

PEER GROUP SOCIALIZATION OF AGGRESSION IN EARLY ADOLESCENCE: SOCIAL
STATUS, GROUP CHARACTERISTICS, AND INDIVIDUAL DIFFERENCES

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ABSTRACT

Peer Group Socialization of Aggression in Early Adolescence: Social Status, Group Characteristics, and Individual Differences

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In previous research on the importance of a peer group in shaping and supporting group members' antisocial behavior (e.g., aggression), researchers have focused on the influence of group norms on individuals' behavior. Two potential aspects of variability have been neglected: peers in a group would vary in the strength of influences on individuals, and individuals would vary in the openness to peer influences. Social learning theory and social impact theory suggest that a peer's social status would affect the strength of his/her influences on individuals' behavior. In this study, I investigated how social status is related to the strength of influences of peers in a group on individuals' aggression. Potential moderating effects of group characteristics (i.e., group status and group cohesion) were investigated. Moreover, individual characteristics (i.e., individual status and individuals' beliefs about aggression) were examined as factors which would influence individual member's openness to peer influences. Finally, previous studies have concentrated on the socialization of physical aggression in peer groups. In the current study, both physical and social aggression were investigated.

A diverse sample of 7th-grade students (n = 336, mean age = 13.00) participated in this study. Data were collected in the fall (Time 1) and in the spring (Time 2) semesters of 7th grade. Group administration procedures were used to conduct a 45-minute survey session. Both forms of aggression, physical and social aggression, were measured by peer nominations and victim

nominations at both time points. The Social Cognitive Map (SCM) procedure was used to identify peer groups in school at Time 1. A total of 245 individual members belonging to 65 groups were included for statistical analyses using Hierarchical Linear Modeling (HLM) procedure.

Findings showed that after controlling for individual members' aggression at Time 1, individual members' aggression at Time 2 was positively and significantly associated with high-status peers' aggression at Time 1 rather than with low-status peers' aggression at Time 1. This pattern was found for both physical and social aggression. In terms of moderating effects of group-level factors, the association between individual members' physical aggression at Time 2 and high-status peers' physical aggression at Time 1 was found to be stronger in boys' groups than in girls' groups and stronger in a highly cohesive group than in a non-cohesive group. As to moderating effects of individual-level factors, the association between individual members' social aggression at Time 2 and high-status peers' social aggression at Time 1 was stronger for individuals with aggression-encouraging beliefs than for individuals with aggression-nonencouraging beliefs and stronger for low-status individuals than for high-status individuals.

In summary, results from this study indicate that, in early adolescence, peers in a group differ in the strength of influences which varies across group and individual characteristics. These findings imply that future researchers should consider the variability in the strength of peer influences and in the openness of individuals to peer influences. In addition, special attention should be given to high-status aggressive youth in future prevention and intervention programs in order to reduce aggression and violence in school.

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CHAPTER 1

INTRODUCTION

The importance of a peer group in shaping and supporting group members' behavior has long been acknowledged by developmental psychologists and sociologists (e.g., Corsaro & Eder, 1990; Crockett, Losoff, & Peterson, 1984; Eder, 1985; Harris, 1995; Rubin, Bukowski & Parker, 2006). Antisocial behavior, such as aggression, is found to increase over time for adolescents who affiliate with antisocial friends or peers in a group (e.g., Dishion & Owen, 2002; Ellis & Zarbatany, 2007; Espelage, Holt, & Henkel, 2003). However, previous studies failed to further consider potential variability in the strength of influences of peers in a group. Social learning theory (Bandura, 1986; Bandura & Walters, 1963) and social impact theory (Latené, 1981) suggest that a peer's social status would affect the strength of his/her influences on an individual's behavior. In this study, I investigated how social status is related to the strength of influences of peers in a group on individuals' aggression. Furthermore, rarely have researchers examined moderating effects of group characteristics on the influences of peers in a group. Two group characteristics, i.e., group status and group cohesion, were examined in this study. In addition, potential variability in the degree to which individual members are influenced by peers was investigated. Individual characteristics, i.e., individual status and individuals' beliefs about aggression, were targeted for investigation.

Moreover, previous studies have concentrated on the socialization of physical aggression in peer groups. Although subtle forms of aggression, such as social aggression, are frequently used and become important in early adolescence (e.g., Cairns Cairns, Neckerman, Ferguson, & Gariépy, 1989; Cillessen & Mayeux, 2004; Xie, Cairns, & Cairns, 2002a), rarely have studies

investigated these forms of aggression with the exception of one recent report (Ellis & Zarbatany, 2007). In the current study, both physical and social aggression was investigated.

This investigation was conducted with early adolescents given that peers are particularly important in early adolescence (e.g., Brown, 1990; Hartup, 1993) and peer groups are the major context for peer interactions in this period (e.g., Crockett, et al., 1984). The importance of peer groups in modifying and shaping early adolescents' aggressive behaviors has been demonstrated in previous studies (e.g. Boxer, Guerra, Huesmann, & Morales, 2005; Espelage, et al., 2003).

Peer Groups as a Context for Children's Socialization Processes

Early Theories of Socialization in Peer Context

Socialization is a process of becoming a mature member in society (Goslin, 1969). In conventional theories about socialization, parents and other adults serve as the link between children and society (e.g., Freud, 1968; Goslin, 1969). Through the interactions and relations with adults, children start and continue the processes of internalizing ideas and opinions for a mature member in society.

In departure from these theories, Sullivan and Piaget propose that children's relationships with peers serve important but distinct functions in children's socialization (Piaget, 1965; Sullivan, 1953). Adults are not open to making new discoveries or to redefining their system in a joint effort with children. The unilateral relationships with adults provide children with a sense of a settled social reality. However, relationships with peers are bilateral. The socialization within peer context follows an innovative direction. When children turn to peers, they learn a system can be created jointly with others. Not predetermined as right or wrong, this system works functionally, is open to modification, and does not necessarily conform to the adult system (Youniss, 1980).

Children further understand self and others during their interactions with peers. In Sullivan's theory (1953), socialization in peer context introduces children to new possibilities of understanding self and others in interpersonal relationships. These relationships are critical to the development of children's mature personality. In Piaget's theory, which concentrates on the development of individual morality, the mature moral agent refers to a person who takes a stand on norms of reciprocity in a spirit of mutual respect (Piaget, 1965). Such norms or criteria for nurturing their relationships with peers are established jointly by children. Through the processes of establishment, children not only learn to discover the boundaries that separate self from others, but also learn to understand and to be understood by others. As proposed by Sullivan and Piaget, both self and others are progressively articulated in the processes of socialization in peer context (Piaget, 1965; Sullivan, 1953).

Furthermore, Sullivan and Piaget emphasize that children and peers are likely to disagree with each other. When they disagree, children have ways of avoiding an impasse. In Sullivan's theory (1953), children are sensitive to what matters to their peers. They often adjust their behaviors to the expressed needs of peers. Intimate friendship which equates with the beginnings of interpersonal love develops. In Piaget's theory (1965), cooperation is important in the development of personality as well as cognition. During the processes of socialization in peer context, both self and others are agents and recipients of instructions. Concessions occur on both parts when children disagree. Often friendship develops with these concessions. Therefore, through self-adjustment (Sullivan, 1953) or mutual concession (Piaget, 1965), children reach consensus and develop relationships with their peers. In a word, both theories propose a unique role of peers in children's development.

Significance of Peer Groups in Early Adolescence

The importance of peers in children's development increases from childhood through early adolescence. With a growing independence from adults and a desire for autonomy, children become particularly dependent upon peers in early adolescence (Youniss & Smollar, 1985). Not only does the need for peers and playmates develop in early adolescence to avoid the loneliness or ostracism by peers (Sullivan, 1953), but peers are also important for early adolescents in establishing and maintaining the positive perceptions of self (Steinberg, 1990; Youniss & Smollar, 1985). As interactions with peers consume a larger amount of time in early adolescence than before (Putallaz, & Wasserman, 1989; Rubin, et al., 2006) and associations with peers account for a much larger proportion of children's central social network than associations with adults (Brown, 1990; Garbarino, Burston, Raber, Russel, & Crouter, 1978; Hartup, 1993), children's interactions with peers increase in early adolescence.

Moreover, an early adolescent often interacts with the same peers. The majority of peer interactions in early adolescence occur in group context (Crockett, Losoff, & Peterson, 1984). Children of 11 years old report that most of their peer interactions take place in the context of peer groups (Kirchler, Palmonari, & Pombeni, 1993; Palmonari, Pombeni, & Kirchler, 1990; Rubin, et al., 2006). A substantial amount of their time is spent with members in peer groups, and this amount of time even extends beyond that spent at school (Tarrant, 2002). As a relay station between relinquishing their childish dependence on parents for self-definition and achieving an autonomous sense of self rooted in their society at large (Newman & Newman, 1976), peer groups are the major social context for development in early adolescence (Erickson, 1968; Newman & Newman, 1976). The proximal social interactions that occur in groups are the "engine" for the development of early adolescents' behaviors (Bronfenbrenner & Morris, 1998).

The Definition of a Peer Group

The notion of a “group” implies a social unit that extends beyond the dyad (for review, Kindermann & Gest, 2009). In developmental psychology, there are at least three distinct traditions of studying groups. The first tradition examines a natural social group which is defined as a group of youth who often interact with one another a lot. Social ties for this group are natural and interconnected interactions among group members (e.g., Cairns, Perrin & Cairns, 1985). A second tradition focuses on a friendship group which is defined as a group of a target child’s friends with whom this child often spends time together (e.g., Kwon & Lease, 2009). Social ties for this group are friendships and this child’s friends are not necessary to be interconnected with one another. Members in a natural social group may overlap with members in a friendship group given that friends often hang out together (Cairns, Leung, Buchanan, & Cairns, 1995). However, it is likely that a child may hang out with some children who are not his/her friends. A third tradition focuses on social crowds of youth who share a common reputation among peers for patterns of behavior and values (e.g., Brown, 1999). Children in a crowd (e.g., druggies, nerds, jocks) share “ideational ties” and committed to a shared set of norms (Simmel, 1950). In this study, a peer group specifically refers to a natural social group.

Socialization of Aggression in Peer Groups

Mechanisms of Socialization in Peer Groups

One key phenomenon about peer groups is that children belonging to the same group are more similar to each other than to other children outside the group. This within-group similarity is called homophily (Cohen, 1977; Kandel, 1978). Peer group homophily is usually viewed as the outcome of two complementary processes: selection and socialization (e.g., Kandel, 1978). Selection refers to the processes in which individuals with prior similarity on some attributes of mutual importance purposefully select each other as affiliates. Socialization represents the

processes in which individual members who associate with each other irrespective of their prior similarity influence one another. In this study, I concentrated on potential socialization processes in a peer group.

Three mechanisms about socialization processes in a peer group are proposed in the literature. One is synchronized social interactions between group members (Cairns & Cairns, 1994). Another is normative influence processes (e.g., Kruglanski & Webster, 1991) and the third is social comparison processes (Festinger, 1954, 1989). According to the synchronized interactions perspective (Cairns & Cairns, 1994), synchronized interactions are necessary to maintain the existence of a peer group. The actions of individuals in a group could constrain the actions of others, and vice versa. As a result, social interactions in peer groups would modify individual members' behaviors and may increase the levels of their behavioral similarity over time. In normative influence processes (e.g., Kruglanski & Webster, 1991), the pressure to conform to social norm is proposed to be very powerful, in part because people who deviate from the norm often experience negative consequences such as embarrassment, awkwardness, and even hostile behavior from others. Because of the unpleasant consequences of deviating from the norm, an individual is motivated to learn and adhere to the norm of his/her group. Over time, an individual's behavior becomes more similar to his/her group norm. Finally, according to social comparison theory (Festinger, 1954, 1989), humans are proposed to have a fundamental need to compare themselves to others to evaluate their abilities and opinions. This press for social comparison often motivates an individual to affiliate in groups comprised of others similar to this individual. Within group context, this individual compares self to other members. To maintain this existence of this group, a discrepancy between group members will either lead to changes of this individual, or lead to changes of other members in the group. These changes are

thought to reduce the discrepancy between group members over time. Taken together, all these mechanisms propose that members in a group become more similar over time through behavioral modifications within group context.

However, these mechanisms fail to consider which group members are more likely than others to influence an individual and therefore may induce changes in this individual's behaviors. Note that with children's primary social goal evolving from the coordination of dyadic play in early childhood to the navigation of the peer system in middle and late childhood, one emerging characteristic of peer groups in early adolescence is the hierarchical structure for members who often have different levels of social prominence or social status in a group (e.g., Brown, 1990; Gottman & Mettetal, 1986; Harris, 1995; Hartup, 1993; Parker & Gottman, 1989). In social learning theory (Bandura, 1986; Bandura & Walters, 1963), children are proposed to observe peers' behaviors and related outcomes during their interactions with peers. With social and material benefits associated with high level of social status, high-status peers are major sources of children's observational learning. Activities of high-status peers are more salient and receive more attention than those of low-status peers. Children are proposed to model themselves after the performances of high-status peers (Bandura, 1986; Bandura & Walters, 1963). Similar to social learning theory, social impact theory which provides general rules on the effect of other persons on an individual proposes that other individuals vary in their social impact on a target individual. In this theory, social impact is defined as any of the great variety of changes in physiological states and subjective feelings, motives and emotions, cognitions and beliefs, values and behaviors that occur in an individual as a result of the presence or actions of other individuals. The total impact of others is further proposed to vary with their social status. High-status others have a stronger social impact and are more influential than low-status others

(Latené, 1981). Therefore, it is reasonable to expect that in a peer group, high-status peers, rather than low-status peers, would have strong influences on individuals' behaviors and would induce changes in their behaviors.

Socialization of Aggression in Peer Groups during Early Adolescence

In the literature, the importance of a peer group in shaping and supporting individual members' behaviors has long been acknowledged by developmental psychologists and sociologists (Corsaro & Eder, 1990; Crockett, et al., 1984; Eder, 1985; Harris, 1995; Rubin, et al., 1998). Peer contagion refers to the increase of children's antisocial behaviors through affiliations with antisocial peers. It is frequently observed in the socialization of antisocial behaviors in groups (Boxer, et al., 2005; Cairns, Cairns, Neckerman, Gest, & Garipey, 1988; Card, & Hodges, 2006; Cohen & Pristein, 2006; Dishion, et al., 1995, 1999; Espelage, et al., 2003; Farmer, 2000; Farmer & Rodkin, 1996; Giordano, Cernkovich, & Pugh, 1986; Luthar & McMahon, 1996; Moffitt, 1993). For instance, research indicated that in groups where high-risk children (boys and girls of 11 to 14 years old) were randomly aggregated by researchers (Dishion & Andrews, 1995), peer interactions within groups were associated with long-term increases in tobacco use. In other studies, interactions between aggregated delinquent or antisocial children were found to induce an increase in children's delinquent or antisocial behaviors over time (Dishion, et al., 1999; O'Donnell, Hawkins, & Abbott, 1992).

Specifically, Espelage and colleagues (2003) examined peer contagion in aggressive behaviors. Participants were from 6th to 8th grades. Peer groups were identified on the basis of the self-reported friendship links and the strength of these links. Average levels of bullying in a peer group, i.e., group norms, in the fall semester predicted individual members' levels of bullying in the spring semester after controlling for their initial levels. Levels of bullying for individual

members in groups with high levels of group norms were found to increase over time. Similar results were found for fighting. These results demonstrated a substantial peer contagion effect on aggression within the group context.

