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**Children's Peer Relations and the Development of  
Psychopathology:  
A Group-based Approach**

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VRIJE UNIVERSITEIT

**Children's Peer Relations and the Development of  
Psychopathology:  
A Group-based Approach**

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ter verkrijging van de graad Doctor aan  
de Vrije Universiteit Amsterdam,  
op gezag van de rector magnificus  
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# Chapter 1

## General Introduction

We must remember that a small group of determined people can change the course of history  
- *Sonia Johnson*

Children's peer relations form an important context for their behavioral development. Research on children's peer relations emerged in the 1930s when scientists began to focus on the nature of children's peer groups and on the relationship between individual characteristics and the position of children in peer groups (Ladd, 1999). Peer relations are believed to provide children a social context where they can practice social skills, learn social norms and rules, experience social support, and validate a sense of self-worth (Boivin, Vitaro, & Poulin, 2005; Hartup, 1992; Rubin, Bukowski, & Parker, 2006). Indeed, empirical evidence shows that positive peer experiences, such as being accepted by peers and having friends promote children's behavioral adjustment (Coe, Dodge, & Kupersmidt, 1990; Newcomb & Bagwell, 1998; Parker & Asher, 1993; van den Oord & Rispens, 1999). In contrast, negative experiences with peers may impact children's behavioral development in a negative way. Indeed, children who experience negative peer relations such as peer rejection, victimization, and isolation have been found to show elevated levels of internalizing and externalizing problems (Deater-Deckard, 2001; Hay, Payne, & Chadwick, 2004; Parker & Asher, 1987). Moreover, children who interact with deviant, externalizing friends are at risk for developing similar externalizing problems (Allen, Porter, McFarland, Marsh, & McElhaney, 2005; Lacourse, Nagin, Tremblay, Vitaro, & Claes, 2003; Patterson, Dishion, & Yoerger, 2000; Snyder, Horsch, & Childs, 1997). Currently, both these bright and dark sides of children's peer relations are central foci in the field of developmental psychology.

Peer relation researchers often address the association between children's peer relations and the development of psychopathology. Indeed, it is important to center on the development of internalizing and externalizing problems, because these maladaptive behaviors may have serious negative consequences for children's future well-being. For instance, both internalizing and externalizing problems are associated with negative outcomes including substance use, academic problems, and future psychopathology (Lynskey & Fergusson, 1995; Pine, Cohen, Cohen, & Brooks, 1999; Rutter, Kim-Cohen, & Maughan, 2006; Vitaro, Larocque, Janosz, & Tremblay, 2001). Studying the associations between peer relations and psychopathology may improve our understanding of the development of internalizing and externalizing problems and may yield insights that are useful in efforts employed to prevent psychopathology. The present thesis focused on children's peer relations and the development of psychopathology from a group perspective. Specifically, the studies reported in this thesis aimed to describe child characteristics related to

clique membership, to investigate whether clique membership predicts the development of internalizing and externalizing problems, and to test whether children's group-level peer relations play a role in changing the course of psychopathology. Before the specific research aims of this thesis are outlined, theories and empirical evidence about children's group-level peer relations, and important unresolved issues regarding the role of children's group-level peer relations in the development of psychopathology will be discussed.

### **Group-level Peer Relations**

#### ***Group-level versus Dyadic-level Peer Relations***

A general distinction that peer relation researchers often make is between *group-level* and *dyadic-level* peer relations. At the dyadic level, researchers mostly study children's friendships (e.g., Bukowski, Newcomb, & Hartup, 1996), but also other dyadic experiences, such as romantic relationships (Furman, Brown, & Feiring, 1999), and bully-victim relationships (Veenstra et al., 2007). Children's dyadic relationships are often nested within peer groups, that is, in small interaction-based peer groups or in larger social networks such as classrooms. According to Rubin (1980), groups provide children with resources, such as a sense of collective participation and group support, which dyadic friendships often cannot offer. Indeed, peer groups have specific structural characteristics, such as *transitivity* (i.e., 'a friend of a friend is a friend'), *stratification* (i.e., a social dominance hierarchy), and *cohesiveness* (i.e., having strong, direct, intense, and frequent interactions with other members of the same group) that move beyond characteristics of dyadic friendships (Adler & Adler, 1998; Wasserman & Faust, 1994).

Two types of group-level peer relations are typically distinguished, namely cliques and reputation-based peer relations. *Cliques* are interaction-based, *naturally occurring peer groups* (Brown, 1989; Kindermann, 1993; 2007). Developmental psychologists who investigate cliques often focus on children who are members of cliques and frequently address the behavioral characteristics of these clique members (Burk, Steglich, & Snijders, 2007; Cairns, Cairns, Neckerman, Gest, and Gariépy, 1988; Espelage, Holt, & Henkel, 2003). Regarding the role of cliques in individual children's adjustment, scientists have also made the distinction between being a member of a clique versus being isolated from cliques (Ennett & Bauman, 1994; Ennett et al., 2006; Wentzel & Caldwell, 1997).

*Reputation-based peer relations* have actually received much more attention from research in developmental psychology than cliques. Reputation-based peer relations develop and are measured in the classroom. These reputation-based peer relations are indicated by *sociometric status*, which describes the degree that children are liked or disliked by their classmates (Coie & Dodge, 1988; Coie, Dodge, & Coppotelli, 1982). More recently, researchers have focused attention on another form of peer relations based on children's reputation within the classroom, namely *perceived popularity*. Perceived

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popularity reflects the extent to which children are thought to be popular rather than being liked by their classmates (Lafontana & Cillessen, 2002; Parkhurst & Hopmeyer, 1998; Rose, Swenson, & Waller, 2004).

