, relationships, and groups: Social, emotional, and personalitly development in context* (pp. 361–376). New York, NY: Guilford Press.

Brown, B. B., & Lohr, M. J. (1987). Peer-group affiliation and adolescent self-esteem: An integration of ego-identity and symbolic-interaction theories. *Journal of Personality and Social Psychology*, *52*, 47–55. doi:10.1037/0022-3514.52.1.47

Burk, W. J., Steglich, C. E. G., & Snijders, T. A. B. (2007). Beyond dyadic interdependence: Actor-oriented models for co-evolving social networks and individual behaviors. *International Journal of Behavioral Development*, *31*, 397–404. doi:10.1177/0165025407077762

Cairns, R. B., Cairns, B. D., Neckerman, H. J., Gest, S. D., & Gariepy, J. L. (1988). Social networks and aggressive behavior: Peer support or peer rejection? *Developmental Psychology*, *24*, 815–823. doi:10.1037/0012-1649.24.6.815

Cairns, R. B., Leung, M. C., Buchanan, L., & Cairns, B. D. (1995). Friendships and social networks in childhood and adolescence: Fluidity, reliability, and interrelations. *Child Development*, *66*, 1330–1345. doi:10.2307/1131650

Cohen, G. L., & Prinstein, M. J. (2006). Peer contagion of aggression and health risk behavior among adolescent males: An experimental investigation of the effects on public conduct and private attitudes. *Child Development*, *77*, 967–983. doi:10.1111/j.1467-8624.2006.00913.x

Crockett, L., Losoff, M., & Peterson, A. C. (1984). Perceptions of the peer group and friendship in early adolescence. *Journal of Early Adolescence*, *4*, 155–181. doi:10.1177/0272431684042004

Dijkstra, J. K., Lindenberg, S., & Veenstra, R. (2008). Beyond the class norm: Bullying behavior of popular adolescents and its relation to peer acceptance and rejection. *Journal of Abnormal Child Psychology*, *36*, 1289–1299. doi:10.1007/s10802-008-9251-7

Dijkstra, J. K., Lindenberg, S., Veenstra, R., Steglich, C., Issacs, J., Card, N. A., & Hodges, E. V. E. (2010). Influence and selection processes in weapon carrying during adolescence: The roles of status, aggression, and vulnerability. *Criminology*, *48*, 187–220. doi:10.1111/j.1745-9125.2010.00183.x

Dijkstra, J. K., Lindenberg, S., Verhulst, F. C., Ormel, J., & Veenstra, R. (2009). The relation between popularity and aggressive, destructive, and norm-breaking behaviors: Moderating effects of athletic abilities, physical attractiveness, and prosociality. *Journal of Research on Adolescence*, *19*, 401–413. doi:10.1111/j.1532-7795.2009.00594.x

Dijkstra, J. K., & Veenstra, R. (2011). Peer relations. In B. B. Brown & M. Prinstein (Eds.), *Encyclopedia of adolescence* (pp. 255–259). New York, NY: Elsevier.

Dishion, T. J., Spracklen, K. M., Andrews, D. W., & Patterson, G. R. (1996). Deviancy training in male adolescents' friendships. *Behavior Therapy*, *27*, 373–390. doi:10.1016/S0005-7894(96)80023-2

Duffy, A. L., & Nesdale, D. (2009). Peer groups, social identity, and children's bullying behavior. *Social Development*, *18*, 121–139. doi:10.1111/j.1467-9507.2008.00484.x

Eder, D. (1985). The cycle of popularity: Interpersonal relations among female adolescents. *Sociology of Education*, *58*, 154–165. doi:10.2307/2112416

Ellis, W. E., & Zarbatany, L. (2007). Peer group status as a moderator of group influence on children's deviant, aggressive, and prosocial behavior. *Child Development*, *78*, 1240–1254. doi:10.1111/j.1467-8624.2007.01063.x

Espelage, D. L., Holt, M. K., & Henkel, R. R. (2003). Examination of peer-group contextual effects on aggression during early adolescence. *Child Development*, *74*, 205–220. doi:10.1111/1467-8624.00531

Gest, S. D., Graham-Bermann, S. A., & Hartup, W. W. (2001). Peer experience: Common and unique features of number of friendships, social network centrality, and sociometric status. *Social Development*, *10*, 23–40. doi:10.1111/1467-9507.00146

Hawley, P. H. (1999). The ontogenesis of social dominance: A strategy-based evolutionary perspective. *Developmental Review*, *19*, 97–132. doi:10.1006/drev.1998.0470

Hawley, P. H. (2003). Prosocial and coercive configurations of resource control in early adolescence: A case for the well-adapted Machiavellian. *Merrill-Palmer Quarterly*, *49*, 279–305. doi:10.1353/mpq.2003.0013