Another method for investigating peer contagion within group context is to test the effect of discrepancy in aggression between group members and a target individual member. This discrepancy effect on a target individual member's aggression was tested in a study by Boxer, Guerra, Huesmann, and Morale (2005). Boxer et al. created small groups of aggressive 3rd and 6th graders. Group members met with each other and two staff facilitators once every week. Aggression was assessed twice by the combination of teacher ratings (Achenbach & Edelbrock, 1983) and peer nominations (Eron, Waler, & Lefkowitz, 1971). The time interval between these two assessments was two years. Results indicated that when the target child was less aggressive than his/her peers in the group, his/her scores on aggression increased over time. The more aggressive peers seemed to be "pulling up" the aggressiveness of the target child. The increase or "pulling up" was the greatest when the discrepancy in aggression between the target child and other group members was the greatest (Boxer, et al., 2005). On the other hand, results in Boxer and colleagues' study (2005) indicated that when the target child (boy or girl) was more aggressive than his/her peers within the group, his/her scores on aggression decreased over time. The less aggressive peers seemed to be "pulling down" the aggressiveness of the target child. The decrease or "pulling down" was the greatest when the discrepancy in aggression between the target child and other group members was the greatest (Boxer, et al., 2005). Findings in Boxer and colleagues' study (2005) are consistent with social comparison theory which proposes that group members would compare themselves with each other and thereafter would reduce the

discrepancy between them (Festinger, 1954, 1989). These findings further indicate that peer groups are important in the development of early adolescents' aggressive behaviors.

Impacts of Social Status on Socialization of Aggression in Peer Groups

It should be noted that the strength of influences of all members in a group is assumed to be equal in previous studies (e.g., Boxer, et al., 2005; Espelage, et al., 2003). In fact, members in a peer group often differ in their social status in early adolescence (e.g., Harris, 1995; Hartup, 1993). According to social learning theory (Bandura, 1963, 1986) and social impact theory (Latené, 1981), different levels of social status for group members may be associated with the variability in their influences. High-status children are prominent in their social network. The prominence of high-status peers attracts children's close attention to their performances. In Bandura's social learning theory (1963, 1986), children are expected to model high-status peers' behaviors more than they model low-status peers' behaviors. Similarly, in Latené's social impact theory (1981), high-status others are expected to have a stronger social impact than low-status others. Based on these two theories, I expected that high-status peers in a group would have stronger influences on individual members' aggression than low-status peers.

Variability in the influence of peers with various levels of social status has been investigated in Cohen and Prinstein's study (2006). Forty three 11th grade White males were recruited for participation in one experimental study. Participants were randomly assigned to one of two experimental conditions, i.e., "high-status peers" and "low-status peers" conditions. In the "high-status peers" condition, participants were led to believe that they were interacting (in the context of an electronic chat room) with three high-status peers from their school. In the "low-status peers" condition, the ostensible peers were low in social status. Results indicated that social status had a significant main effect on participants' aggressive responses, even after

controlling for participants' average pretest responses and participants' general tendencies toward aggressive and risk behaviors (e.g., teasing a vulnerable student, damaging someone's property, drinking alcohol). Participants conformed to high-status peers' responses on aggressive and risk scenarios more than they did to low-status peers'.

Cohen and Prinstein's study has a couple limitations. First, only generic information about peers' social status was provided to participants. The actual identity of these peers was not known to participants. Therefore, it is hard to clarify which type of relationship (e.g., associate, friends, or group mate) was involved between participants and peers in this study. Second, participants are in late adolescence. According to the psychosocial theory (Newman & Newman, 1976), early adolescence and late adolescence may be two separate and distinct stages of adolescence. Peer approval and group identity may be more important in early adolescence than in late adolescence. Therefore, status in a peer group would be more important to individual members in early adolescence than in late adolescence. In the current study, social status was targeted for investigation within natural group context.

In sum, peer groups are an important context for socialization of aggression in early adolescence. Researchers have investigated the influences of group norms (Espelage, et al., 2003) and the discrepancy in aggression between a target child and other members in a group (Boxer, et al., 2005). Peer contagion was found in these studies. However, these studies assume the influences of each member in a group are the same. According to Bandura's social learning theory (Bandura, 1986; Bandura & Walters, 1963) and Latené's social impact theory (1981), peers differ in their influences if they have different social status. High-status peers are proposed to have stronger influences than low-status peers. Given that peers in a group often have different levels of social status (e.g., Harris, 1995), high-status peers in a group should have stronger

influences than low-status peers on individual members' aggression. Up to date, no study has explicitly examined how individuals' aggression is influenced by peers of different social status in their groups.

Different Dimensions of Social Status

Four Dimensions of Social Status: Dominance, Centrality, Perceived Popularity, and Peer Preference

Theories and empirical evidence mentioned above indicate that social status is important in the socialization of aggression within group context. Previous studies demonstrate that social status is a multidimensional construct (Lease, Musgrove, & Axelrod, 2002; Rodkin, Farmer, Pear, & Van Acker, 2000;) and four dimensions, i. e., dominance, social centrality, perceived popularity, and peer preference, have been identified for social status (e.g., Coie, Dodge, & Coppotelli, 1982; Harris, 1995; Hartup, 1993; Lease, et al., 2002; Rodkin, et al., 2000; Rubin & Coplan, 1992). In this section, I discussed these four dimensions of social status and their associations with aggression.

Dominance. Dominance has been defined as one's social power to defeat someone else in resource competition (e.g., Dunbar, 1988; Hawley, 1999). The notion of dominance within a group implies that, when children are engaging in conflict with other group members, some are likely to win and lead others, and some are likely to yield to their peers (Hay, Payne, & Chadwick, 2004). In studies, dominance can be measured by asking participants to nominate the "toughest" or "influential and powerful" children in contexts such as a class, a camp (Sluckin & Smith, 1977). It can also be measured by asking teachers to evaluate children's physically assertive behaviors (e.g., bossy, shows off, dominates peers) or group leadership behaviors (e.g.,

wants to be in charge, egotistical) (Pellegrini, & Bartini, 2001; Pellegrini, Bartini, & Brooks, 1999).

Social centrality. Social centrality has been defined as the degree of attention or visibility a child receives from peers (Cairns, et al., 1988; Cairns, & Cairns, 1994; Cairns, et al., 1985). This dimension of social status captures how prominent a child is among his/her peer network. It was first advanced by Cairns and colleagues in the Social Cognitive Map (SCM) procedure for identifying peer groups (e.g., Cairns, et al., 1985, 1988; Cairns, Xie, & Leung, 1998; Estell, Farmer, & Cairns, 2006; Farmer, Leung, Pearl, Rodkin, Cadwallader & Van Acker, 2002; Gest, Graham-Bermann, & Hartup, 2001; Xie, Cairns, & Cairns, 1999). In this SCM procedure, social centrality is measured by the number of times a child is nominated by peers into his/her group.

Perceived popularity. Perceived popularity is alligned with the idea that status is composed of social power, prestige, and social honor (Corsaro, 1979; Weber, 1946). Thus, perceived popularity is defined not only as the degree of power and influence over peers, but also as the degree of attention, visibility or prominence. Perceived popularity is often assessed by virtue of peer nominations of the most/least popular children (Gorman, Kim & Schimmelbusch, 2002; LaFontana & Cillessen, 2002; Parkhurst & Hopmeyer, 1998; Prinstein & Cillessen, 2003).

Peer preference. Peer preference, which is also termed as sociometric popularity, is an index of individuals' relative likeability by peers. Peer preference is built upon the idea that individuals could be accepted by some peers and rejected by other peers at the same time. There are two aspects of interpersonal experiences, attraction and repulsion (Bukowski, Sippola, Hoza, & Newcomb, 2000). Peer preference is measured by using nominations of peers who are liked-most (an index of attraction) and who are liked-least (an index of repulsion) (Gest, et al., 2001; Graham & Juvonen, 2002; LaFontana & Cillessen, 2002). Based on these nominations, social

preference (like-most – like-least), a measure of ‘relative likeableness’ (Bukowski et al., 2000), is evaluated.

Dominance, centrality, and perceived popularity are conceptually similar to each other, given that all these three command a great deal of attention or visibility from peers. On the other hand, peer preference focuses on an individual’s relative likeability by peers.

Differentiation among Four Dimensions of Social Status

Researchers have demonstrated that dominance, centrality, and perceived popularity are closely correlated to each other. Socially dominant individuals are central in peer groups (Hawley, 1999). In Ellis and Zabatany’s study (2007), dominance, which is measured via leadership, is significantly associated with centrality. Furthermore, dominant children are perceived by peers as being popular, and vice versa (Adler & Adler, 1995; Lease et al., 2002; Parkhurst & Hopmeyer, 1998; Vaillancourt, & Hymel, 2006). In addition, positive associations are found between perceived popularity and social centrality. Popular 3rd-6th graders who are nominated by peers are central in their network in Farmer and Rodkin’s study (1996). In another study (Rodkin et al., 2000), perceived popular 4th-6th grade boys identified through teacher ratings are central in their peer groups. All these findings support the conceptual similarity among dominance, social centrality and perceived popularity.

In contrast, the associations between each of these three dimensions of social status and peer preference are weak in strength. Most studies fail to find an association between these three dimensions and peer preference. Dominant, central or perceived popular children are not necessarily preferred or well-liked by peers. Neither are well-liked children necessarily dominant, central or popular in their network (Eder, Evans, & Parker, 1995; Farmer, Estell, Bishop, O’Neal, & Cairns, 2003; Lease et al., 2002; Parkhurst & Hopmeyer, 1998; Rodkin,

Farmer, Pearl, & Van Acker, 2006; Rose, Swenson, & Waller, 2004). Moreover, some dominant, central, or perceived popular children even have low levels of peer preference. For instance, some dominant children are found to be disliked by peers (Coie, & Dodge, 1998; Hawley & Little, 1999; LaFreniere & Sroufe, 1985; Sadalla, Kenrick, & Vershure, 1987; Stray, 1980; Vaughn & Waters, 1981). Some children who are central in their network are likely to be rejected by peers (Farmer et al., 2003). Also, there is growing evidence indicating that some of children and adolescents who are identified by their peers as being popular are disliked by many of their peers (e.g., Cillessen, & Mayeux, 2004; Gorman, et al., 2002; Lease, et al., 2002; Parkhurst & Hopmeyer, 1998; Rose, et al., 2004). All these findings indicate that peer preference differs from dominance, social centrality and perceived popularity.

Furthermore, individual characteristics of children who are dominant, central or popular in their networks differ from characteristics for children who are preferred by peers. For instance, perceived popular children are described as cool, athletic, influential trend-setters who could manipulate and control the social order (Adler & Adler, 1995; Crick & Grotpeter, 1995; Rodkin, et al., 2000; Rodkin, et al., 2006; Xie, Li, Boucher, Hutchins, & Cairns, 2006). Some of them are prosocial, whereas others are involved in risky behaviors and experience academic difficulties (Cillessen & Mayeux, 2004; Estell, Farmer, Pearl, Van Acker & Rodkin, 2008; Farmer, et al., 2002, 2003; Prinstein, Meade, & Cohen, 2003; Rodkin, et al., 2000). On the other hand, peer preferred children are consistently associated with prosocial behaviors (e.g., helpful to other peers), but not with risky or deviant behaviors (Coie & Dodge, 1998; Rubin et al., 1998). These children are likeable and academically inclined (Boivin, Dodge, & Coie, 1995; Coie & Dodge, 1998; Newcomb, Bukowski, & Pattee, 1993; Rubin et al., 1998; Salmivalli, Kaukiainen, &

Lagerspetz, 2000). In the long run, perceived popular children rather than peer preferred children are likely to incorporate notable risks for development (e.g., Sandstrom, & Cillessen, 2006).

In sum, previous studies indicate that four dimensions of social status can be differentiated into two types. Dominance, centrality, and perceived popularity index one type of social status which represents prominence, salience, and power among peers. Peer preference, on the other hand, indexes the other type of social status which represents an individual's relative likeability by peers.

Differential Associations of Social Status with Aggression

Furthermore, these two types of social status vary in their associations with aggression. Research has consistently demonstrated a negative association between aggression and peer preference (Rubin, et al., 1998). High levels of aggression are associated with peer dislike in previous studies (e.g., Dodge, 1983; Dodge, Coie, Pettit & Price, 1990; Dubow, 1988; Newcomb, et al., 1993). However, aggression is not always negatively associated with prominence among peers. Some aggressive children are found to have high levels of prominence and are identified as dominant, central or popular among peers (Adler & Adler, 1995; Estell et al., 2002, 2003; Estell, Cairns, Farmer, & Cairns, 2002; Farmer, et al., 2003; Farmer & Rodkin, 1996; Rodkin, et al., 2000, 2006; Vaillancourt, & Hymel, 2006). For instance, some aggressive boys were found to be prominent and likely to be leaders in Farmer and colleagues' study (2003). Consistently, Rodkin and colleagues' study (2000) indicated that some aggressive boys were popular, "cool", and were central in their social network. All these findings suggest a different role of aggression in these two types of social status.

In sum, although a negative association between aggression and peer preference has been consistently demonstrated in previous studies, aggression is not always negatively associated

with prominence among peers. Moreover, from the perspectives of social learning theory (Bandura, 1986) and social impact theory (Latené, 1981), high-status individuals represent those who are likely to be imitated by others and have a strong social impact. Therefore, prominence which is indexed by dominance, social centrality, or perceived popularity, rather than peer preference, is likely to be associated with varying levels of peer influences on individual members' aggression. In this study, we chose the social centrality measure over the measure of dominance or perceived popularity based on the consideration that the procedure for assessing a child's social centrality also yields key information on peer group membership, individual status within a group, and group status in the social network (e.g., Cairns, et al., 1985, 1988, 1998; Farmer et al., 2002), critical variables to be investigated in this study.

Potential Moderators: Group- and Individual-Level Factors

Group-Level Factors

As discussed above, children' social status within a group is likely to affect the socialization processes of aggression in groups. Moreover, the general characteristics of a group, for instance, group status and group cohesion, are likely to affect the way that individual members interact with each other and therefore may moderate the effect of social status on the socialization processes of aggression.

Group status. Peer influences are likely to vary across groups with different levels of group status. Ethnographic studies show that high-status groups offer greater social recognition, more opportunity to relationships, and more access to resources than low-status groups (e.g., Adler & Adler, 1998; Eder, 1985). Members in a high-status group prefer to interact with each other more than members in a low-status group (Horn, 2006). Therefore it can be anticipated that peers' influences would be stronger in a high-status group than in a low-status group. In a recent

study, the influence of group norms on early adolescents' deviant behavior, school misconduct and relational aggression was found to be stronger in high-status groups than in low-status groups (Ellis & Zarbatany, 2007). In the present study, we tested whether high-status peers would have stronger influences on individual members' aggression in a high-status group than in a low-status group.

Group cohesion. Group cohesion can be defined as the strength of connections among group members or the degree to which members are integrated with each other (e.g., Forsyth, 1999). Group cohesion is found to be positively associated with the time group members spend together. The more time group members spend together, the stronger that cohesion becomes (Griffith & Greenlees 1993; Terborg, Castore, & DeNinno, 1976). Given the more intense social interactions among members in a highly cohesive group, it could be expected that peers in a highly cohesive group would have a stronger influence on individuals' aggression than peers in a non-cohesive group.

Individual-Level Factors

Individuals differ in the degree to which they are influenced by peers. Based on extant theories and previous studies, two important individual factors, individual status and individuals' beliefs about aggression, could moderate the degree to which an individual is influenced.

Individual status. According to social impact theory, a person's social status would influence his/her openness towards others', particularly high-status others' influences (Latené, 1981). A low-status person would be more open than a high-status person towards high-status others' social impact (Latené, 1981). In addition, Brown, Bakken, Ameringer, and Mahon (2008) propose that within a group, being in a subordinate position may actually enhance a person's openness to influence as a means of maintaining membership in a group. Therefore, it can be

predicted that a low-status individual in a peer social group would be more influenced by high-status peers than a high-status individual would. This prediction has rarely been investigated in previous developmental studies where all group members were assumed to be influenced to the same degree (e.g., Boxer et al., 2005; Espelage et al., 2003). In this study, I tested this prediction.