Reputation-based peer relations such as sociometric status and perceived popularity are indications of a child's standing among his/her classmates, whereas being a clique member reflects actual affiliations with peers. Children with a negative peer reputation may still affiliate in cliques (Bagwell, Coie, Terry, & Lochman, 2000). And in contrast, children who are isolated from cliques may still be liked by their classmates. Consequently, while reputation-based peer relations and clique membership both reflect peer relations at the group level, they are considered distinct aspects of group-level peer relations. Nonetheless, the experience of having a negative reputation in the classroom (i.e., being disliked by peers) can shape children in such a way that they are more likely to experience other negative peer relations, such as becoming isolated from cliques or affiliation with others who reinforce deviant behavior (Bukowski, Pizzamiglio, Newcomb, & Hoza, 1996). Indeed, it has been found that children who are isolated from cliques are less accepted by their peers than clique members (Wentzel & Caldwell, 1997). Thus, although reputation-based peer relations and clique membership are distinct aspects of group-level peer relations, they are likely to co-occur. In the next two sections, theoretical and empirical evidence about cliques and reputation-based peer relations, and their associations with psychopathology are delineated.

### *Cliques*

The study of groups emerged as a research field in the 1930s and views the group as an important social context in which cognitions, emotions, attitudes, and the self arise and develop (Hogg & Tindale, 2001). Although the term 'group' is a broad concept, the majority of scientists studying social groups conceptualize a group as a relatively small, informal set of individuals with close personal ties (Freeman, 1992). More precise definitions of groups are generally based on several properties that are believed to be central group aspects. For example, groups have been defined based on properties such as *mutuality* (i.e., all members of a group choose each other as affiliates), *cohesion* (i.e., the extent to which interactions are concentrated within a group, rather than between groups), and the *frequency* of interactions among group members (Wasserman & Faust, 1994). Scientists who investigate groups in childhood and adolescence have often characterized a clique as naturally occurring (Kindermann, 2007), cohesive (Urberg, Degirmencioglu, Tolson, & Halliday-Sher, 1995; Wentzel & Caldwell, 1997), and to consist of members who frequently interact with each other (Brown, 1989; Cairns, Xie, & Leung, 1998; Shrum & Cheek, 1987). Based on these characterizations, a more comprehensive definition of a clique can be specified: *a clique is a naturally occurring and cohesive set of children who interact more with each other than with other children.*

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Researchers have theorized that clique membership is beneficial for children's adjustment. For instance, being a clique member may offer children opportunities to attain social skills and to learn social norms and rules (Boivin et al., 2005; Rubin et al., 2006). Also, clique membership may provide children with assets such as group support and a sense of belongingness (Rubin, 1980). In contrast, children who are isolated from cliques are deprived of these positive group assets, and may therefore show less adjustment than clique members. Being a member of a clique may be particularly important in late childhood and early adolescence, as this is the period when achieving group identity and group acceptance is believed to be a central developmental task (Parker & Gottman, 1989; Buhrmester, 1990; Buhrmester & Furman, 1987).

Indeed, studies that focused on the distinction between clique membership and clique isolation suggest that children who are members of a clique show better adjustment than children isolated from cliques. That is, isolated children and adolescents are found to demonstrate higher levels of internalizing problems, to show lower levels of academic achievement, and more cigarette smoking than children who are members of cliques (Ennett & Bauman, 1994; Ennett et al., 2006; Henrich, Kuperminc, Sack, Blatt, & Leadbeater, 2000; Wentzel & Caldwell, 1997). Thus, there is some empirical evidence supporting the notion that clique membership is advantageous for children. However, researchers who focused on the characteristics of children who are members of cliques have painted a less positive picture about the benefit of being a clique member. That is, children who show externalizing problems such as aggression and bullying have been found to affiliate in cliques with other children who show similar levels of externalizing problems (Burk et al., 2007; Cairns et al., 1988; Espelage et al., 2003; Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998; Salmivalli, Huttunen, & Lagerspetz, 1997). Two processes have often been theorized to underlie this homogeneity in problem behavior: selection and socialization. Specifically, children may be attracted to others who show similar behavior, similar attributes such as social dominance, and similar attitudes. This is denoted as the process of selection. At the same time, affiliates are believed to influence each other's behavior – including problem behavior – through processes such as peer pressure, reinforcement, conformity, and modeling (Adler & Adler, 1998; Cohen, 1977; Dishion, Patterson, & Griesler, 1994; Kindermann, 2003), which is called socialization. An example of a socialization process that has been examined *in vivo* among adolescent boys is reinforcement. That is, Dishion, Spracklen, Andrews, and Patterson (1996) observed that adolescent boys who often talk and joke with their friends about deviant topics such as substance use and breaking the law (i.e., deviancy training) showed an increase in delinquent behavior.

This overview shows that evidence about the benefit of being a clique member is not conclusive. That is, theoretical and empirical evidence has been found for an association between clique membership and both low and high

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levels of adjustment. This contradiction is intriguing and needs further clarification.

### ***Reputation-based Peer Relations***

Research on reputation-based peer relations typically focuses on individual differences between children and on the place of an individual child within the broader social network (e.g., the classroom). Numerous studies have been dedicated to identifying (behavioral) characteristics associated with the sociometric status of individual children. Results from these studies indicate that children who are rejected by their peers show more externalizing problems and report more feelings of loneliness and depression than children who are not rejected (for overviews, see Bierman, 2004; Boivin, Hymel, & Bukowski, 1995; Kupersmidt, Coie, & Dodge, 1990; Parker & Asher, 1987). On the other hand, children who are highly accepted by their peers show less externalizing problems and more prosocial behavior than their less accepted counterparts (Cillessen & Mayeux, 2004a; Coie et al., 1990). Besides a focus on sociometric status, others have centered on perceived popularity as a measure of children reputation in the classroom. These studies showed that perceived popularity is positively related to both antisocial and prosocial behavior (Lafontana & Cillessen, 2002; Rose, Swenson, & Waller, 2004).

Despite this support for a link between reputation-based peer relations and psychopathology, contradictory evidence exists about the actual influence of these peer relations on the development of psychopathology. That is, some studies have found that peer rejection in childhood does not increase children's risk for psychopathology beyond the predictive value of early levels of psychopathology (Kupersmidt & Coie, 1990; Pedersen, Vitaro, Barker, & Borge, 2007). In contrast, others have found that children's sociometric status mediated the development of psychopathology (Ladd & Troop-Gordon, 2003; Snyder, Prichard, Schrepferman, Patrick, & Stoolmiller, 2004; Vitaro, Pedersen, & Brendgen, 2007). Taken together, these findings indicate that while an abundance of studies showed an association between reputation-based peer relations and psychopathology, there is no consensus about the actual influence of reputation-based peer relations on the development of psychopathology.