Hawley, P. H., Card, N. A., & Little, T. D. (2008). The myth of the alpha male: A new look at dominance-related beliefs and behaviors among adolescent males and females. *International Journal of Behavioral Development*, *32*, 76–88. doi:10.1177/0165025407084054

Hoff, K. E., Reese-Weber, M., Schneider, W. J., & Stagg, J. W. (2009). The association between high status positions and aggressive behavior in early adolescence. *Journal of Social Psychology*, *47*, 395–426. doi:10.1016/j.jsp.2009.07.003

Hogg, M. A. (1996). Social identity, self-categorization, and the small group. In E. H. Witte & J. H. Davis (Eds.), *Understanding group behavior, Vol. 2: Small group processes and interpersonal relations* (pp. 227–253). Hillsdale, NJ: Erlbaum.

Hogg, M. A. (2005). All animals are equal but some animals are more equal than others: Social identity and marginal membership. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 243–261). New York, NY: Psychology Press.

Kiesner, J., Cadinu, M., Poulin, F., & Bucci, M. (2002). Group identification in early adolescence: Its relation with peer adjustment and its moderator effect on peer influence. *Child Development*, *73*, 196–208. doi:10.1111/1467-8624.00400

Kindermann, T. A. (1993). Natural peer groups as contexts for individual development: The case of children's motivation in school. *Developmental Psychology*, *29*, 970–977. doi:10.1037/0012-1649.29.6.970

Kiuru, N., Burk, W. J., Laursen, B., Salmela-Aro, K., & Nurmi, J. E. (2010). Pressure to drink but not to smoke: Disentangling selection and socialization in adolescent peer networks and peer groups. *Journal of Adolescence*, *33*, 801–812. doi:10.1016/j.adolescence.2010.07.006

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford Press.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interaction effects in multiple linear regression, multilevel modeling and latent curve analysis. *Journal of Educational and Behavioral Statistics*, *31*, 437–448. doi:10.3102/10769986031004437

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: Sage.

Rodkin, P. C., & Ahn, H. J. (2009). Social networks derived from affiliations and friendships, multi-informant and self-reports: Stability, concordance, placement of aggressive and unpopular children, and centrality. *Social Development*, *18*, 556–576. doi:10.1111/j.1467-9507.2008.00505.x

Rodkin, P. C., Farmer, T. W., Pearl, R., & Van Acker, R. (2000). Heterogeneity of popular boys: Antisocial and prosocial configurations. *Developmental Psychology*, *36*, 14–24. doi:10.1037/0012-1649.36.1.14

Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, *132*, 98–131. doi:10.1037/0033-2909.132.1.98

Rubin, K. H., Bukowski, W. M., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In N. Eisenberg, D. William, & R. M. Lerner (Eds.), *Handbook of child psychology, vol. 3: Social, emotional, and personality development* (6th ed., pp. 571–645). Hoboken, NJ: Wiley.

Ryan, A. M. (2001). The peer group as a context for the development of young adolescent motivation and achievement. *Child Development*, *72*, 1135–1150. doi:10.1111/1467-8624.00338

Sage, N. A., & Kindermann, T. A. (1999). Peer networks, behavior contingencies, and children's engagement in the classroom. *Merrill-Palmer Quarterly: Journal of Developmental Psychology*, *45*, 143–171.

Sijtsema, J. J., Ojanen, T., Veenstra, R., Lindenberg, S., Hawley, P. H., & Little, T. D. (2010). Forms and functions of aggression in adolescent friendship selection and influence: A longitudinal social network analysis. *Social Development*, *19*, 515–534. doi:10.1111/j.1467-9507.2009.00566.x

Tajfel, H., & Turner, J. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worschel (Eds.), *The social psychology of intergroup relations* (pp. 178–234). New York, NY: Brooks/Cole.

Ungar, M. T. (2000). The myth of peer pressure. *Adolescence*, *35*, 167–180.

Urberg, K. A., Degirmencioglu, S. M., & Pilgrim, C. (1997). Close friend and group influence on adolescent cigarette smoking and alcohol use. *Developmental Psychology*, *33*, 834–844. doi:10.1037/0012-1649.33.5.834

Veenstra, R., & Dijkstra, J. K. (2011). Transformations in adolescent peer networks. In B. Laursen & W. A. Collins (Eds), *Relationship pathways: From adolescence to young adulthood* (pp. 135–154). New York, NY: Sage.

Walcott, C. M., Upton, A., Bolen, L. M., & Brown, M. B. (2008). Associations between peer-perceived status and aggression in young adolescents. *Psychology in the Schools*, *45*, 550–561.

West, B. T., Welch, K. B., & Gałecki, A. T. (2007). *Linear mixed models: A practical guide using statistical software*. Boca Raton. FL: Chapman & Hall.