Individuals' beliefs about aggression. Individuals' beliefs that aggressive behaviors will yield valued outcomes could largely determine the adoption of aggression in an individual's interactions with others (Bandura, 1986; Boldizar, Perry, & Perry, 1989; Perry, Williard, & Perry, 1990). In research, such aggression-encouraging beliefs are found to be associated with increases in children's aggressive behaviors over time (Egan, et al., 1998; Huesmann & Guerra, 1997). In Egan and colleagues' study (1998), children who endorsed aggression-encouraging beliefs (e.g., self-efficacy for aggression, values assigned to harming a victim) became more aggressive over the school year. Huesmann and Guerra (1997) found that the level of aggression for children who endorsed aggression-encouraging beliefs (e.g., "It is usually ok to push or shove other people around if you're mad") increased over the following year. These previous studies indicate that aggression-encouraging beliefs are associated with gains in individuals' aggression over time. In this study, I expected that individuals with aggression-encouraging beliefs would be more open to peers' influences on aggression than individuals with aggression-nonencouraging beliefs.

Gaps in the Literature

Previous studies on the socialization of aggression in groups concentrate on physical aggression (e.g., bullying, fighting). Recent studies show that subtle forms of aggression, such as social aggression, are frequently used in early adolescence (e.g., Cairns, et al., 1989; Cillessen & Mayeux, 2004; Xie, et al., 2002a; Zimmer-Gembeck, Geiger, & Crick, 2005). Subtle forms of

aggression have been demonstrated to differ from physical aggression in multiple aspects such as interactional processes (e.g., Xie, Swift, Cairns, & Cairns, 2002b) and developmental trajectories (e.g., Cairns, et al., 1989). Compared to direct and confrontational physical aggression, subtle forms of aggression are often indirect, non-confrontational, and involve the participation and help of other children in their network (Cairns & Cairns, 1994; Cairns et al., 1989; Xie, 1998; Xie, et al., 2002a, 2002b). Behaviors of these subtle forms of aggression may minimize the risks of direct revenge by the victim and the punishment by the authorities (Cairns & Cairns, 1994; Lagerspetz & Björkqvist, 1994). For example, Xie, Swift, and other colleagues (2002b) found that school authorities were most likely to intervene in a conflict where physical aggression was used. The lowest likelihood of intervention by authorities occurred in conflicts where social aggression and/or relational aggression were used. Given these differences, socialization processes of subtle forms of aggression may differ from those of physical aggression. One prominent issue related to different forms of aggression concerns gender differences.

Significant gender differences have been reported for physical aggression. Physical aggression is more common in boys than in girls (e.g., Archer, 2004; Card, Stucky, Sawalani, & Little, 2008; Maccoby & Jacklin, 1974). Some studies indicate that the association between physical aggression and social status varies by gender in early adolescence. A positive association between physical aggression and social status (i.e., network centrality or perceived popularity) is often found for boys, but not always found for girls (e.g., Cillessen & Mayeux, 2004; Farmer, & Rodkin, 1996; LaFontana & Cillessen, 2002; Rodkin et al., 2000; Rose, et al., 2004; Xie, Cairns, & Cairns, 1999). For example, Cillessen and Mayeux (2004) failed to find a significant association between physical aggression and perceived popularity for girls. Farmer and Rodkin (1996) additionally reported that physical aggression was negatively associated with

network centrality for girls. Based on the gender differences mentioned above, it can be expected that the influences of high-status peers on individual members' physical aggression may be stronger in boys' groups than in girls' groups. Moreover, as we discussed above, high-status peers would have a stronger influence on low-status individuals' physical aggression than on high-status individuals' physical aggression. This difference would be more pronounced in boys' groups than in girls' groups. These expectations are supported by findings from previous studies indicating that in early adolescence boys are more susceptible or less resistant than girls to peer influences (e.g., Berndt, 1979; Brown, Clasen, & Eicher, 1986; Devereux, 1970; Steinberg & Monahan, 2007; Steinberg & Silverberg, 1986).

In contrast, gender differences in social/relational aggression are not consistent in previous research. Although some studies have found girls to be significantly more relationally aggressive than boys (e.g., Crick, 1996; Crick & Grotpeter, 1995), others have found no gender differences (e.g., Underwood, 2002; Underwood, Galen, & Paquette, 2001). A meta-analytic review demonstrates trivial gender difference in social/relational aggression (Card et al., 2008). More importantly, the association between social/relational aggression and social status is often similar across gender. Recent reports show that in middle childhood and early adolescence, social/relational aggression is associated with high levels of perceived popularity or network centrality among both boys and girls (e.g., LaFontana & Cillessen, 2002; Lease, et al., 2002; Xie, et al., 2002b). Overall findings in previous studies suggest that peer influence on social aggression may be similar in boys' and girls' peer groups.

In early adolescence, children often interact with peers in same-gender social groups (e.g., Cairns, et al., 1998; Maccoby, 1998, 2002; Rubin, et al., 1998). There are few mixed-gender groups in this period. The mechanism for cross-gender groups in this period may differ

from same-gender groups. Given these, I focused on the socialization of aggression in same-gender groups. Potential differences in group gender, rather than individual gender, were examined in this study.

Overview of the Current Study

Peer groups are a major context for the socialization processes of aggression in early adolescence. The influences of peer group norms have been investigated in previous studies. Peer contagion has been found on individual members' aggression over time. However, these studies assume that the influences of each member in a peer group are similar. According to Bandura's social learning theory (1963, 1986) and Latené's social impact theory (1981), peers differ in their influences if they have different levels of social status. High-status peers are proposed to have stronger influences on individuals' behaviors than low-status peers. Given that members in peer groups are often differentiated in their social status in early adolescence (e.g., Harris, 1995), high-status peers in a group may have stronger influences than low-status peers on individual members' aggression. Moreover, considering the differences in interactions between members across peer groups, general characteristics of a group, for instance, group status and group cohesion, may affect high-status peers' influences on individual members' aggression. On the other hand, individual characteristics, i.e., individual status and beliefs about aggression, may affect individuals' openness to high-status peers' influences and therefore may moderate high-status peers' influences on their aggressive behaviors. Physical and social aggression was investigated in this study. Given the overwhelming findings on gender differences in physical aggression and gender similarities in social aggression, gender differences were expected for the socialization of physical aggression, but not social aggression in peer groups.

Hypotheses

Aim 1: To Examine Different Influences of Peers with Different Social Statuses

Hypothesis 1. Given the prominence and social rewards associated with high status (e.g., Bandura, 1963, 1986; Berndt, 1996, 2002; Rubin, Bukowski, & Parker, 2006), I hypothesized that in a peer group, high-status members' aggression at Time 1, rather than low-status members' aggression at Time 1, would be positively and significantly associated with individual members' aggression at Time 2 after controlling for individual members' aggression at Time 1.

Hypothesis 2. Furthermore, I hypothesized that the association between group norms of aggression at Time 1 and individual members' aggression at Time 2 would be mediated by the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2.

Aim 2: To Examine the Moderating Effect of Group-Level Factors: Group Status and Group Cohesion

Hypothesis 3. I hypothesized that group status would moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual member's aggression at Time 1. The association would be stronger in a high-status group than in a low-status group.

Hypothesis 4. I hypothesized that group cohesion would moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual member's aggression at Time 1. The association would be stronger in a highly cohesive group than in a non-cohesive group.

Aim 3: To Examine the Moderating Effect of Individual-Level Factors: Individual Status and Individuals' Beliefs about Aggression

Hypothesis 5. Individuals' beliefs about aggression may moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual member's aggression at Time 1. The association was expected to be stronger for individuals with aggression-encouraging beliefs than for individuals with aggression-nonencouraging beliefs.

Hypothesis 6. Individual status may moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual member's aggression at Time 1. The association was expected to be stronger for low-status individuals than for high-status individuals.

Aim 4: To Examine Gender Differences in Physical and Social Aggression

Hypothesis 7. The association between high-status members' physical aggression at Time 1 and individual members' physical aggression at Time 2 after controlling for individual member's physical aggression at Time 1 would be stronger in a boys' group than in a girls' group. No differences would be expected on social aggression.

Hypothesis 8. The moderating effect of individual status on the association between high-status members' physical aggression at Time 1 and individual members' physical aggression at Time 2 after controlling for individual member's physical aggression at Time 1 would be stronger in boys' groups than in girls' groups. No differences would be expected for social aggression.

CHAPTER 2

METHOD

The data that were used for this research are from the project of Transition to Middle School, a three-year longitudinal study about children's experience with their peers from 5th grade to 7th grade. Enrollment for this project began in 2005 and completed in 2007. At the beginning, a total of 318 5th grade students (51% female, mean age = 11.00, SD = 0.44) were recruited from 6 elementary schools in an urban school district outside Philadelphia, Pennsylvania. Students who later entered into three middle schools in this district were followed up through 6th and 7th grades. Additional participants were recruited from these middle schools each year. Data used for the present analyses were from 7th grade.

Participants

A total of 336 7th grade students (55% female, mean age = 13.00, SD = 0.44) participated in this study. Among them, 256 students had been followed up since they were at 5th grade, 71 students since 6th grade and the other 9 students were recruited at 7th grade. Both parental consent and children's consent were obtained for participants. A total of 548 students were registered in these middle schools. The participation rate for this study was 61% (336/548). A higher participation rate was found for girls (70%) than for boys (53%), $\chi^2(1, 548) = 18.29, p < .001$. About one half of participants were African-American, 31% White, 16% Hispanic, and 2% Asian or other ethnicity. Fifty percent of participants were eligible for free-lunch at school and an additional 9% of participants were eligible for reduced-lunch. Participants and non-participants did not differ in their ethnicity background and lunch eligibility, $\chi^2 s < 6.66, ps > .15$.

Procedure

Data were collected in the fall and in the spring semesters of 7th grade. Group administration procedures were used to conduct a 45-minute survey session with participants. Before the administration of the survey, participants were assured that their answers would be kept confidential, and they were asked to protect the confidentiality of their responses. Participants were also told they could stop participating at any time. During the survey, one administrator read the instructions and questions aloud. Additional administrators provided mobile monitoring and assisted students as needed.

Measures

Peer groups. In this study, the Social Cognitive Map (SCM) procedure was used to identify peer groups in school (e.g., Cairns, & Cairns, 1994; Cairns, et al., 1985). In the fall semester of the 7th grade, participants were asked to nominate peer groups in their grade: “Are there any students in your grade who hang around together a lot?” “Please write their names.” According to the nominations of peer groups from all respondents within a grade, social groups were identified based on the following two matrices (Cairns, et al., 1985; Cairns, Gariépy, & Kindermann, 1991).

A co-occurrence matrix was generated as a square matrix with all the students in a grade listed down the rows and across the columns. Each off-diagonal number in the matrix summarizes the number of times two students corresponding to the row and the column are nominated in the same group. Each diagonal number of the co-occurrence matrix represents the total number of occasions that a given person is named to any group. The distribution of numbers in a column is regarded as the personal profile of co-occurrences with other students in the same groups.

Then, a correlational matrix was generated by intercorrelating the columns in the co-

occurrence matrix. The magnitude of the correlation represents the degree of similarity between two personal profiles of co-occurrences. If two participants are group-mates, high similarity in their personal profiles of co-occurrences is expected. According to Cairns and colleagues (Cairns et al., 1991), a cutoff point of .40 for the correlation is employed to determine whether two people are in the same social group. An example of a co-occurrence matrix and a correlational matrix was presented in the Appendix.

The validity and reliability of the SCM procedure have been tested in prior studies. The validity of peer groups identified by the SCM procedure has been proved by direct observations (Cairns, et al., 1985; Gest, Farmer, Cairns, & Xie, 2003) and self-nominations (Cairns, et al., 1995). Test–retest reliability coefficients within three weeks are high, which also indicate high short-term stability of children’s peer groups (i.e., 90% of groups maintain a majority of their members over this period; Cairns et al., 1995).

Furthermore, this procedure is robust to various levels of participation rate. Because aggregate responses are used and groups are generally publicly agreed upon in the SCM procedure, group profiles based on participation rates of 50% are almost indistinguishable from those with participation rates of 100% (Cairns, et al., 1995).

Group membership was identified for 276 students in 71 groups in this study. Group size ranged from 3 to 16. The majority of identified groups were of the same gender: 33 all-girl groups, 30 all-boy groups, and 8 were mixed-gender groups. All-girl groups did not differ from all-boy groups in group size, $t(61) = 1.12, p = 0.27$. In this study, two groups with all non-participant members were excluded from analyses. Furthermore, to test group gender differences, I excluded four groups with mixed-gender high-status members. In the other four mixed-gender groups, 5 low-status participants whose gender was different from their high-status members’

gender were also excluded. A total of 245 participant members belonging to 65 peer groups were included in the analyses.

Individual status in a group. A continuous variable was used to measure individual status in a group. The number of times an individual is nominated into a group is called Individual Nomination. In this study, individual status within a group was measured by Individual Nomination, which was standardized within group to control for group differences in nominations.¹

High-status and low-status members in a group. Members in a group were categorized into high-status and low-status members according to the preexisting criteria developed by Cairns and colleagues (1988, 1994) in the SCM procedure. First, an average of Individual Nominations for the two most nominated members in a group is calculated as Group

¹ To test the validity of this measure, associations of this measure with perceived popularity and leadership were examined. Participants were asked to nominate, from free recall, unlimited number of peers who best fit descriptors for items about leadership, i.e., “leader” (“This person gets chosen by the others as the leader. Other people like to have this person in charge.”) and about perceived popularity, i.e., “popular” (“Some kids are very popular with their peers. That is, many classmates like to play with them or do things with them.”). For each student, the total number of peer nominations was calculated and standardized by school. Associations between the standardized number of individual nominations and being a leader/being popular among peers were highly significant, $r = .21$, $p < .001$ for being a leader, and $r = .22$, $p < .001$ for being popular. This indicates that individual status measured by standardized number of nominations strongly accounts for individuals’ prominence among peers.

Nomination. Then, an individual is classified as nuclear member in a group if his/her nomination is greater than or equal to 70% of the group nomination (i.e., $0.7 * \text{Group Nomination}$). An individual is classified as peripheral if his/her nomination is below 30% of the group nomination (i.e., $0.3 * \text{Group Nomination}$). The rest are classified as secondary members in a group. In this study, high-status members in a group referred to nuclear members, and low-status members in a group included secondary and peripheral members. Note that not every group contained low-status members. In 17 groups, only nuclear or high-status members were identified. Participants and nonparticipants did not differ in their likelihood of being either high-status or low-status members in a group, $\chi^2(1, 345) = 2.47, p = .12$.

Group status. A continuous variable was used to measure group status among the broad social network. A group's status was measured by Group Nomination, which was standardized by school to control for differences in the number of participants in each school.

Previous studies indicate that group status is significantly correlated with group size (Bales, Strodtbeck, Mills, & Roseborough, 1951; Xie, & Shi, 2009). Groups with high levels of status have more group members than groups with low levels of status. Consistently, group status was highly correlated with group size in this study, $r = 0.68, p < .001$. Therefore, group size was entered as a control variable in the analyses involving the effect of group status.

Group cohesion. Group cohesion was defined as the degree to which members are integrated with each other (e.g., Forsyth, 1999). In this study, group cohesion was indexed by the medium correlation between any two members in a group given that the correlation matrices produced by the SCM procedure assess the degree of similarity in interactional profiles between any two individuals in the same groups (Cairns, & Cairns, 1994).

Group cohesion was negatively correlated with group size, $r = -0.14, p < .05$. Therefore,

group size was entered as a control variable in the analyses involving the effect of group cohesion. Moreover, the partial correlation between group status and group cohesion after controlling for group size was significant, $r = 0.19$, $p < .001$. Higher levels of group status were associated with higher levels of group cohesion.