### ***Group-level Peer Relations in Different Age Periods***

Reputation-based peer relations and cliques may have a different significance for children's behavioral development in different age periods. That is, having a positive or negative reputation among peers may be especially important for early school-aged children, while cliques may play a larger role in children's development in late childhood and (early) adolescence (Brown, 1989, Vitaro et al., 2007). Indeed, empirical evidence seems to support this notion by showing that peer rejection becomes weaker linked to aggression when children grow older (Coie, Terry, Zakriski, & Lochman, 1995; Vitaro, Tremblay, Gagnon, & Boivin, 1992). Being a clique member may be particularly salient in

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late childhood and early adolescence, because shared norms and social comparison within friendships become increasingly important at this age (Buhrmester, 1990; Buhrmester & Furman, 1987).

Although sociometric status and cliques may differently impact children's development in different age periods, they both seem to be relatively stable. That is, sociometric status, which is typically studied in elementary school children, appears to have a moderate to high long-term stability in childhood (Cillessen, Bukowski, & Haselager, 2000; Jiang & Cillessen, 2005). Also cliques, who are mostly studied in adolescence, tend to have a moderately stable composition (Cairns, Leung, Buchanan, & Cairns, 1995; Degirmencioglu, Urberg, Tolson, & Richard, 1998; Shrum & Cheek, 1987). The (moderate) stability of both sociometric status and cliques indicates that although they may have a different significance for children in different age periods, these aspects of group-level peer relations may play a role in the development of psychopathology in both childhood and in (early) adolescence. Therefore, it is important to take both clique membership and reputation-based peer relations into account in the examination of the associations between group-level peer relations and psychopathology in childhood and in (early) adolescence.

### **Important Unresolved Issues Regarding Group-level Peer Relations**

Theoretical and empirical work reviewed above indicates that studying children's peer groups is an interesting and widely addressed research topic. The overview given above shows that although reputation-based peer relations and clique membership are distinct aspects of group-level peer relations, they are likely to co-occur and should both be taken into account in the examination of the role of children's groups in the development of psychopathology. Further, there are still important unresolved issues concerning the role of children's groups in the development of psychopathology. That is, work on children's cliques suggests that there is no consensus about the benefit of being a clique member. Also, there exists contradictive evidence about the actual influence of group-level peer relations on the development of psychopathology. In this section, we suggest three approaches to address these issues. First, we will focus on child characteristics related to clique membership. Second, we will center on clique membership as a predictor of the development of both internalizing and externalizing problems. Finally, we will focus on a broader range of group-level peer relations and address their potential role in changing children's psychopathology development.

### ***Understanding Children's Characteristics Related to Clique Membership***

In order to understand the meaning of clique membership for children's behavioral development, we first need to ascertain which child characteristics play a role in clique membership. Most studies investigating cliques have focused on adolescence (e.g., Cohen, 1977; Ennett & Bauman, 1994; Espelage, et al., 2003). Consequently, little is known about the existence of cliques in

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earlier developmental periods. Nonetheless, children may affiliate in cliques already in early elementary school. Therefore, in understanding the role of clique membership in children's development, there is a need to investigate child characteristics related to clique membership already at the beginning of elementary school. Moreover, it is important to describe the characteristics of children who enter a clique, and the characteristics of children who become estranged from cliques, because cliques are dynamic social networks in which children change their clique membership in the classroom over time (Alder & Adler, 1998; Cairns et al., 1995; Cairns et al., 1998; Degirmencioglu et al., 1998; Shrum & Check, 1987).

Studies investigating the characteristics of children in cliques in late childhood and adolescence frequently center on the behavior of children in cliques. Results from these studies show that clique affiliates tend to display similar behavioral characteristics (Burk et al., 2007; Cairns et al., 1988; Espelage et al., 2003; Haselager et al., 1998; Salmivalli et al., 1997). However, it is also important to focus on other characteristics besides behavior, such as on children's status among peers (Hawley, 1999; Pellegrini & Long, 2002). That is, besides being similar in behavior, clique affiliates also tend to be similar in popularity and social dominance (Bagwell et al., 2000; Adler & Adler, 1998). Therefore, in understanding the characteristics of children in cliques, it is essential to describe multiple characteristics of clique members, including behavior, popularity, and social dominance.

In the present thesis, we addressed the issue of whether being a clique member is beneficial by examining child characteristics associated with clique membership. We addressed change and stability in early school-aged children's clique membership, and investigated child characteristics related to becoming estranged from cliques, and, on the other hand, to successfully entering a clique in early elementary school. Furthermore, we focused on children in cliques in late childhood and examined the similarity of clique affiliates regarding multiple characteristics, namely bullying behavior, likeability, and perceived popularity.

### ***The Role of Belonging to a Clique in the Development of Internalizing and Externalizing Problems***

A second step in increasing our knowledge about the benefit of being a clique member is addressing the question whether belonging to a clique predicts the development of internalizing and externalizing problems. Indeed, child development researchers investigating reputation-based peer relations often study peer relations from this perspective and view children's sociometric status as a predictor of individual behavior. The many interesting findings on internalizing and externalizing problems related to the social position of children in the classroom show the value of studying group-level peer relations as predictors of children's behavior (Boivin et al., 1995; Cillessen & Mayeux, 2004a; Coie et al., 1990; Kupersmidt et al., 1990; Parker & Asher, 1987).

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However, it is necessary to direct more attention to individual differences in children's clique membership, in addition to centering on sociometric status. Little is known about the *unique* impact of clique membership on the development of psychopathology independent of children's sociometric status. As we mentioned above, cliques and reputation-based peer relations are likely to co-occur to a certain extent. Consequently, it is important to simultaneously study children's clique membership and their sociometric status in the classroom as predictors of the development of psychopathology. We addressed the issue of whether being a clique member is beneficial in the present thesis by studying the association between clique membership and the development of both internalizing and externalizing problems, while simultaneously controlling for the co-occurrence of clique membership and other peer relationships aspects such as sociometric status.