Measures of aggression. Aggression was assessed in the fall (Time 1) and the spring (Time 2) semesters of 7th grade. Both forms of aggression, physical and social aggression, were measured by peer nominations and victim nominations. Participants were asked to nominate, from free recall, unlimited number of peers who best fit descriptors for items about physical aggression, i.e., “starts fights” (“This person starts fights. This person pushes them, or hits them.”) and about social aggression, i.e., “sets up fights” (“This person is good at causing people to get mad at each other.”). In addition, participants were asked to report their victimization experience at school. First they were asked if they had experienced specific types of peer victimization. They were then asked to nominate peers who had done this to them. The number of times a student was nominated for “hit, pushed or kicked” a victim was used to assess physical aggression. The number of times a student was nominated for “gotten friends to turn against” a victim was used to assess social aggression. Note that I used two items, “set up fights” and “gotten friends to turn against a victim” to measure social aggression. These two items highly match the definition of social aggression, which refers to behaviors that intentionally damage interpersonal relationships and/or social status through the involvement of the third party and are nonconfrontational and generally concealed (e.g., Xie et al., 2002a).

For each student, the total number of peer nominations and victim nominations was calculated and standardized by school. Standardized scores of peer nominations were significantly correlated with standardized scores of victim nominations, $r = .33$, $p < .001$ for

physical aggression, and $r = .31, p < .001$ for social aggression. Cronbach's alpha was moderate for both forms of aggression, $\alpha = .50$ for physical aggression and $\alpha = .47$ for social aggression. Given these, for each form of aggression, an average score was calculated across standardized scores of peer nominations and victim nominations.

In this study, participants' physical aggression and social aggression were assessed in both the fall semester (Time 1) and the spring semester (Time 2) of 7th grade. Participants were more aggressive than non-participants at both time points for physical aggression, $F_s > 4.01, p_s < 0.05, \eta^2 = 0.01$. For social aggression, participants were more aggressive than non-participants at Time 1, $F(1, 542) = 7.68, p < 0.01, \eta^2 = 0.01$, and tended to be more aggressive than non-participants at Time 2, $F(1, 541) = 3.15, p = .08, \eta^2 = 0.01$.

Group norms of aggression. An average score of aggression across group members at Time 1 was calculated to measure the group norm of aggression.

High-status members' aggression. An average score of aggression across high-status (i.e., nuclear) members at Time 1 was calculated to measure high-status peers' aggression.

Low-status members' aggression. An average score of aggression across low-status (i.e., secondary and peripheral) members at Time 1 was calculated to measure low-status peers' aggression.

Individuals' beliefs about aggression. The degree to which children reported aggressive behaviors for popularity was measured. Female participants were asked the question of "what makes a girl popular at school", and male participants were asked the question of "what makes a boy popular at school". Two items about physical aggression were used in this measure: Getting into fights, and Breaking school rules. Scores for these items ranged from 1.0 (low: very unlikely to make someone popular) to 5.0 (high: very likely to make someone popular). ANOVA tests

indicated that scores on the item “Breaking school rules” did not differ across three schools, $F(2, 227) = 1.54, p = .22$ whereas scores on the item “Getting into fights” tended to differ across school, $F(2, 229) = 2.30, p = .10$. Given this, scores were standardized by school for each item. The correlation between standardized scores on these two items was significant, $r = 0.60, p < .001$. Cronbach’s alpha was adequate, $\alpha = .75$. Individuals’ beliefs about physical aggression were calculated by the average of these standardized scores at Time 1.

Two items were used for measuring individual beliefs about social aggression: “Setting up or cheering on fights” and “Getting others to turn against another boy (or girl)”. Similarly, scores for these items ranged from 1.0 (low: very unlikely to make someone popular) to 5.0 (high: very likely to make someone popular). ANOVA tests indicated that scores on the item “Setting up or cheering on fights” significantly differed across school, $F(2, 226) = 3.47, p < .05$. Scores on the item “Getting others to turn against another boy (or girl)” did not differ across school, $F(2, 226) = 2.28, p = .12$. Scores were standardized by school for each item. The correlation between standardized scores on these two items was significant, $r = 0.39, p < .001$. Cronbach’s alpha was moderate, $\alpha = .56$. Individuals’ beliefs about social aggression were evaluated by the average of these standardized scores at Time 1.

Stability of peer affiliation. Peer groups in childhood and adolescence are often dynamic in organization (Brown, 1990; Cairns, et al., 1995). Group membership is not static over time. Since the strength of high-status members’ influences would vary by the amount of time high-status members spend with an individual child, stability of affiliation with high-status members was controlled in analyses involving high-status members’ influences. With the same SCM procedure, peer groups were identified in the spring semester of 7th grade (Time 2). A target individual’s stability of affiliation with high-status members was determined by comparing high-

status members in a target individual's groups at both time points (i.e., Fall and Spring semesters). First, the number of high-status members who remained in the same group with a target child was counted (with the exclusion of the target child if he/she was a high-status member). Then this number was divided by the total number of high-status members in the target child's group at Time 1 (again with the exclusion of the target child if he/she was a high-status member).

Similarly, stability of affiliation with group members was controlled when the influence of group norms was investigated. To code stability of affiliation with group members, the number of group members who remained in the same group with a target child in both fall and spring semesters was divided by the total number of members in the child's group at Time 1 (excluding the target child). Stability of affiliation with low-status members was controlled when the influence of low-status members was examined. To code stability of affiliation with low-status members, the number of low-status members who remained in the same group with a target child in both fall and spring semesters was divided by the total number of low-status members in the child's group at Time 1 (excluding the target child if he/she had low status).

Affiliation with high-status members (Mean = 0.49, SD = 0.44), group members (Mean = 0.45, SD = 0.37), or low-status members (Mean = 0.25, SD = 0.34) was more stable in a high-status group than in a low-status group, $r_s > 0.23$, $p_s < .001$. Moreover, stability of affiliation with high-status members or group members was significantly correlated with individual status in a group, $r = 0.19$, $p < .01$ for affiliation with high-status members, $r = 0.16$, $p < .05$ for affiliation with group members. High-status individuals were more stable than low-status individuals in their affiliation with high-status members in a group. High-status individuals were also more stable than low-status individuals in their affiliation with other group members.

However, stability of affiliation with low-status members was not significantly correlated with individual status, $r = 0.10$, $p = .14$. Individuals with various levels of social status did not differ in their stability of affiliation with low-status members.

Overview of Statistical Analyses

Hierarchical Linear Modeling (HLM) procedure was used to test the hypotheses in this study. The use of HLM procedure is required by the nature of data structure in this study: individual members are nested within peer groups. A major assumption of single-level, ordinary least squares models is that the observations (hence the error terms) are independent from one another. Whenever there is a nested structure in a data set, there is a good chance that the independent assumption is violated. HLM procedure relaxes this independent assumption, and allows for correlated error structures (Luke, 2004; Raudenbush, & Bryk, 2002). Furthermore, HLM procedure can be used to test effects at both individual and group levels. In previous research, HLM procedure has been successfully used to analyze the influence of group characteristics, as well as individual characteristics, on individual member's aggressive behaviors (e.g., Boxer, et al., 2005; Espelage, et al., 2003; Rodkin, et al., 2006).

Testing hypotheses related to Aim 1. Two-level HLM models were developed to examine the influences of members with different social status in a group (Hypothesis 1). To test high-status members' influences, a target individual's aggression score at Time 2 was entered in the Level-1 model as the dependent variable. His/her aggression score at Time 1 and stability of affiliation with high-status members were entered as control variables. In the Level-2 model, the intercept in the Level-1 model (β_0) was entered as the dependent variable. The predictor in the Level-2 model was high-status members' aggression at Time 1. The equations for this two-level HLM were represented as follows:

Level 1: Individual Aggression at Time 2 = $B_{0j} + B_{1j}$ (individual aggression at Time 1) + B_{2j} (stability of affiliation with high-status members in a group) + r_{ij} (individual error) (1)

Level 2: $B_{0j} = \gamma_{00} + \gamma_{01}$ (high-status members' aggression at Time 1) + μ_{0j} (group error) (2)

The significance of the coefficient of high-status members' aggression at Time 1 (γ_{01}) determined whether high-status members had a significant influence on individuals' aggression. To test low-status members' influences, similar models were used where stability of affiliation with low-status members and low-status members' aggression at Time 1 were entered. The non-significance of the coefficient of low-status members' aggression at Time 1 determined that low-status members did not influence individuals' aggression over time.

Under the condition that high-status members had significant influences, the mediation of high-status members on group norms' influences (Hypothesis 2) was further tested. Following the steps proposed by Baron & Kenney (1986), I first tested whether high-status members' aggression at Time 1 was significantly correlated with group norms of aggression at Time 1. Next, I tested whether group norms of aggression at Time 1 would influence individuals' aggression over time. Models for testing group norms' influences were similar to above-mentioned models for testing high-status members' influences, except that stability of affiliation with all group members and group norms of aggression at Time 1 were used. The significance of the coefficient for group norms determined whether group norms had a significant influence on individuals' aggression over time. Finally, the influences of high-status members' aggression and group norms were examined simultaneously. A non-significant coefficient for group norms and a significant coefficient for high-status members' aggression determined whether high-status members mediated the effect of group norms on individuals' aggression over time.

Testing hypotheses related to Aim 2. Aim 2 was to examine the moderating effect of group-level factors, i.e., group status and group cohesion, on high-status members' influences. Here I use group status as an example to illustrate how to test hypotheses related to Aim 2 (Hypothesis 3 & 4). To test the effect of group status, Equation (1) was used as the Level-1 model. In the Level-2 model, the dependent variable was the intercept in the Level-1 model (β_0). Predictors for the Level-2 models were high-status members' aggression at Time 1, group status, and high-status members' aggression at Time 1 x group status. Group size was entered as a control variable given a significant association identified between group size and group status ($r = 0.68, p < .001$). The equation for this Level-2 model was as follows:

$$\text{Level 2: } B_{0j} = \gamma_{00} + \gamma_{01} (\text{high-status members' aggression at Time 1}) + \gamma_{02} (\text{group status}) + \gamma_{03} (\text{high-status members' aggression at Time 1} \times \text{group status}) + \gamma_{04} (\text{group size}) + \mu_{0j} (\text{group error}) \quad (3)$$

The significance of the coefficient for this interaction, high-status members' aggression at Time 1 x group status (γ_{03}), determined whether group status moderated high-status members' influence.

Testing hypotheses related to Aim 3. The moderating effect of individual-level factors, i.e., individual status and beliefs about aggression, on high-status members' influences was tested in Aim 3. Here I use individual status as an example to illustrate how to test the moderating effect of individual-level factors (Hypothesis 5 & 6). To test the effect of individual status, individuals' aggression at Time 2 was entered as the dependent variable in the Level-1 model. Individual status was entered as the predictor and individuals' aggression at Time 1 and stability of affiliation with high-status members were entered as control variables in the Level-1 model. The Level-1 model was represented by the following equation:

Level 1: Individual Aggression at Time 2 = $B_{0j} + B_{1j}$ (individual status) + B_{2j} (individual aggression at Time 1) + B_{3j} (stability of affiliation with high-status members in a group) + r_{ij} (individual error) (4)

The slope for individual status in Level-1 model was entered as the dependent variable in Level-2 model. High-status members' aggression at Time 1 was entered as a predictor. Level-2 model was represented by the following equation:

$$\text{Level 2: } B_{1j} = \gamma_{10} + \gamma_{11} (\text{high-status members' aggression at Time 1}) + \mu_{1j} (\text{group error}) \quad (5)$$

The significance of the coefficient for high-status members' aggression at Time 1 (γ_{11}) in the level-2 model tested whether individual status moderated high-status members' influences on an individual member's aggression.

Testing hypotheses related to Aim 4. Gender differences in high-status peers' influences on physical and social aggression were tested in Aim 4. To test whether high-status members' influences would differ across boys' and girls' groups (Hypothesis 7), Equation (1) was used as the Level-1 model. The intercept in the Level-1 model was entered as the dependent variable. High-status members' aggression at Time 1, group gender and high-status members' aggression at Time 1 x group gender were entered as predictors in Level-2 model which was represented in the following equation:

$$\text{Level 2: } B_{0j} = \gamma_{00} + \gamma_{01} (\text{high-status members' aggression at Time 1}) + \gamma_{02} (\text{group gender}) + \gamma_{03} (\text{high-status members' aggression at Time 1 x group gender}) + \mu_{0j} (\text{group error}) \quad (6)$$

The significance of the coefficient for this interaction, high-status members' aggression at Time 1 x group gender (γ_{03}), determined whether group gender moderated high-status members' influences.

Moreover, gender differences in the moderating effect of individual status on high-status members' influences (Hypothesis 8) were tested. Level-1 model was the same as Equation (4), that is, the Level-1 model for testing the moderating effect of individual status on high-status members' influences. The coefficient for individual status in the Level-1 model (B_{1j}) was entered as the dependent variable in the Level-2 model. High-status members' aggression, group gender, and high-status members' aggression x group gender were entered as predictors. The equation for this Level-2 model was as follows.

$$\text{Level 2: } B_{1j} = \gamma_{10} + \gamma_{11} (\text{high-status members' aggression at Time 1}) + \gamma_{12} (\text{group gender}) + \gamma_{13} (\text{high-status members' aggression at Time 1} \times \text{group gender}) + \mu_{1j} (\text{group error}) \quad (7)$$

The significance of the coefficient for the interaction, high-status members' aggression at Time 1 x group gender (γ_{13}), in the level-2 model determined whether the moderating effect of individual status on high-status members' influences varied across group gender.

Most of the predictors in the Level-1 models and all predictors in the Level-2 models were grand-mean centered. Individual status in a group was group-mean centered in order to make it comparable across groups. Group gender was not centered due to its categorical property. When using grand-mean centering, the Level-2 model represents the group-level relationship between the predictor and the outcome adjusted for the influence of the Level-1 predictor (Bryk & Raudenbush, 1992). Significant interactions in HLM models were presented according to the guideline outlined by Aiken and West (1991). Variables in the interaction were split into 1 SD above the means (high level) and 1 SD below the means (low level) to plot the interaction effect.

CHAPTER 3

RESULTS

Table 1 lists the means and standard deviations of the individual-level variables along with zero-order correlations among them. Children's physical aggression was positively correlated with their social aggression, $r_s > 0.33$, $p_s < .001$. Boys tended to be more physically aggressive than girls at Time 1, $r = 0.11$, $p = .08$. This trend was not found at Time 2. In addition, individual beliefs about physical aggression was positively and significantly associated with individual beliefs about social aggression at Time 1, $r = 0.54$, $p < .001$. Individuals who endorsed physical aggression for popularity also endorsed social aggression for popularity. In addition, individual beliefs about social aggression at Time 1 tended to be significantly and positively associated with physical and social aggression at Time 2, $r = 0.13$, $p = .05$ for physical aggression and $r = 0.11$, $p = .08$ for social aggression.

Table 2 lists the means and standard deviations of group-level variables along with correlations among them. Boys' groups were more physically aggressive than girls' groups, $r = 0.19$, $p < .001$, whereas girls' groups were more socially aggressive than boys' groups, $r = -0.17$, $p < .01$. Moreover, high-status members in boys' groups were more physically aggressive than high-status members in girls' group, $r = 0.14$, $p < .05$, whereas low-status members did not differ across group genders, $r = 0.10$, $p = .13$. In contrast, no difference in high-status members' social aggression was found across boys' and girls' groups, $r = 0.02$, $p = .80$, whereas low-status members in girls' groups were more socially aggressive than low-status members in boys' groups, $r = -0.29$, $p < .001$.

Given that group status was significantly correlated with group size, $r = 0.68$, $p < .001$, group size was controlled to evaluate the relationships of group status with other level-2

variables. After controlling for group size, group status was significantly correlated with group norms of physical aggression ($r = 0.23, p < .01$), high-status members' physical aggression ($r = 0.36, p < .001$), but not with low-status members' physical aggression ($r = 0.05, p = .48$). Similar results were found for social aggression. After controlling for group size, group status was significantly correlated with group norms of social aggression ($r = 0.38, p < .001$), high-status members' social aggression ($r = 0.51, p < .001$), but not with low-status members' social aggression ($r = 0.01, p = .91$).

Partial correlations between group cohesion and other level-2 variables after controlling for group size were calculated since group cohesion was also significantly correlated with group size, $r = -0.14, p < .05$. The partial correlation between group cohesion and group gender was significant, $r = 0.14, p < .05$. Boys' groups were more cohesive than girls' groups after controlling for group size. The partial correlation between group cohesion and group status was significant, $r = 0.19, p < .01$. A high-status group is more cohesive than a low-status group after controlling for group size. Moreover, partial correlations of group cohesion with group norms of social aggression and high-status members' social aggression were significant and positive, $r = 0.21, p < .01$ for group norms of social aggression and $r = 0.30, p < .001$ for high-status members' social aggression. In contrast, partial correlations of group cohesion with group norms of physical aggression, high-status members' physical aggression, and low-status members' physical aggression were not significant, $r_s < -0.06, p_s > .44$.

Table 1

Means, Standard Deviations, and Correlations for Individual-Level Variables

Variable	<i>M</i> (<i>SD</i>)	1	2	3	4	5	6	7
Gender (female coded as 0)	0.41 (0.49)	0.01	-0.08	-0.11	0.11†	0.02	-0.09	-0.09
1 Individual status in a group	0.23 (0.91)		0.03	-0.02	-0.004	-0.01	0.03	0.04
2 Beliefs about PHY at Time 1	0.001 (0.89)			0.54***	-0.06	0.03	0.06	0.06
3 Beliefs about SOC at Time 1	0.005 (0.83)				-0.01	0.13*	0.10	0.11†
4 PHY at Time 1	0.09 (0.91)					0.34***	0.54***	0.37***
5 PHY at Time 2	0.02 (0.66)						0.34***	0.42***
6 SOC at Time 1	0.16 (1.00)							0.56***
7 SOC at Time 2	0.10 (0.82)							

Note. PHY = physical aggression; SOC = social aggression.

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

Table 2

Means, Standard Deviations, and Correlations for Group-Level Variables at Time 1

Variable	<i>M</i> (<i>SD</i>)	1	2	3	4	5	6	7 ^a	8 ^a
Group gender (female group coded as 0)	0.41 (0.49)	0.19**	0.14*	0.10	-0.17**	0.02	-0.29***	-0.10	0.14*
1 Group norms of PHY	0.10 (0.47)		0.83***	0.77***	0.54***	0.56***	0.37***	0.23**	0.02
2 High-status members' PHY	0.14 (0.67)			0.34**	0.46***	0.71***	0.07	0.36***	-0.01
3 Low-status members' PHY	0.11 (0.64)				0.50***	0.22**	0.62***	0.05	-0.05
4 Group norms of SOC	0.16 (0.46)					0.74***	0.63***	0.38***	0.21**
5 High-status members' SOC	0.21 (0.72)						-0.04	0.51***	0.30**
6 Low-status members' SOC	0.12 (0.66)							0.01	-0.09
7 Group status	-0.03 (1.01)								0.19**
8 Group cohesion	0.67 (0.15)								

Note. PHY = physical aggression; SOC = social aggression.

^a Partial correlations after controlling for group size.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Testing Hypothesis 1:

In a peer group, high-status members' aggression at Time 1, rather than low-status members' aggression at Time 1, would be positively and significantly associated with individual members' aggression at Time 2 after controlling for individual members' aggression at Time 1.

Hypothesis 1 was confirmed in this study. Results from HLM analyses are presented in Table 3. Associations between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual members' aggression at Time 1 were positive and significant for physical and social aggression over time, $b = 0.16$, $t(46) = 2.38$, $p < .05$ for physical aggression and $b = 0.06$, $t(46) = 1.99$, $p = .05$ for social aggression.

Next, associations between low-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual members' aggression at Time 1 were tested. Related HLM models are presented in Table 4. For both forms of aggression, associations were not significant, $b = 0.11$, $t(46) = 1.33$, $p = .19$ for physical aggression and $b = 0.04$, $t(46) = 0.58$, $p = .57$ for social aggression.

Table 3

Influences on Individuals' Physical and Social Aggression: The Effects of High-status Members

Variables	Model 1 (PHY)	Model 2 (SOC)
Predicting Level-1 intercept		
Level-2 intercept	0.01 (0.05)	0.14 (0.04)
High-status members' AGG	0.16* (0.07)	0.06* (0.03)
Control variables		
Individual Time 1 AGG	0.17* (0.08)	0.40*** (0.08)
Stability of affiliation with high-status members	-0.04 (0.10)	0.03 (0.12)

Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Influences on Individuals' Physical and Social Aggression: The Effects of Low-status Members

Variables	Model 1 (PHY)	Model 2 (SOC)
Predicting Level-1 intercept		
Level-2 intercept	0.03 (0.05)	0.15** (0.05)
Low-status members' AGG	0.11 (0.08)	0.04 (0.06)
Control variables		
Individual Time 1 AGG	0.19* (0.08)	0.48*** (0.11)
Stability of affiliation with low-status members	0.02 (0.13)	-0.05 (0.12)

Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Testing Hypothesis 2:

The association between group norms of aggression at Time 1 and individual members' aggression at Time 2 would be mediated by the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2.

Considering that group norms of aggression were significantly correlated with high-status members' aggression (as indicated in Table 2) and high-status members' aggression at Time 1 was significantly associated with individual members' aggression at Time 2 (as indicated in Table 3), the mediating effect of high-status members on the association between group norms at Time 1 and individual members' aggression at Time 2 was further tested in this section. Related results are presented in Table 5.

First, I tested the significance of group norms at Time 1 with individual members' aggression at Time 2 after controlling for individual members' aggression at Time 1. The association was significant, $b = 0.25$, $t(60) = 2.50$, $p < .05$ for physical aggression and $b = 0.16$, $t(60) = 1.87$, $p = .07$ for social aggression. Next, the association of group norms at Time 1 with individual members' aggression at Time 2 was tested simultaneously with the association of high-status members' aggression at Time 1 with individual members' aggression at Time 2. The association of group norms with individuals' aggression at Time 2 was not significant, $b = 0.13$, $t(59) = 0.75$, $p = .46$ for physical aggression, and $b = 0.09$, $t(59) = 0.60$, $p = .55$ for social aggression. And the association of high-status members' aggression at Time 1 with individual members' aggression at Time 2 was no longer significant, $b = 0.10$, $t(59) = 0.94$, $p = .35$ for physical aggression, and $b = 0.04$, $t(59) = 0.61$, $p = .54$ for social aggression. These findings failed to support Hypothesis 2.

Table 5

Influences on Individuals' Physical and Social Aggression: The Effects of Group norms and High-status Members

Variables	Model 1 (PHY)	Model 2 (PHY)	Model 3 (SOC)	Model 4 (SOC)
Predicting Level-1 intercept				
Level-2 intercept	0.01 (0.04)	-0.003 (0.04)	0.11* (0.05)	0.11* (0.04)
Group norms of AGG	0.25* (0.10)	0.13 (0.17)	0.16† (0.08)	0.09 (0.15)
High-status members' AGG		0.10 (0.11)		0.04 (0.06)
Control variables				
Individual Time 1 AGG	0.14† (0.08)	0.14† (0.07)	0.42*** (0.09)	0.42*** (0.09)
Stability of affiliation with group members	0.05 (0.10)	0.13 (0.18)	-0.01 (0.12)	-0.04 (0.14)
Stability of affiliation with high-status members		-0.09 (0.15)		0.06 (0.10)

Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

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

Testing Hypothesis 3:

Group status would moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual member's aggression at Time 1. The association would be stronger in a high-status group than in a low-status group.

Hypothesis 3 was not confirmed in this study. Results for HLM models are presented in Table 6. Group status did not moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2, $b = 0.02$, $t(57) = 0.31$, $p = .76$ for physical aggression and $b = -0.05$, $t(57) = -1.07$, $p = .29$ for social aggression.

Testing Hypothesis 4:

Group cohesion would moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual member's aggression at Time 1. The association would be stronger in a highly cohesive group than in a noncohesive group.

Hypothesis 4 was confirmed partially in this study. Results for HLM models are presented in Table 7. Group cohesion tended to moderate the association between high-status members' physical aggression at Time 1 and individual members' physical aggression at Time 2, $b = 0.64$, $t(57) = 1.76$, $p = .08$. To plot this interaction effect, groups were split into highly cohesive groups (1 SD above the average level of group cohesion) and non-cohesive groups (1 SD above the average level of group cohesion). Figure 1 shows that when high-status peers became more aggressive, individuals in a highly cohesive group tended to increase more in physical aggression than individuals in a noncohesive group. However, group cohesion did not moderate the association for social aggression, $b = 0.11$, $t(57) = 0.42$, $p = .68$.

Table 6

Moderating Effects of Group Status on High-status Members' Influences on Individuals' Physical and Social Aggression

Variables	Model 1 (PHY)	Model 2 (SOC)
Predicting Level-1 intercept		
Level-2 intercept	0.02 (0.05)	0.10† (0.05)
High-status members' AGG	0.20* (0.09)	0.07 (0.07)
Group status	-0.03 (0.06)	0.07 (0.06)
Group status x High-status members' AGG	0.02 (0.08)	-0.05 (0.05)
Control variables		
Individual Time 1 AGG	0.15† (0.07)	0.42*** (0.09)
Group size	-0.01 (0.02)	-0.003 (0.01)
Stability of affiliation with high-status members	0.03 (0.10)	-0.02 (0.13)

Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

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

Table 7

*Moderating Effects of Group Cohesion on High-status Members' Influences on Individuals'**Physical and Social Aggression*

Variables	Model 1 (PHY)	Model 2 (SOC)
Predicting Level-1 intercept		
Level-2 intercept	0.03 (0.05)	0.09* (0.05)
High-status members' AGG	0.22** (0.07)	0.06 (0.04)
Group cohesion	-0.19 (0.26)	-0.05 (0.23)
Group cohesion x High-status members' AGG	0.64† (0.36)	0.11 (0.25)
Control variables		
Individual Time 1 AGG	0.15* (0.07)	0.42*** (0.08)
Group size	-0.02 (0.01)	0.01 (0.01)
Stability of affiliation with high-status members	0.01 (0.09)	0.03 (0.10)

Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

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

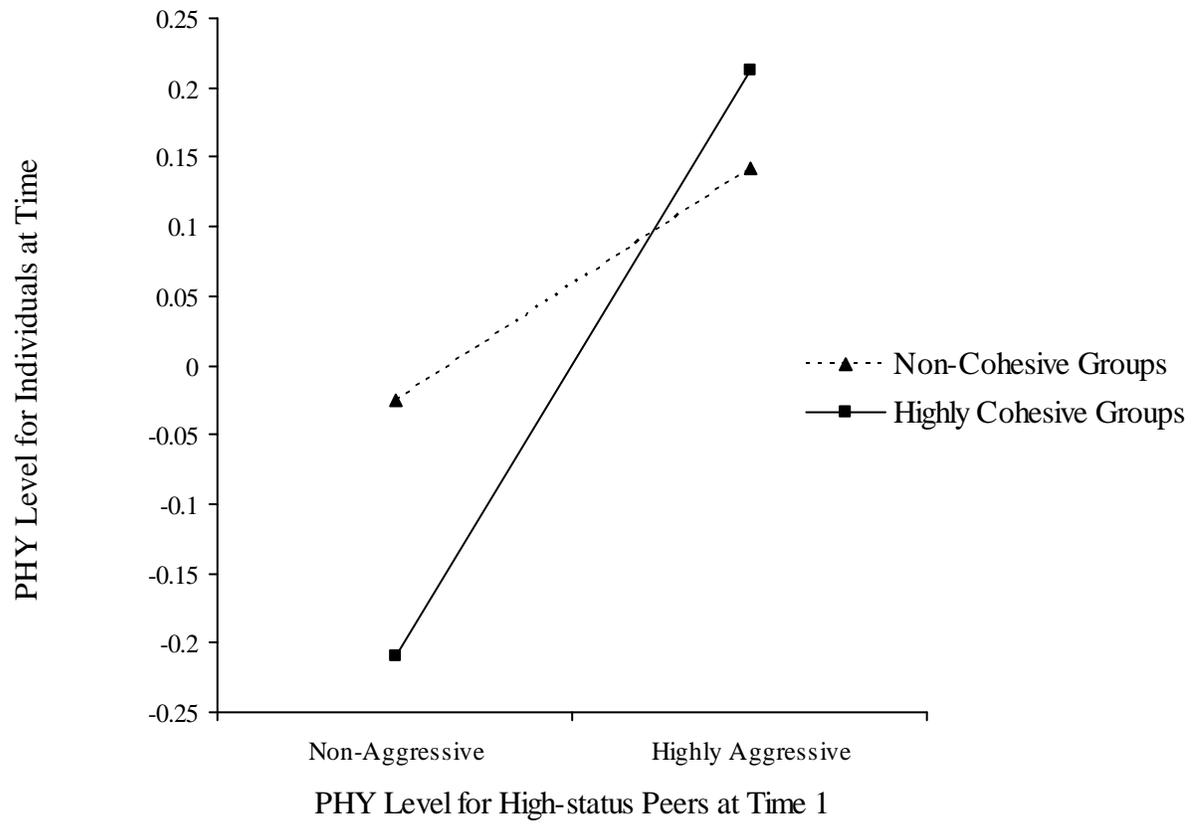


Figure 1. An interaction between group cohesion and high-status members' physical aggression.

Testing Hypothesis 5

Individuals' beliefs about aggression may moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual member's aggression at Time 1. The association was expected to be stronger for individuals with aggression-encouraging beliefs than for individuals with aggression-nonencouraging beliefs.

Hypothesis 5 was confirmed partially in this study. Results are presented in Table 8. Individuals' beliefs about physical aggression did not significantly moderate the association for physical aggression, $b = 0.06$, $t(59) = 0.77$, $p = .44$. In contrast, individuals' beliefs about social aggression significantly moderated the association for social aggression, $b = 0.11$, $t(59) = 2.03$, $p < .05$. Figure 2 shows that the association was stronger for individuals with aggression-encouraging beliefs than for individuals with aggression-nonencouraging beliefs.

Testing Hypothesis 6:

Individual status may moderate the association between high-status members' aggression at Time 1 and individual members' aggression at Time 2 after controlling for individual member's aggression at Time 1. The association was expected to be stronger for low-status individuals than for high-status individuals.

Hypothesis 6 was confirmed partially in this study. Results are presented in Table 9. Individual status did not significantly moderate the association for physical aggression, $b = -0.002$, $t(58) = -0.03$, $p = .98$. However, individual status significantly moderated the association for social aggression, $b = -0.09$, $t(58) = -2.28$, $p < .05$. Figure 3 shows the association was stronger for low-status individuals than for high-status individuals.