### ***The Role of Children's Group-level Peer Relations in Changing the Development of Psychopathology***

The second unresolved issue involves the actual influence that group-level peer relations have on children's psychopathology development. As we reviewed above, no consensus exists about peer relations as markers or environmental mediators of children's psychopathology development (Parker & Asher, 1987). If peer relations are *markers*, they would not be assumed to influence behavior, but rather serve as an index of behavior. On the other hand, if peer relations are *environmental mediators*, they would mediate children's behavioral development (Patterson, DeBaryshe, & Ramsey, 1989). Knowledge about the role of peer relations in changing children's behavior may be especially important from a prevention point of view. That is, support for peer relations as environmental mediators of children's behavior problems would imply that children's peer relations may be important tools in preventing psychopathology in children. In the present thesis, we tested the role of group-level peer relations in changing the course of psychopathology in a randomized controlled intervention study. We studied the extent to which the effect of a classroom-based preventive intervention on reducing children's externalizing problems is mediated by different aspects of group-level peer relations, namely sociometric status, the number of friends children have in a classroom, and the social proximity of children to others in the classroom.

### **The Present Thesis**

#### ***Research Aims***

The general aim of the present thesis was to provide more insight into the role of children's groups in the development of psychopathology. We employed a network approach in understanding group-level peer relations and their associations with children's development of internalizing and externalizing problems. That is, we studied naturally occurring peer groups existing in the school context and viewed peer groups and classrooms as social structures in

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which children's behavior develop. Specifically, we addressed two unresolved issues regarding the role of children's groups in the development of psychopathology. First, we addressed the issue whether being a member of a clique is beneficial for children's development. Second, we focused on the issue whether children's group-level peer relations play a role in changing the course of psychopathology. We investigated group-level peer relations in a broad age range, that is, from the early elementary school-period to early adolescence.

Guided by the two issues outlined above, the specific aims of the present thesis were:

1. To investigate child characteristics associated with clique membership by addressing change and stability in clique membership in early elementary school, and by focusing on the similarity of clique affiliates on multiple characteristics (i.e., bullying behavior, likeability, and perceived popularity) in late childhood.
2. To study children's clique membership as a predictor of the development of internalizing and externalizing problems in late childhood and early adolescence, while simultaneously controlling for the co-occurrence of clique membership and other peer relation aspects including sociometric status.
3. To study whether group-level peer relations play a role in changing the course of psychopathology by testing the extent to which multiple indicators of group-level peer relations (i.e., sociometric status, the number of mutual friends children have, and the social proximity to others in the classroom) mediate the effect of a classroom-based preventive intervention on reducing externalizing problems in early elementary school.

### ***Design***

The studies described in Chapter 2 to Chapter 6 used different designs and samples in addressing the research aims of this thesis. Table 1.1. presents an overview of the designs, samples, and measures. The study described in Chapter 2 used a dataset with a longitudinal design that was based on a Dutch sample of children who were followed from age 6 to 8 years. Peer nominations and teacher reports were used to assess children's clique membership, sociometric status, and their behavioral characteristics. In Chapter 3, a cross-sectional dataset based on a sample of Dutch children in the age range of 9 to 13 years was used. Information about cliques, reputation-based peer relations, and children's bullying behavior was obtained by peer nominations and peer ratings. The studies described in Chapter 4 and 5 are based on a longitudinal dataset in which children from a small community in northwestern Quebec, Canada were followed from late childhood to early adolescence. In Chapter 4, children's peer relations and psychopathology were assessed with peer nominations. In Chapter 5, both peer nominations and self ratings were used. Finally, Chapter 6 presents

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findings from a randomized controlled intervention study in which children were followed from age 6 to 8 years. Children's group-level peer relations were assessed with peer nominations and their externalizing behavior was measured with teacher ratings.

### *Structure of this Thesis*

In Chapter 2, we examined clique membership during early elementary school and focused on change and stability in clique membership. Moreover, we investigated child characteristics associated with stability and change in clique membership and addressed the role of the individual child and his/her peers in becoming included into cliques and in becoming estranged from cliques. In Chapter 3, the characteristics of children in cliques in late childhood were addressed. Specifically, we investigated the similarity between fourth- to sixth-grade clique affiliates on bullying, likeability, and perceived popularity. From Chapter 4 onwards, we changed our perspective from describing the characteristics related to clique membership into viewing group-level peer relations as predictors of children's psychopathology development. In Chapter 4, we examined the association between clique membership and the development of children's internalizing and externalizing problems during late childhood. In Chapter 5, we focused on the prediction of depressive symptoms from being isolated from cliques in early adolescence. Chapter 6 tested the mediating role of group-level peer relations (i.e., sociometric status, number of friends, and proximity to others) in the effect of a preventive intervention on reducing externalizing problems, and, thus, addressed our final research aim. In Chapter 7, we discuss the main findings and conclusions of the studies described in Chapters 2 to 6, as well as implications for research and prevention, and directions for future research.

*Table 1.1* Overview of Study Designs, Samples, and Measures used in Chapters 2-6

<b>Chapter</b>	<b>Study design</b>	<b>Waves</b>	<b>N</b>	<b>Grade</b>	<b>Outcome</b>	<b>Peer measures and behavior ratings</b>
<b>2</b>	Longitudinal; observational	2	300	1 – 2	- Clique membership	- Internalizing - Externalizing - Prosocial behavior - Sociometric status - Friendship nominations
<b>3</b>	Cross-sectional; observational	1	461	4,5, and 6	- Cliques	- Perceived popularity - Likeability - Bullying
<b>4</b>	Longitudinal; observational	4	451	3 – 6	- Internalizing - Externalizing	- Clique membership - Social preference - Having dyadic friends - Disruptiveness of clique affiliates
<b>5</b>	Longitudinal; observational	4	356	5 – 8	- Depressive symptoms	- Clique isolation - Peer rejection - Friendlessness - Loneliness
<b>6</b>	Longitudinal; experimental (RCT)	5	758	Kindergarten – grade 2	- Externalizing	- Social self-esteem - Peer acceptance - Number of friends - Proximity to others



## **Chapter 2**

### **Change and Stability in Childhood Clique Membership, Isolation from Cliques, and Associated Child Characteristics**

*Miranda Witvliet, Pol A.C. van Lier, Pim Cuijpers, and Hans M. Koot*

*An adapted version of this chapter is in press:  
Journal of Clinical Child and Adolescent Psychology*

#### **Abstract**

This study explored the role of clique membership and clique isolation in children's psychosocial adjustment. We identified change and stability in early elementary school clique membership, and investigated behavioral characteristics related to this change and stability. Participants were first-grade pupils ( $N = 300$ ), followed over a one-year period. Clique membership was identified through social network analysis. Differences between children with a stable versus changing clique membership status were tested using peer nominations and teacher ratings. Clique members were better adjusted than isolated children. Internalizing behavior and less prosocial behavior preceded clique estrangement. Stable-isolated children increased in externalizing behavior, while children who joined a clique decreased in externalizing behavior. Clique entry was reflected most of all by an increase in friendship choices received from the clique. Implications for research and prevention are discussed.

#### **Introduction**

Peer relations form an important context for children's social development (for reviews, see Hay, Payne, & Chadwick, 2004; Rubin, Bukowski, & Parker, 2006). Children with problematic peer relations tend to show more maladjustment than children without such difficulties. For instance, studies indicate that children who are rejected by their peers show more externalizing behavior and report more feelings of loneliness and depression than non-rejected children (Boivin, Hymel, & Bukowski, 1995; Kupersmidt, Coie, & Dodge, 1990; Parker & Asher, 1987). Furthermore, several studies have shown that children without friends have more internalizing problems, are more often victimized, and show less prosocial behavior than children with friends (Newcomb & Bagwell, 1998; Parker & Asher, 1993; Wojslawowicz Bowker, Rubin, Burgess, Booth-LaForce, & Rose-Krasnor, 2006).

Although the sociometric status of children is an indication of their reputation in the peer group, having dyadic friendships reflects actual affiliations with peers. Importantly, however, dyadic friendships are often nested within larger groups of children, for instance in cliques. Cliques are cohesive groups of children who interact more with each other than with other

## 2. Change and Stability in Clique Membership

children (Shrum & Cheek, 1987; Urberg, Degirmencioglu, Tolson, & Halliday-Sher, 1995). Cliques have specific characteristics, such as cohesiveness, stratification, and transitivity that move beyond characteristics of dyadic relationships (Adler & Adler, 1998; Wasserman & Faust, 1994). The objective of this study is to explore the role of clique membership and isolation from cliques in children's behavioral adjustment.

### ***Children's Clique Membership***

Most studies investigating cliques have focused on adolescence (e.g., Cohen, 1977; Ennett & Bauman, 1994; Espelage, Holt, & Henkel, 2003). Nonetheless, there are reasons to assume that clique membership is already important for children's development during the first years of elementary school. The elementary school period is a time during which interactions with peers provide children the opportunity to develop and practice social skills that are important for their further development (Boivin, Vitaro, & Poulin, 2005). In fact, there is evidence that difficulties with peers in this period pose large risks for children's behavioral and emotional development. Although not specifically found for clique membership, being rejected in an early elementary school class has been found to predict maladjustment (Ladd, 2006). There is also evidence that, already at this young age, a child's number of (best) friends is linked to reduced rates of internalizing and externalizing behavior (Pedersen, Vitaro, Barker, & Borge, 2007; van den Oord & Rispens, 1999).

Although clique membership is a distinct aspect of peer relations, empirical knowledge about the influences of clique membership and isolation from cliques on early elementary school children's behavioral adjustment is very limited. In this study, we will address three topics, namely (1) the behavioral characteristics of clique members versus non-clique members; (2) the stability of clique membership status over time, and the characteristics of children with a stable and changing clique membership status; and (3) whether differences in characteristics between these groups are similar for boys and girls.

### ***Clique Membership Status and Children's Behavioral Adjustment***

Several researchers have theorized that children who are members of a clique show better adjustment than children isolated from cliques. For instance, being isolated from cliques may negatively impact children's self-esteem and may lead to feelings of loneliness (Brown & Lohr, 1987; Hoza, Bukowski, & Beery, 2000). Also, being isolated from cliques can deprive children of the opportunity to attain social skills, learn social norms and rules, and experience social support (Boivin et al., 2005; Rubin et al., 2006). Indeed, empirical findings from studies that focused on social isolation support this notion. For instance, children who withdraw themselves from their peers experience feelings of anxiety, loneliness, and depressed mood (Bell-Dolan, Reaven, & Peterson, 1993; Rubin, Burgess, & Coplan, 2002; Rubin, Chen, McDougall,

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Bowker, & Mckinnon, 1995). Further, children who are actively excluded by their peers show more externalizing behavior than other children (Bowker, Bukowski, Zargarpour, & Hoza, 1998; Harrist, Zaia, Bates, Dodge, & Pettit, 1997; Rubin & Mills, 1988; Younger & Daniels, 1992).

Despite this evidence, scant research has directly focused on how behavioral characteristics are related to children's clique membership status. Based on the theoretical notions described above, it can be expected that children isolated from cliques show more internalizing problems, including anxiety and depression. The identification of externalizing child characteristics that are related to clique membership may not be straightforward, however. Prior research supports the idea, on the one hand, that externalizing problems are a risk factor for peer rejection and social isolation (Bowker et al., 1998; Cillessen & Mayeux, 2004a; Harrist et al., 1997; Kupersmidt et al., 1990; Parker & Asher, 1987; Rubin & Mills, 1988; Younger & Daniels, 1992). Theorists focusing on aggression have argued, on the other hand, that externalizing behavior might also reflect children's skilled use of social strategies to obtain a dominant position in the peer group, especially when it is combined with prosocial behavior (Hawley, 1999; Pellegrini & Long, 2002). In fact, various studies have demonstrated that children who engage in aggressive behavior are often members of cliques and not more isolated than other children (Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988; Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998; van den Oord, Rispen, Goudena, & Vermande, 2000). Prosocial behavior, such as cooperation and helping, may also be a key variable in understanding clique membership and isolation from cliques among children who show externalizing behavior. For example, children who have a central position within a clique tend to display prosocial leadership styles (Farmer & Rodkin, 1996). In fact, prosocial behavior may protect externalizing children from becoming isolated, as aggressive youth who are nonetheless popular may still be perceived as socially skilled (Farmer, Estell, Bishop, O'Neal, & Cairns, 2003). Thus, to study child characteristics associated with clique membership and isolation from cliques, we must take prosocial behavior into account, in addition to internalizing and externalizing behavior.