Table 8

Moderating Effects of Individual Beliefs about Aggression on High-status Members' Influences on Individuals' Physical and Social Aggression

Variables	Model 1 (PHY)	Model 2 (SOC)
Predicting Level-1 intercept		
Level-2 intercept	0.01 (0.04)	0.07* (0.03)
High-status members' AGG	0.19* (0.07)	0.13* (0.05)
Predicting Level-1 individuals' beliefs about AGG		
Level-2 intercept	-0.003 (0.05)	0.03 (0.04)
High-status members' AGG	0.06 (0.07)	0.11* (0.05)
Control variables		
Individual Time 1 AGG	-0.17* (0.08)	0.35*** (0.08)
Stability of affiliation with high-status members	-0.03 (0.09)	-0.02 (0.10)

Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

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

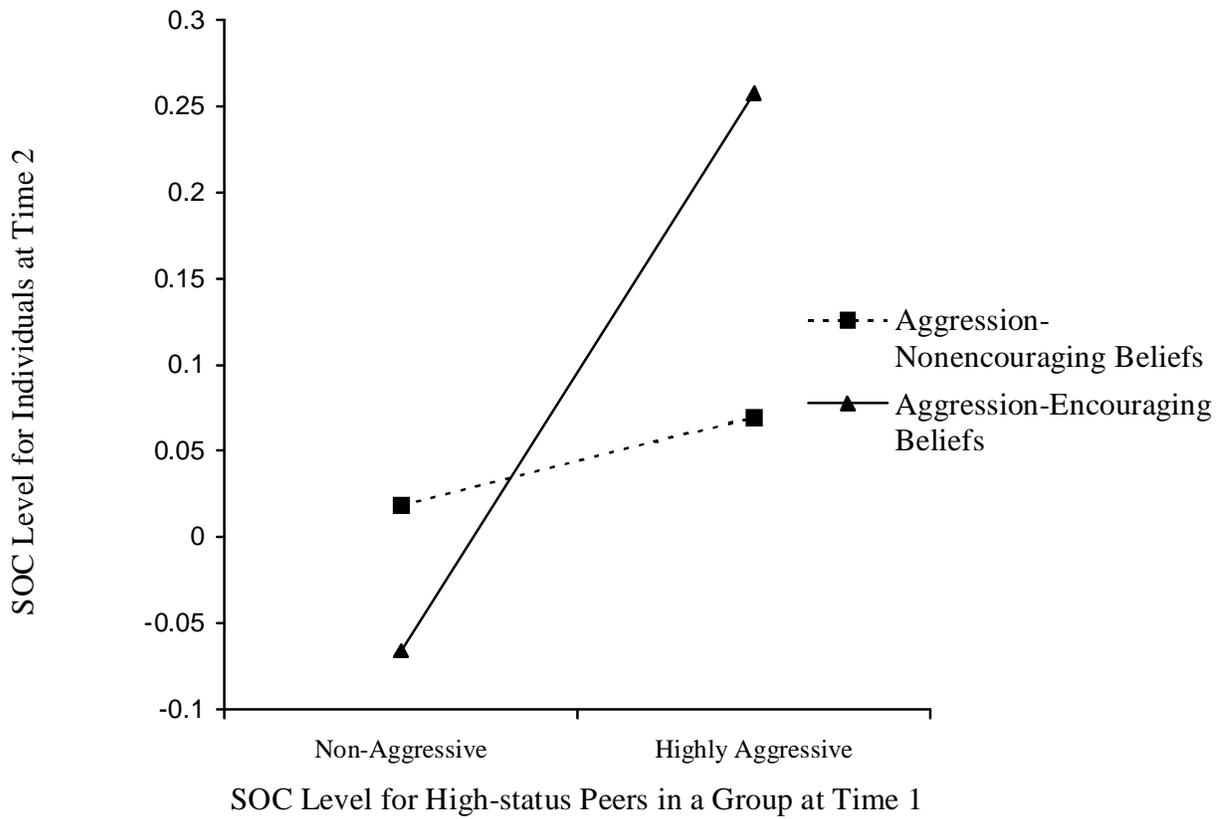


Figure 2. An interaction between individual beliefs about social aggression and high-status peers' social aggression.

Table 9

Moderating Effects of Individual Status on High-status Members' Influences on Individuals' Physical and Social Aggression

Variables	Model 1 (PHY)	Model 2 (SOC)
Predicting Level-1 intercept		
Level-2 intercept	0.001 (0.04)	0.11** (0.04)
High-status members ' AGG	0.17* (0.06)	0.05 (0.04)
Predicting Level-1 individual Status		
Level-2 intercept	0.003 (0.05)	0.004 (0.04)
High-status members ' AGG	-0.002 (0.07)	-0.09* (0.04)
Control variables		
Individual Time 1 AGG	0.15† (0.08)	0.43*** (0.08)
Stability of affiliation with high-status members	-0.00002 (0.09)	0.06 (0.11)

Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

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

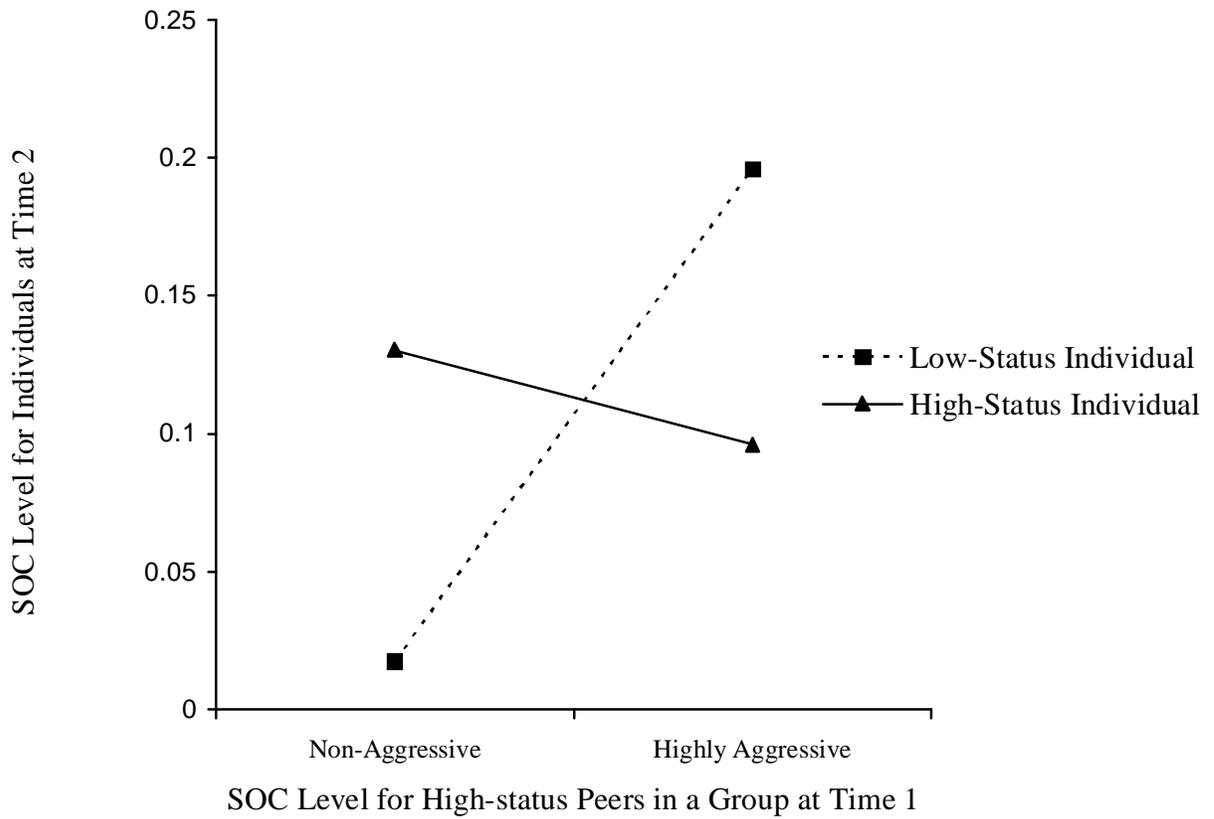


Figure 3. An interaction between individual status and high-status members' social aggression

Testing Hypothesis 7:

The association between high-status members' physical aggression at Time 1 and individual members' physical aggression at Time 2 after controlling for individual member's physical aggression at Time 1 would be stronger in a boys' group than in a girls' group. No differences would be expected on social aggression.

Hypothesis 7 was confirmed entirely in this study. Results are presented in Table 10. Group gender significantly moderated the association for physical aggression, $b = 0.27$, $t(58) = 2.16$, $p < .05$, whereas group gender did not moderate the association for social aggression, $b = -0.05$, $t(58) = -0.63$, $p = .53$. Figure 4 further shows the association between high-status members' aggression at Time 2 and individual members' aggression at Time 1 was stronger in boys' groups than in girls' groups.

Testing Hypothesis 8:

The moderating effect of individual status on the association between high-status members' physical aggression at Time 1 and individual members' physical aggression at Time 2 would be stronger in a boys' group than in a girls' group. No differences would be expected on social aggression.

Hypothesis 8 was confirmed partially in this study. Results are presented in Table 11. For physical aggression, the moderating effect of individual status tended to vary across group gender, $b = -0.23$, $t(56) = -1.83$, $p = .07$, whereas no gender difference was found for social aggression, $b = -0.06$, $t(56) = -0.61$, $p = .54$. The left panel in Figure 5 shows that the association was stronger for low-status boys than for high-status boys. However, the right panel shows the association was positive for high-status girls whereas negative for low-status girls.

Table 10

Moderating Effects of Group Gender on High-status Members' Influences on Individuals' Physical and Social Aggression

Variables	Model 1 (PHY)	Model 2 (SOC)
Predicting Level-1 intercept		
Level-2 intercept	-0.005 (0.05)	0.14** (0.05)
High-status members' AGG	0.01 (0.09)	0.11 (0.08)
Group gender	0.01 (0.08)	-0.09 (0.08)
Group gender x High-status members' AGG	0.27* (0.12)	-0.05 (0.08)
Control variables		
Individual Time 1 AGG	0.16* (0.07)	0.42*** (0.08)
Stability of affiliation with high-status members	-0.02 (0.09)	0.01 (0.12)

Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

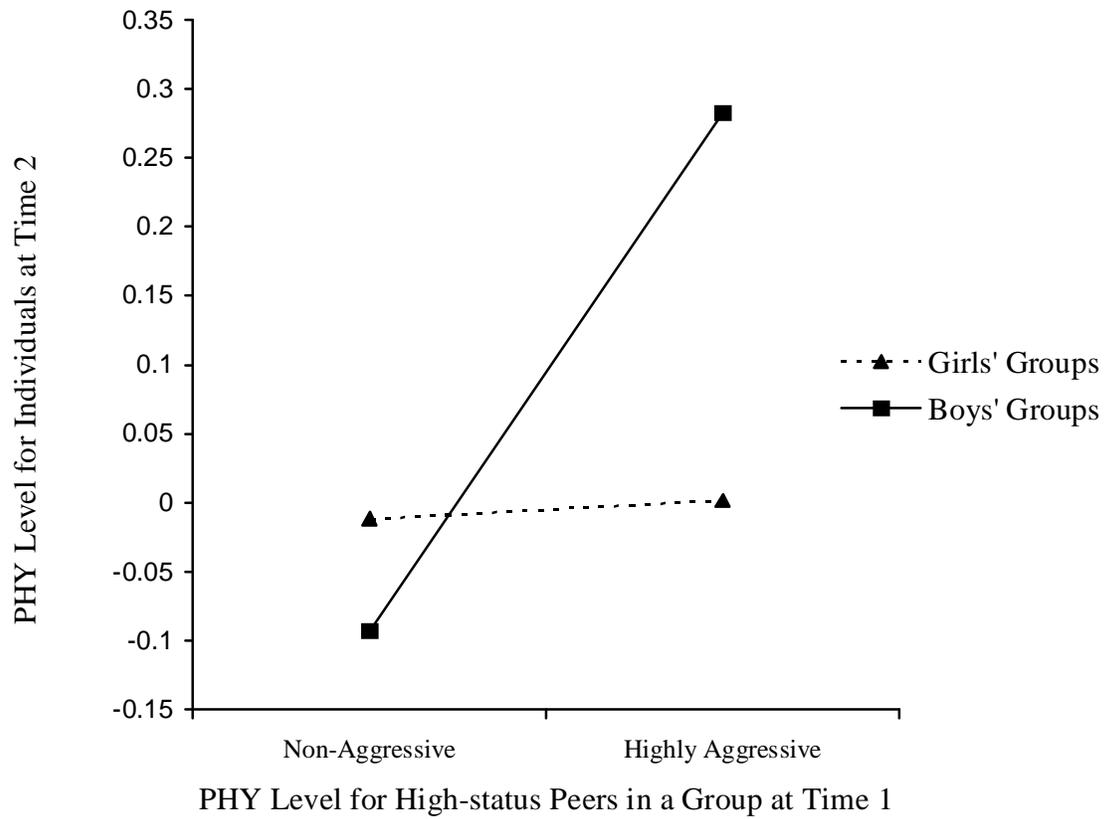


Figure 4. An interaction between group gender and high-status members' physical aggression.

Table 11

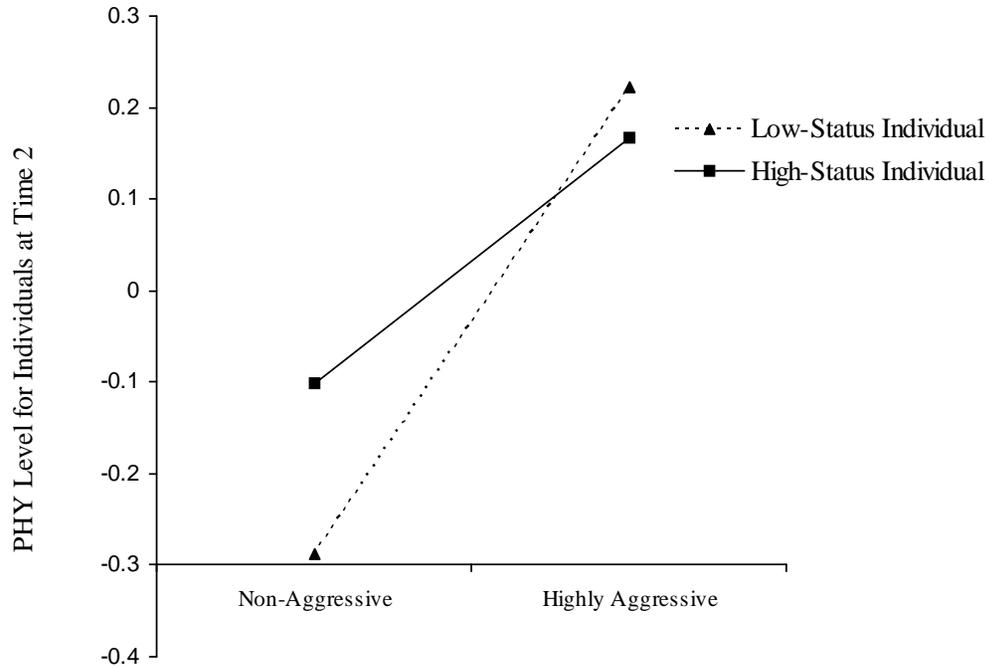
Moderating Effects of Individual Status on High-status Members' Influences by Group Gender

Variables	Model 1 (PHY)	Model 2 (SOC)
Predicting Level-1 intercept		
Level-2 intercept	-0.01 (0.06)	0.14** (0.05)
Group gender	0.01 (0.08)	-0.09 (0.08)
High-status members' AGG	0.03 (0.09)	0.09 (0.08)
Group gender x High-status members' AGG	0.26* (0.13)	-0.06 (0.07)
Predicting Level-1 individual Status		
Level-2 intercept	-0.02 (0.06)	-0.08 (0.06)
Group gender	0.06 (0.09)	0.18* (0.07)
High-status members' AGG	0.12 (0.09)	-0.04 (0.09)
Group gender x High-status members' AGG	-0.23† (0.12)	-0.06 (0.10)
Control variables		
Individual Time 1 AGG	0.14† (0.08)	0.43*** (0.08)
Stability of affiliation with high-status members	-0.03 (0.09)	0.05 (0.12)

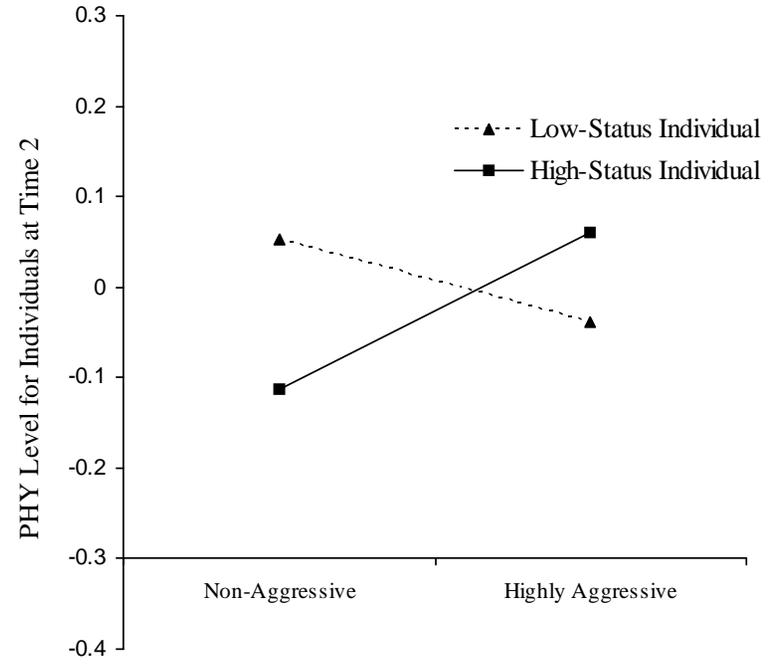
Note. PHY = physical aggression; SOC = social aggression; AGG = aggression.