### ***Change and Stability in Clique Membership Status***

Studies addressing the stability of cliques (Cairns, Leung, Buchanan, & Cairns, 1995; Degirmencioglu, Urberg, Tolson, & Richard, 1998; Shrum & Cheek, 1987) have shown that, although cliques are quite stable, children change their clique membership in the classroom over time. As a consequence, only by studying children's clique membership longitudinally can we distinguish between child characteristics that are related to (1) retention of a position in a clique, (2) clique entry, (3) clique estrangement, and (4) chronic isolation from cliques. Such knowledge is essential, because (especially continued) isolation from cliques may have negative consequences for children's social development (Boivin et al., 2005; Brown & Lohr, 1987; Hoza

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et al., 2000; Rubin et al., 2006). Moreover, the longitudinal investigation of children's clique membership status and related child characteristics is important, because it enables us to gain knowledge about factors that promote successful entry into a clique, or, alternatively, that precede the estrangement from cliques.

Merely knowing the behavioral characteristics of children with a stable versus changing clique membership status is not enough, however. The role the individual child and his/her peers play in the successful entry into, or estrangement from, cliques is also highly relevant. Rubin and Mills (1988) suggested that isolation can be the consequence of voluntary withdrawal by a child, but also the result of peers denying the child access to the clique. Similarly, becoming a member of a clique may be the consequence of an invitation by clique members, but also the result of the initially isolated child striving for affiliation with clique members (Adler & Adler, 1998; Zabatany & Pepper, 1996). Knowing the role of the individual child and his/her peers in changing clique membership status is of special importance, because self-initiated estrangement from cliques may be related to fearfulness of social interactions and internalizing problems. In contrast, children whose peers deny them access to a clique, or exclude them from the clique, may show high levels of externalizing behavior (Bowker et al., 1998; Harrist et al., 1997; Rubin & Mills, 1988; Younger & Daniels, 1992). Consequently, in order to understand why some children are successful in obtaining and retaining a position in a clique while others are not, we need to know the role of the individual child and his/her peers in these processes. Therefore, we will ascertain whether changes in children's clique membership status (i.e., joining a clique or becoming estranged) are mainly the result of changes in the individual child's own friendship choices, or result from changes in friendship choices reported by the other clique members.

### ***Gender Differences in Clique Membership Status***

We have to take gender into account when studying clique membership and clique isolation. For instance, it is believed that a greater emphasis exists on physical dominance among male clique members, whereas intimacy, cohesiveness, and exclusivity play a larger role among girls in cliques (Crick & Grotpeter, 1995; Maccoby, 1998). Additionally, prior findings indicate that girls are more often members of a clique, and place greater importance on clique membership than boys (Cohen, 1977; Urberg et al., 1995). Therefore, behavioral problems may be observed especially among girls who are isolated from cliques, and particularly characterize girls who become estranged from cliques. This may be especially true for externalizing behavior, because this behavior is believed to be more accepted among male clique members than female clique members.

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### *The Present Study*

To summarize, this study aims to test (1) differences in behavioral characteristics between clique members and non-clique members in early elementary school; (2) the stability of clique membership status from first to second grade, and child characteristics linked to stable and changing clique membership status; and (3) whether differences in characteristics between these groups are similar for boys and girls.

We will test differences between clique members and isolated children in peer-nominated and teacher-rated internalizing, externalizing, and prosocial behavior and in social preference. We hypothesize that internalizing behavior is associated with isolation from cliques, while prosocial behavior is a factor promoting clique membership. Moreover, we will test two competing hypotheses about clique membership and externalizing behavior. According to the first hypothesis, isolated children show more externalizing behavior because they have less opportunity to practice social skills and because their peers often deny them access to cliques (Boivin et al., 2005; Bowker et al., 1998; Harrist et al., 1997; Rubin et al., 2006; Rubin & Mills, 1988; Younger & Daniels, 1992). The alternative hypothesis states that clique members show more externalizing behavior because they use this behavior, in combination with prosocial behavior, to obtain or maintain a position in a clique (Hawley, 1999; Pellegrini & Long, 2002). Regarding clique membership stability, we hypothesize that clique membership will be moderately stable over the period from first to second grade. That is, we expect that most children will be stable in their clique membership, but that there will also be a considerable number of children who can be characterized by change from a clique member into an isolate, and from an isolate into a clique member. Finally, we expect that girls who are isolated from cliques or become estranged from cliques show more behavior problems, as compared to boys. This may be especially the case for externalizing problems.

### **Method**

#### *Participants*

Participants included 300 first-grade students (151 boys and 149 girls) from 16 classes in 11 different elementary schools in two urban areas and one rural area in the Netherlands. All children who moved on from kindergarten to first grade were eligible for inclusion, as were those who repeated first grade ( $N = 842$ ). In first grade, signed parental informed consent for children's participation in the study was obtained for 90 percent of the children ( $N = 758$  in 47 classes). In general, schools in the Netherlands have stable classroom compositions, in which children remain in the same self-contained class during their elementary school period. Nevertheless, because some children leave or move into classes, or because classes are merged after first grade, classroom compositions change regularly. Because this study focuses on stability and

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change in children's clique membership status, it is essential that we allow for stability in clique membership status to occur by including only second-grade classrooms that retained at least 90 percent of the students from the first grade. Consequentially, 31 classrooms were excluded from the study. The children from the excluded classrooms were compared with children participating in this study in terms of gender, ethnicity, behavioral characteristics, and friendship nominations. We found no gender differences between these children. However, we did find that the included children more often had a Dutch/Caucasian background than the excluded children. Moreover, the included children showed less externalizing and internalizing behavior, and received fewer friendship nominations than the children who were excluded from the study.