Standard errors for the coefficient estimates are presented in the parentheses.

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



PHY Level for High-status Peers in a Boys' Group at Time 1



PHY Level for High-status Peers in a Girls' Group at Time 1

Figure 5. An interaction between individual status, and high-status members' physical aggression in boys' and girls' groups (left – boys' groups; right – girls' groups).

CHAPTER 4

DISCUSSION

Although peers often vary in their social status in early adolescents' groups, little research has focused on the heterogeneity in peers' social status and associated influences. On the basis of social learning theory and social impact theory, the primary goal of this study was to examine how peers with different social status varied in their influences on individual members' aggression and how these peer influences were moderated by group- and individual-level factors. Specifically, in the present study, I investigated whether (1) high-status peers in early adolescence would have stronger influences than low-status peers on individual members' aggression; (2) group status and group cohesion would moderate the influences of high-status peers on individual members' aggression; (3) individual status and beliefs about aggression would moderate the influences of high-status peers on individual members' aggression. Furthermore, two forms of aggression, physical and social aggression, were investigated in this study. Given different roles of gender in physical and social aggression during early adolescence, the moderating effect of gender on peer influences was compared for these two forms of aggression.

Findings provided strong support for the influence of high-status peers, rather than low-status peers, on individual members' aggression. This was true for both forms of aggression. In terms of the effect of group-level moderators, we failed to find any significant moderating effect of group status on high-status peers' influence. High-status peers' influence on physical aggression was found to be stronger in boys' groups than in girls' groups, and tended to be stronger in a highly cohesive group than in a non-cohesive group. As to the moderating effects of individual-level factors, high-status peers had stronger influences on social aggression for

individuals with aggression-encouraging beliefs than on individuals with aggression-nonencouraging beliefs. High-status peers had stronger influences on social aggression for low-status individuals than for high-status individuals. Overall findings indicate that, in early adolescence, peers in a group differ in the strength of influences which also varies depending upon group and individual characteristics.

High-Status Peers in a Group

Findings demonstrated that high-status peers rather than low-status peers in a group significantly influenced individual members' aggression. These findings were true regardless of the form of aggression. In addition, this study replicated findings on the effect of group norms on the socialization of aggression in groups in previous studies. The expected mediation of high-status peers' aggression on the effect of group norms was not supported in this study.

Consistent with Hypothesis 1, this study showed that high-status peers, rather than low-status peers in a group, significantly influenced the development of individual members' aggression. Aggressive high-status peers are likely to induce an increase in individual members' aggression over time. The demonstrated strong influences of high-status peers in a group are consistent with social learning theory (Bandura, 1986; Bandura & Walters, 1963) and social impact theory (Latané, 1981) which propose that high-status individuals are likely to be imitated or have an impact on others. Moreover, findings in this study extend previous studies about strong influences of high-status peers in the broad social network such as classroom and school (e.g., Lease, et al., 2004; Farmer, et al., 2003). As this study indicated, even within relatively small social networks, i. e., peer groups, high-status peers still have strong influences on individuals' aggression.

These findings further contribute to elaborating mechanisms about socialization

processes in a group. Three mechanisms which are synchronized interaction processes (Cairns & Cairns, 1994), social comparison processes (Festinger, 1954, 1989) and normative influence processes (Kruglanski & Webster, 1991) are involved in the literature. From different points of view, they propose that members in a group would become more similar over time. Further, findings in this study suggest that high-status peers in a group are likely to induce changes in an individual's aggression to synchronize interactions within a group or to reduce the discrepancy between this individual and other members.

Note that findings from this study did not show how exactly the influences of high-status peers occur in a peer group. Several possibilities can be speculated. On the one hand, individuals, particular low-status individuals, may actively observe and imitate high-status peers' aggressive behaviors during their interactions with one another. They may intentionally compare their own aggressive behavior with high-status peers'. If there is any discrepancy in aggression, low-status individuals may change their own aggressive behaviors to reduce the discrepancy. On the other hand, individual members may be passive recipients of influences through peer pressure and coercion by high-status peers. Aggressive high-status peers may have the power to set the norm of aggression and therefore may pressure low-status individuals to conform to this norm. It is also possible that aggressive high-status peers may victimize low-status individuals in a group and thereafter low-status individuals may be coerced to fight back and become more aggressive. Future research may further identify specific social processes involved.

In this study, the influence of group norms was tested as one step to examine Hypothesis 2, that is, high-status peers' influences would mediate the effect of group norms on individual members' aggression. Findings replicated previous research. Consistent with previous studies indicating that group norms significantly influenced individual member's bully, fighting, or other

overt aggressive behaviors over time (e.g., Espelage, et al., 2003; Boxer, et al., 2005), the effect of group norms on individual members' physical aggression was also found significant in this study. In addition, consistent with Ellis and Zarbatany's study (2007) which demonstrated that group norms substantially influenced individual members' relational aggression, group norms tended to have a significant influence on individual members' social aggression in this study. These findings provide support for the notion that in early adolescence, peer groups are an important context for shaping and modifying individual members' aggressive behaviors.

However, when the influences of group norms and high-status peers on individual members' aggression were tested simultaneously, findings showed that both group norms' and high-status peers' influences became non-significant. These findings failed to support Hypothesis 2 since high-status peers' influences were no longer significant when the influences of group norms and high-status peers were tested simultaneously. One explanation for the failure of detecting significant high-status peers' influences could be the strong association between high-status peers' aggression and group norms of aggression. As data analyses indicated in this study, the correlation between high-status peers' aggression and group norms was highly significant for both forms of aggression ($r = 0.83$, $p < .001$ for physical aggression, and $r = 0.74$, $p < .001$ for social aggression). This strong association may reduce the statistical power for detecting the significance of high-status peers' influences on individual members' aggression.

Moderating Effects of Group-Level Factors

The moderating effect of group-level factors (i.e., group status and group cohesion) on high-status peers' influences was tested in this study. Group status was not found to moderate high-status peers' influence on both physical and social aggression. Moreover, group cohesion tended to moderate high-status peers' influences on individual members' physical aggression but

not social aggression. In a highly cohesive group, high-status peers tended to have stronger influences on individual members' physical aggression than in a non-cohesive group.

Findings related to the moderating effect of group status failed to support Hypothesis 3 which stated that high-status peers would have stronger influences in a high-status group than in a low-status group. Our results indicated that no difference was found for high-status peers' influences across different levels of group status. Aggressive high-status peers in a high-status group did not differ from aggressive high-status peers in a low-status group in their influences of inducing an increase in aggression for group members.

Findings on the moderating effect of group status for physical aggression were consistent with Ellis and Zabatany's study (2008) in which group status did not moderate group norms' influences on individual members' overt aggression. However, in contrast to our findings on the moderating effect of group status for social aggression, Ellis and Zabatany (2008) found that group status moderated the socialization of relational aggression in groups. Aggressive groups with high centrality were found to have a stronger socialization effect on relational aggression than aggressive groups with low centrality. One explanation for this inconsistency on the socialization of subtle forms of aggression could be the way in which aggression was measured in these two studies. In Ellis and Zabatany's study, relational aggression was measured by two items: "when mad, ignores or stops talking to person"; "when mad, gets even by keeping person from being in their group of friends". These two items involve behavioral responses to negative emotions or affects, which are likely to function as reactive aggression (Brendgen, Vitaro, Boivin, Dionne, & Pe'russe, 2006; Dodge & Coie 1987; Poulin & Boivin, 1999, 2000). On the other hand, in the current study, social aggression was measured by the following two items: "this person is good at causing people to get mad at each other"; "this person has gotten friends to turn

against somebody". These two items focus on aggressive behaviors which are manipulative and do not necessarily follow negative affections such as madness and anger. Therefore these items are likely to assess proactively social aggression (Cairns, et al., 1988; Estell, et al., 2002; Gest, et al., 2001). Since proactive aggression is instrumental and proactive aggressors are often socially skilled and resourceful (e.g., Cairns, et al., 1988; Estell, et al., 2002) whereas reactive aggression is affective, defensive, and reactive aggressors are often not socially skilled, and always react to the provocation of peers with further aggression (e.g., Dodge & Coie, 1987; Poulin & Boivin, 1999, 2000), these two functions of aggression may follow different patterns of socialization within peer group context. Given that, the effect of group status for relational aggression in Ellis and Zabatany's study (2007) may differ from the effect of group status for social aggression in this study.

Another explanation for the failure to detect the moderating effect of group status in this study could be the substantial association between group status and high-status peers' aggression. The partial correlation between high-status peers' aggression and group status after controlling for group size was highly significant ($r = 0.36$, $p < .001$, for physical aggression, and $r = 0.51$, $p < .001$, for social aggression). As Baron and Kenny (1986) described in their paper, it is desirable that the moderator variable be uncorrelated with the predictor to provide a clearly interpretable interaction term. In this study, the significant correlation between group status and high-status peers' aggression may have reduced the level of variability in group status for a specific level of aggression (e.g., aggressive high-status peers in groups). This limited variability in group status may have made it difficult to detect the moderating effect of group status.

The moderating effect of another group-level factor, group cohesion, was tested in this study. Consistent with Hypothesis 4, findings indicated that group cohesion tended to moderate

high-status peers' influences on individuals' physical aggression. Aggressive high-status peers tended to induce a larger increase in physical aggression for members in a highly cohesive group than in a non-cohesive group. The stronger influences of high-status peers on physical aggression in a highly cohesive group could be due to the higher level of interactional intensity between members in a highly cohesive group than in a non-cohesive group. However, high-status peers' influences on individuals' social aggression failed to be moderated by group cohesion. This finding differed from Hypothesis 4 which stated that the moderating effect of group cohesion on high-status peers' influences would be found for social aggression as well. One possible explanation could be related to the correlation between group cohesion and high-status peers' social aggression. Findings indicated a significant correlation between group cohesion and high-status peers' social aggression but a non-significant correlation between group cohesion and high-status peers' physical aggression (The partial correlation between high-status peers' aggression and group cohesion was $r=0.30$, $p < .01$ for social aggression, and $r=-0.01$, $p = .89$ for physical aggression). As we mentioned above, it is desirable that the moderator variable be uncorrelated with the predictor to provide a clearly interpretable interaction term (Baron & Kenny, 1986). The significant correlation between group cohesion and high-status peers' social aggression may have reduced the level of variability in group cohesion for a specific level of social aggression (e.g., socially aggressive high-status peers in groups). Given this limited variability in group cohesion, the moderating effect of group cohesion for social aggression may be difficult to detect.

Moderating Effects of Individual-Level Factors

In this study, I investigated two individual-level factors: individuals' beliefs about aggression and individual status. Results revealed that individuals' beliefs about aggression

moderated high-status peers' influences on social aggression but not physical aggression. Findings for social aggression are consistent with the prediction in Hypothesis 5. Individuals who believed that social aggression makes a girl (boy) popular at school were influenced by aggressive high-status peers more than individuals who did not. However, this pattern was not found for physical aggression. Beliefs about physical aggression failed to moderate high-status peers' influences. This finding was unexpected given that previous research shows that an individual's beliefs about physical aggression influence this individual's physical aggression (e.g., Huesmann & Guerra, 1997). One explanation could be that measures of individuals' beliefs about physical aggression in this study are different from previous studies. In this study, individuals' beliefs about physical aggression were assessed by the utility of physical aggression for the promotion of social status in this study. However, in previous studies, individuals' beliefs about physical aggression were assessed by the acceptance/appropriateness of utilizing physical aggression for solving inter-personal issues (Huesmann & Guerra, 1997). The difference in measurement may partly explain the discrepancy. Another explanation could be that physical aggression does not often promote individuals' social status (Cillessen & Mayeux, 2004). Rather, it is always displayed by children once they reach high level of social status (e.g., Farmer & Rodkin, 1996). According to Bandura's propositions on observational learning (1986), if social realities do not accord with a person's perception, this perception could be invalidated and become impotent as a guide for this person's future behaviors. From this point of view, an individual's beliefs that physical aggression makes a person popular may become invalidated by the reality that physical aggression does not promote social status. Therefore, such beliefs are unlikely to influence individuals' physical aggression. In contrast, social aggression has been found to reliably promote individuals' social status (Rose et al., 2004). As a result, beliefs that

social aggression makes a person popular would match the social reality and therefore influence individuals' social aggression.

Another factor, individual status, was found to moderate high-status peers' influences on aggression. Consistent with Hypothesis 6, low-status members, as compared to high-status members, were influenced more by aggressive high-status peers in a group. This was true for social aggression. These findings are consistent with the propositions of social impact theory (Latené, 1981) and the recent conceptualization of peer influences in a group (e.g., Brown et al., 2008). Namely, low-status individuals, in comparison to high-status individuals, are influenced more by high-status peers. Note that the same effect failed to be found for physical aggression. I will discuss this issue in the following section.

Gender Differences in Different Forms of Aggression

In this study, findings indicated that high-status peers' influences on physical aggression differed across gender. High-status peers had stronger influences in boys' groups than in girls' groups. These findings are consistent with Hypothesis 7. Since physical aggression is often more prevalent and more consistently associated with high status in peer networks among boys than among girls (e.g., Card et al., 2008; Farmer, & Rodkin, 1996; Xie et al., 1999), I expected that the socialization of physical aggression could be stronger in boys' groups than in girls' groups. This expectation was supported.

In contrast, no gender difference was found for high-status peers' influences on social aggression. These results are consistent with my expectations based on the following findings from previous studies: (1) Similar levels of social aggression are often reported among boys as well as among girls (e.g., Archer, 2004; Card et al., 2008), (2) The association between social aggression and social status is often similar across gender in middle childhood and early

adolescence (e.g., LaFontana & Cillessen, 2002; Lease, et al., 2002; Xie, et al., 2002b).

Therefore, no gender difference was expected for social aggression. Findings in this study provided support for this expectation.

Gender differences in physical aggression were further investigated by including individual status. The moderating effect of individual status on peer influences was expected to be stronger in boys' groups than in girls' (Hypothesis 8). Results showed a gender difference in the effect of individual status. As expected, under the influences of aggressive high-status peers, low-status boys increased more in physical aggression than high-status boys. However, an unexpected finding emerged among girls: under the influences of aggressive high-status peers, high-status girls increased more in physical aggression than low-status girls. It is not clear why this pattern occurred in girls' groups, and this finding itself needs to be replicated in future studies. I speculate that since physical aggression is less prevalent and accepted in girls than in boys, it may be that only the high-status girls have the leverage to increase their levels of aggression. A second possibility could be the process of interactional synchrony by virtue of complementarity (e.g., Farmer, Xie, Cairns, & Hutchins, 2007). High-status girls may display physical aggression as a way to show or maintain their high level of social status. Low-status girls, on the other hand, may support high-status girls' physical aggression by complementing such behaviors rather than by becoming more similar to high-status girls.

Implications

Findings from this study have important implications for future research practices. First, there is substantial heterogeneity of peer influences in two aspects: (1) peers in a group differ in the strength of their influences, (2) and individual members differ in their openness to peer influences. Furthermore, social status helps account for the heterogeneity of peer influences in

both aspects. Therefore, in future studies, researchers should consider the variability in the strength of peer influences and individuals' openness to peer influences. Moreover, social status should be considered as an important factor involved in this domain. Another implication could be associated with structural characteristics of a social group. Given that structural characteristics of a group, for instance, group cohesion, may affect the strength of peer influences on individual members' aggression, group characteristics also need to be considered in future research.

Findings in this study also have important implications for prevention and intervention of aggression in school. Previous studies indicate that a social group is important in the development of group members' aggression (e.g., Espelage et al., 2003; Rubin, et al., 1998), which implies that aggressive peer groups play a critical role in children's aggression in school. The present study further indicates that, high-status peers, rather than low-status peers in a group, have strong influences on individual members' aggression. This finding implies that high-status children in an aggressive group should be given special attention in prevention and intervention efforts. Moreover, low-status individuals are found to be highly open to high-status children's influences. Therefore, once the aggressive behaviors of high-status children are effectively prevented or controlled in peer social networks, such effects may be carried over to low-status individuals. In addition, the influences of high-status children are found to be stronger in highly cohesive groups than in non-cohesive groups. This finding suggests that high-status peers in highly cohesive groups should also be attended.

Limitations and Future Directions

Several limitations need to be discussed. A major limitation of this study is that only one group is allowed for each child, which is required by the HLM procedure. However, in reality, a non-trivial proportion of children may belong to more than one group. In this study, 23% of

group members (62/276) were affiliated with more than one group. These children were assigned to their primary group where they received the most nominations from peers. When children affiliate with more than one peer group, they may experience different and possibly conflicting sources of influence. Future research comparing socialization effects across children's multiple groups would help clarify this issue.

Second, peer groups were examined as the primary context for the socialization of aggression in this study. Participants who were isolates (18%, 60/336) or involved in dyads (1%, 4/336) were not included in the analyses. It is not clear how peers influence the development of these children's aggression over time. Here I speculate that one source of peer influences for these children would exist in the broad social network. For instance, popular peers in a class or a grade may influence these children's aggression. Alternatively, isolates, for instance, aggressive isolates, may choose each other as friends or associates who are likely to reinforce and provide support for their behavior patterns (e.g., Dishion, Patterson, & Griesler). From this perspective, aggressive isolates or dyads should be particularly attended by educators and researchers. Future research in this domain is highly needed to imply us how to prevent and intervene aggression and potential violence among these children.

Third, only one type of peer relation, namely, peer group affiliation, was studied. This type of peer relation was based on direct and frequent interactions between a target individual and his/her peers in a group. There are other types of peer relation, for instance, friendship. Different from peer group affiliation, friendship is based on reciprocal and intimate properties of affiliation (Newcomb & Bagwell, 1995). Given different bases for these two types of peer relation, the mechanism of peer group influences may differ from the mechanism of friend influences. In this study, only the mechanism of peer group influences was investigated, although

peers in a peer group may often be friends (e.g., Carins et al., 1995). Future studies on the joint influences of peer groups and friends would elaborate the socialization processes in a peer group.

Fourth, I only examined two individual factors (i.e., individual status and individuals' beliefs about aggression). These two factors are assumed to affect individuals' openness to peer influences. In previous study, individuals' openness to peer influences is often assessed by individuals' susceptibility to peer influences (e.g., Berndt, 1979; Brown et al., 1986; Steinberg & Silverberg, 1986). It is likely that individual factors used in this study may be associated with individuals' susceptibility to peer influences. Empirical research on direct links between these two factors and individuals' susceptibility to peer influences is needed in the future.

Fifth, the proposed conceptual model was tested with children's aggressive behaviors only. It is not clear whether the model would be applicable to other behavioral domains. Theoretically, the application of this model to other behavioral domains would depend upon the association between this behavior and the social status. Under the condition that a behavior is associated with high social status in peer networks, the model may be highly applicable. High-status peers would have stronger influences than low-status peers on that behavior. However, if a behavior is not associated with high social status in peer networks, the influences of high-status peers may not differ from those of low-status peers. Here, I will consider these two domains: prosocial behaviors and academic behaviors.

For prosocial behaviors, a positive association with high status has been documented in research (e.g., Hawley, Johnson, Mize, & McNamara, 2007; Hawley, Little, & Card, 2008; Rodkin et al., 2000). This finding implicates that high-status peers may have stronger influences than low-status peers on individuals' prosocial behavior. In terms of children's academic behaviors, previous research with Northern American samples fails to find a significant

association with high status (e.g., Becker & Luthar, 2007; Juvonen & Murdock, 1995; Wentzel & Asher, 1995). Therefore, high-status peers may not differ from low-status peers in their influences on individuals' academic behavior. Note that there are cultural differences. In some eastern cultures, such as Chinese culture, academic achievement has been highly emphasized by adults and peers (Stevenson, Lee, Chen, Stigler, Hsu, & Kitamura, 1990). In contrast to U.S. children who frequently have negative reactions toward an achieving peer, Chinese children often express respect and desire to emulate peers with high academic achievement (Li, & Wang, 2004). Therefore, it can be predicted that high-status peers may have a stronger influence than low-status peers on a Chinese child's academic behavior.

Finally, one specific developmental period, early adolescence, was included in this study. It is not clear whether the proposed model would be applicable to aggression in different developmental periods. Here I speculate that the application of the proposed model in a different developmental period would depend upon the association between aggression and social status in this period. In the literature, similar to early adolescence, aggression is associated with high status in middle to late adolescence (e.g, Prinstein, & Cillessen, 2003; Rodkin et al., 2000; Rose et al., 2004; Walcott, Upton, Bolen, & Brown, 2008). For example, aggression for ninth-grade youths is significantly and positively correlated with perceived popularity (Rose et al., 2004). It can be predicted that high-status peers may have a stronger influence than low-status peers on individuals' aggression in other periods of adolescence. As to childhood, a positive association between aggression and social status is only found for children in late childhood but not in early childhood. For example, aggression for 6th graders is found to be positively associated with social status in LaFontana and Cillessen's study (2004). However, for children in early childhood, for instance, 3rd graders, researchers fail to find a positive association between

aggression and social status. Rather, a negative association is reported for them (e.g., Rose, et al., 2004). Hence, it can be predicted that high-status peers may have a stronger influence on aggression than low-status peers in late childhood but not in early childhood.

Summary

In sum, integrating social learning theory and social impact theory with previous findings on peer socialization of aggression, I proposed a conceptual model about the socialization of aggression in early adolescents' peer groups. In this model, high-status peers rather than low-status peers in a group would have strong influences on individual members' aggression and the strength of peers would vary across group and individual characteristics. This model was empirically tested with longitudinal data for 7th graders in this study. Findings show that high-status peers, rather than low-status peers, have strong influences on individuals' aggression. Moreover, high-status peers' influences are stronger in highly cohesive groups than in non-cohesive groups, stronger on low-status individuals than on high-status individuals, and stronger on individuals with social aggression-encouraging beliefs than on individuals with non-encouraging beliefs. These findings suggest that researchers should consider the variability in the strength of peer influences and in individuals' openness to peer influences in future studies. In addition, structural characteristics of a peer group should not be ignored. Findings in this study imply that, in order to reduce aggression and violence in school, special attention should be given to high-status children in aggressive groups and in highly cohesive groups.

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Appendix A

Three Peer Groups Identified through Social Cognitive Map (SCM) Procedure

GROUP1	MEMBERS 6 name: 53102 name: 953150 name: 53104 name: 53324	GROUP NOMINATIONS: 5 nominations: 6 nominations: 4 nominations: 4 nominations: 3
GROUP2	MEMBERS 4 name: 53303 name: 953155 name: 953153 name: 53105	GROUP NOMINATIONS: 4 nominations: 4 nominations: 4 nominations: 4 nominations: 3
GROUP3	MEMBERS 5 name: 53108 name: 53302 name: 53304 name: 53110 name: 53106	GROUP NOMINATIONS: 2.5 nominations: 3 nominations: 2 nominations: 2 nominations: 2 nominations: 2

Appendix A

Co-occurrence Matrices for these Three Peer Groups

53102	6	4	4	3	1	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.
953150	4	4	2	3	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
53104	4	2	4	1	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.
53324	3	3	1	3	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
953452	1	1	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
953198	1	.	1	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.
53303	.	.	.	.	.	.	4	3	3	2	.	.	.	.	.	.	.	.	.	.
953155	.	.	.	.	.	.	3	4	2	3	.	.	.	.	.	.	.	.	.	.
953153	1	.	1	.	.	1	3	2	4	1	.	.	.	.	.	.	.	.	.	.
53105	.	.	.	.	.	.	2	3	1	3	.	.	.	.	.	.	.	.	.	.
53108	.	.	.	.	.	.	.	.	.	.	3	2	2	2	2	1	1	.	.	.
53302	.	.	.	.	.	.	.	.	.	.	2	2	1	2	2	.	.	.	.	.
53304	.	.	.	.	.	.	.	.	.	.	2	1	2	1	1	1	1	.	.	.
53110	.	.	.	.	.	.	.	.	.	.	2	2	1	2	2	.	.	.	.	.
53106	.	.	.	.	.	.	.	.	.	.	2	2	1	2	2	.	.	.	.	.
53101	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	3	2	1	1	1
53109	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	2	2	1	1	1
53401	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	1	1	1
53213	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	1	1	1
53201	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	1	1	1
53309	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	1	1	1
53301	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	2	1	.	.	.
53103	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.
53320	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
53310	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
953450	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5	9	5	5	9	9	5	9	9	5	5	5	5	5	5	5	5	5	5	5
	3	5	3	3	5	5	3	5	5	3	3	3	3	3	3	3	3	3	3	3
	1	3	1	3	3	3	3	3	3	1	1	3	3	1	1	1	1	4	2	2
	0	1	0	2	4	1	0	1	1	0	0	0	0	1	0	0	0	0	1	0
	2	5	4	4	5	9	3	5	5	5	8	2	4	0	6	1	9	1	3	1
	0				2	8		5	3											

Appendix A

Correlational Matrices for these Three Peer Groups

53102	99	92	93	87	71	58	.	.	.	.	.	.	.	.	.	.	.	.	.	.
953150	92	99	75	98	86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
53104	93	75	99	65	43	72	.	.	.	.	.	.	.	.	.	.	.	.	.	.
53324	87	98	65	99	91	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
953452	71	86	43	91	99	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
953198	58	.	72	.	.	99	.	.	52	.	.	.	.	.	.	.	.	.	.	.
53303	.	.	.	.	.	.	99	93	88	85	.	.	.	.	.	.	.	.	.	.
953155	.	.	.	.	.	.	93	99	75	97	.	.	.	.	.	.	.	.	.	.
953153	.	.	.	.	.	52	88	75	99	63	.	.	.	.	.	.	.	.	.	.
53105	.	.	.	.	.	.	85	97	63	99	.	.	.	.	.	.	.	.	.	.
53108	.	.	.	.	.	.	.	.	.	.	99	89	94	89	89	.	.	.	.	.
53302	.	.	.	.	.	.	.	.	.	.	89	99	71	99	99	.	.	.	.	.
53304	.	.	.	.	.	.	.	.	.	.	94	71	99	71	71	43	46	.	.	.
53110	.	.	.	.	.	.	.	.	.	.	89	99	71	99	99	.	.	.	.	.
53106	.	.	.	.	.	.	.	.	.	.	89	99	71	99	99	.	.	.	.	.
53101	.	.	.	.	.	.	.	.	.	.	.	43	.	.	99	92	66	66	66	66
53109	.	.	.	.	.	.	.	.	.	.	.	46	.	.	92	99	79	79	79	79
53401	.	.	.	.	.	.	.	.	.	.	.	.	.	.	66	79	99	99	99	99
53213	.	.	.	.	.	.	.	.	.	.	.	.	.	.	66	79	99	99	99	99
53201	.	.	.	.	.	.	.	.	.	.	.	.	.	.	66	79	99	99	99	99
53309	.	.	.	.	.	.	.	.	.	.	.	.	.	.	66	79	99	99	99	99
53301	.	.	.	.	.	.	.	.	.	.	.	48	.	.	77	52	.	.	.	.
53103	.	.	.	.	.	.	.	.	.	.	.	.	.	.	54	.	.	.	.	.
53320	53	.	69	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
53310	53	.	69	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
953450	53	.	69	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5	9	5	5	9	9	5	9	9	5	5	5	5	5	5	5	5	5	5	5
	3	5	3	3	5	5	3	5	5	3	3	3	3	3	3	3	3	3	3	3
	1	3	1	3	3	3	3	3	3	1	1	3	3	1	1	1	1	4	2	2
	0	1	0	2	4	1	0	1	1	0	0	0	0	1	0	0	0	0	1	0
	2	5	4	4	5	9	3	5	5	5	8	2	4	0	6	1	9	1	3	1
		0			2	8		5	3											

Appendix B

Means, Standard Deviations, and Correlations for Group-Level Variables at Time 1 (Girls' groups)

Variable	<i>M (SD)</i>	1	2	3	4	5	6	7 ^a	8 ^a
1 Group norms of PHY	0.03 (0.48)		0.85***	0.90***	0.54***	0.39***	0.58***	0.10	-0.29**
2 High-status members' PHY	0.06 (0.60)			0.55**	0.36***	0.60***	0.22*	0.32***	-0.27**
3 Low-status members' PHY	0.06(0.66)				0.66***	0.21*	0.75***	-0.05	-0.20*
4 Group norms of SOC	0.22(0.41)					0.52***	0.84***	0.24**	0.19*
5 High-status members' SOC	0.20(0.50)						-0.03	0.58***	0.40**
6 Low-status members' SOC	0.27 (0.78)							-0.02	-0.05
7 Group status	0.18 (1.07)								0.04
8 Group cohesion	0.65 (0.15)								

Note. PHY = physical aggression; SOC = social aggression.

^a Partial correlations after controlling for group size.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix B

Means, Standard Deviations, and Correlations for Group-Level Variables at Time 1 (Boys' groups)

Variable	<i>M (SD)</i>	1	2	3	4	5	6	7 ^a	8 ^a
1 Group norms of PHY	0.21 (0.44)		0.83***	0.52***	0.68***	0.77***	0.09	0.66***	0.28*
2 High-status members' PHY	0.26 (0.76)			0.03	0.63***	0.80***	0.12	0.58***	0.18†
3 Low-status members' PHY	0.19(0.58)				0.33**	0.26*	0.60***	0.31**	0.10
4 Group norms of SOC	0.07(0.51)					0.92***	0.10	0.63***	0.24*
5 High-status members' SOC	0.23(0.96)						-0.09	0.67***	0.24*
6 Low-status members' SOC	-0.12 (0.28)							-0.03	-0.08
7 Group status	-0.33 (0.84)								0.54***
8 Group cohesion	0.69 (0.15)								

Note. PHY = physical aggression; SOC = social aggression.

^a Partial correlations after controlling for group size.

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