The average age of the included participants was 7.0 years ( $SD = .46$ ) in first grade and 7 years and 11 months ( $SD = .46$ ) in second grade. Eighty-one percent of children were from Dutch/Caucasian background, 4 percent Moroccan, 3 percent Turkish, 2 percent Netherlands Antillian, 1 percent Surinamese, and 9 percent from other backgrounds.

The participants of the present study were part of a larger research on prevention of disruptive behavior in Dutch elementary schools. In this study, the Good Behavior Game, a universal classroom-based preventive intervention (GBG; Barrish, Saunders, & Wolfe, 1969; Dolan, Jaylan, Werthamer, & Kellam, 1989), is nested in a longitudinal study on childhood behavior and social development. The GBG is aimed at reducing disruptive behavior and promoting prosocial behavior by formulating explicit class rules, rewarding positive behavior, and facilitating interactions between disruptive and non-disruptive children through a team-based approach. At the end of kindergarten, the participating classes were randomly assigned to either the control- or the intervention condition. Children in the intervention condition received the GBG in first and second grade. Most children ( $N = 228$ ; 75%) in the present sample received the GBG at school. The other 77 children (25%) were assigned to the control condition. Because presenting on the results of the GBG is not an objective of this study, all analyses will be controlled for possible intervention effects by including intervention status as covariate in the analyses.

### **Measures**

*Reciprocal friendships* were assessed by asking children to nominate their best friends. Unlimited nominations were used. A friendship was counted as reciprocated when the nominated friend also nominated the target child as one of his/her best friends (Bukowski & Hoza, 1989).

*Clique membership and isolation from cliques* was determined using the reciprocated friendship nominations of all children within a classroom. We conducted a social network analysis (SNA), using the NEGOPY program (Richards, 1995). NEGOPY can be used to detect cliques of children who have more connections with one another than with children in other cliques. Cliques were identified based on the following criteria: (a) a clique had to consist of at

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least three members, (b) each member of the clique had to have more links with the other members of the clique than with nonmembers, (c) a direct or indirect path (i.e., via a common friendship) had to exist from each member of the clique to all the other members of the clique. To ascertain the robustness of an identified clique, NEGOPY tests whether the group criteria are fulfilled even when randomly ten percent of the clique members are deleted from the clique. Based on the clique identifications within a class, each child receives a classification of his/her clique membership status: *Clique members* are children who have at least two links with other members of the clique and who have common links with the other members of the same clique. *Isolates* are children who do not have links with a clique, nor a reciprocal link with any other child in the class. *Dyads* are children who are not members of a clique, but who do have a link with at least one other child in the class who is also not a clique member. Another classification is liaison. *Liaisons* are not members of a particular clique, but they connect two or more cliques to one another through their friendship links. Finally, children who are only linked to one member of a clique, or who hold no indirect links with other clique members, are classified as *tree nodes*.

*Children's received friendship nominations from clique members and given friendship nominations to clique members* were computed by using friendship nominations. For each child who joined a clique or became estranged from cliques, we computed the number of friendship nominations that this child gave to a clique member (Given Friendship score), and the number of friendship nominations that a child received from clique members (Received Friendship score). The Received Friendship score and the Given Friendship score were divided by the number of children in the clique, minus one (self-nomination was not allowed), to control for differences in clique sizes. Note that the use of the *received* and *given* nominations differs from the *reciprocal* friendship nominations used to compute clique membership status. To assess clique membership, we used the (reciprocal) friendship nominations from all classmates. In contrast, for the analyses on children's friendship choices, we used the friendship nominations given to and received from the other clique members.

*Children's social preference* was obtained through peer nominations. Based on the peer nomination procedure of Coie and Dodge (1988) children were asked to nominate the children in their class whom they liked least (Like Least nominations) and children whom they liked most (Like Most nominations). Unlimited nominations were used. The sum of these peer nominations was divided by the number of children in the class, minus one (self-nomination was not allowed). The Like Least and Like Most nominations were standardized within the class. Social preference was determined by subtracting the standardized Like Least nominations from the standardized Like Most nominations and again standardizing the results. Social preference is

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generally regarded as a reliable and valid measure of sociometric status (Cillessen & Mayeux, 2004a).

*Peer nominations of behavioral characteristics* were obtained through five descriptions. Children were asked to nominate all children in the class who fit the following descriptions: Doesn't obey at school (Oppositional behavior); Hits other children (Aggression); Is often scared (Anxiety); Is often sad (Depression); and Is nice to other children (Prosocial behavior). Oppositional behavior and Aggression were summed to measure externalizing behavior. Anxiety and Depression were summed to measure internalizing behavior. For each of these behavioral descriptions, the sum of all nominations received by the child was divided by the number of children in the class, minus one. Because peer nominations pool together the responses from all the classmates, peer nominations provide reliable data (Cole & White, 1993).

*Teacher ratings of behavioral characteristics* were assessed with the Problem Behavior at School Interview (PBSI; Erasmus MC, 2000). The PBSI is a 32-item teacher questionnaire in which teachers rated pupils' behavior on a 5-point Likert scale ranging from 'never applicable' to 'often applicable'. Oppositional behavior ( $\alpha = .91$ ) was assessed through 7 items, including "Disobeys teachers' instructions" and "Stubborn". Conduct problems ( $\alpha = .90$ ) were assessed through 12 items, including "Attacks other children physically" and "Steals". The scales Oppositional behavior and Conduct problems were summed to measure externalizing behavior. Anxiety ( $\alpha = .82$ ) consisted of 5 items, including "Afraid to go to school" and "Worries about many things". Depression ( $\alpha = .83$ ) contained 7 items, and included "Cries or is sad at school" and "Lack of energy". The scales Anxiety and Depression were summed to measure internalizing behavior. Finally, Prosocial behavior ( $\alpha = .80$ ) was assessed through 4 items, including "Helps other children" and "Comforts a child who cries or is sad".

### **Procedure**

The peer nominations were embedded in a larger interview on children's psychosocial functioning. In the spring of each year, a face-to-face interview was administered to all participating children by trained graduate and undergraduate students. All interviews were conducted in a quiet place in the school. Children were assured that their answers would be held confidential. Before starting with the peer nominations, interviewers first ascertained that children knew all the names on the peer nominations roster. Trained assistants then directed children to the first nomination, ascertained that they understood the behavioral description, and asked the children to nominate each child matching the description. Children received a small token reward after they had completed the survey.

In spring of first and second grade, trained graduate and undergraduate students administered the Problem Behavior at School Interview to the teachers in a face-to-face interview. A separate

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questionnaire was filled out for each pupil. Teachers received a book about an educational subject as acknowledgement of their cooperation with the study.

### Results

#### *Clique Membership Status and Child Characteristics in First and Second Grade*

In first grade, a total of 29 cliques were identified with an average size of 5.3 members (range 3 to 12 members). In second grade, 25 cliques were identified with an average size of 6.2 members (range 3 to 17). The means and standard deviations of the characteristics of boys and girls with a different clique membership status in first grade and second grade are presented in Table 2.1 and Table 2.2, respectively.

To examine whether clique members were better adjusted than non-clique members (i.e., isolated children and children who did have dyadic friendships, but were not member of a clique), two sets of MANCOVAs were conducted (one for each grade, corrected for intervention effects). Dependent variables were behavior characteristics and social preference, and factors were clique membership status and gender. We also included the gender-by-clique membership interaction in the model. When this interaction was significant, we analyzed the results separately for boys and girls.

In first grade, overall effects of children's clique membership status were found on the peer-nominated and teacher-rated child characteristics,  $F(14, 570) = 4.61, p < .001$ . Univariate analyses and post-hoc tests showed that both isolates and dyads had lower levels of peer-nominated and teacher-rated prosocial behavior and social preference than did clique members. Only dyads showed significantly higher levels of teacher-rated internalizing behavior than clique members. The interaction between clique membership status and gender was significant regarding peer-nominated internalizing behavior,  $F(2, 291) = 8.59, p < .001$ , and further analyses indicated that only girls classified as isolates or dyads showed more peer-nominated internalizing behavior than girls who were clique members. In second grade, we again found overall differences in peer- and teacher-ratings,  $F(12, 574) = 2.70, p < .001$ . Univariate tests and post-hoc comparisons showed that isolates had higher levels of peer-nominated externalizing behavior than did clique members. Isolates also had lower levels of prosocial behavior and social preference than dyads and clique members. The interaction between clique membership status and gender was significant regarding peer-nominated internalizing behavior,  $F(2, 292) = 9.56, p < .001$ . Only isolated boys showed more peer-nominated internalizing behavior than boys who were dyads or clique members.

These results suggest that clique members had less behavior problems than non-clique members. Some significant differences were also found between isolates and dyads in second grade. The average effect size (Cohen's  $d$ ; Cohen, 1988) of the differences between isolates and dyads was smaller than

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between dyads and clique members, however ( $d = .29$  and  $d = .38$ , respectively). Moreover, the results from the post-hoc analyses in first and second grade showed that the differences in adjustment between dyads and clique members were more often significant than the differences between isolates and dyads. Based on these results, and to prevent substantial limitations in statistical power due to small group sizes, we decided to group together isolates and dyads and compare them to clique members, in order to investigate stability and change in clique membership status.

### ***Stable versus Changing Clique Membership Status***

We investigated the numbers of children who changed their clique membership status in the classroom or had a stable status from first to second grade. We found that most clique members (168 of 223; 75%) remained in their position from first to second grade. The other 55 first-grade clique members (25%) became estranged from cliques between first and second grade. Less than half of the isolates in first grade were again identified as isolates in second grade (33 of 77; 43%). The other first-grade isolates (44 of 77; 57%) joined a clique between first and second grade. A substantial number of children in this study thus changed from isolates into clique members, or from clique members into isolates, over the period from first to second grade.

No gender difference in the distribution of clique membership status was found in first grade,  $\chi^2(2) = .94$ ,  $p = .82$ , nor in second grade,  $\chi^2(2) = .69$ ,  $p = .70$ . Girls, however, showed more stability in their clique membership status than boys,  $\chi^2(3) = 9.34$ ,  $p < .05$ . From the total of 149 girls in the sample, 20 were stable isolates, 92 were stable clique members, 16 joined a clique between first and second grade, and 21 girls became estranged from cliques. From the 151 boys, 13 were stable isolates, 76 were stable clique members, 28 joined a clique, and 34 boys became estranged from cliques. No differences between intervention and control group classes were found in the clique membership distribution in first grade,  $\chi^2(2) = .91$ ,  $p = .63$ , nor in second grade,  $\chi^2(2) = 1.65$ ,  $p = .44$ . Moreover, we did not find differences in stability and change of clique membership status from first to second grade between intervention and control group classes:  $\chi^2(3) = 2.90$ ,  $p = .40$ .

To further explore stability and change in clique membership, we investigated whether stable clique members changed from one clique to another from first to second grade. We found that only 4 out of the 168 stable clique members (2%) joined another clique over the year. In addition, 27 children (16%) were members of a clique that merged with another clique between first and second grade. These results indicate that clique membership indeed seems to be stable for children who remained clique members over the course of the year.

*Table 2.1* Peer-Nominated and Teacher-Rated Child Characteristics of Isolates, Children with Dyadic Friendships, and Clique Members in First Grade

	(a) Isolate <i>n</i> = 36		(b) Dyad <i>n</i> = 41		(c) Clique <i>n</i> = 223		<i>F</i> -test	Contrast
	Boys <i>n</i> = 18	Girls <i>n</i> = 18	Boys <i>n</i> = 22	Girls <i>n</i> = 19	Boys <i>n</i> = 109	Girls <i>n</i> = 113		
Peer nomination								
Externalizing	.27 (.23)	.10 (.16)	.22 (.20)	.05 (.04)	.21 (.20)	.03 (.04)	3.00	-
Internalizing	.04 (.04)	.10 (.08)	.03 (.03)	.11 (.10)	.06 (.07)	.06 (.04)	8.59*** <sup>A</sup>	a+b>c
Prosocial	.24 (.14)	.32 (.16)	.24 (.13)	.31 (.15)	.31 (.14)	.46 (.14)	17.07***	a+b<c
Social preference	-.85 (1.22)	-.46 (.82)	-.60 (1.03)	-.23 (.70)	-.06 (1.03)	.50 (.68)	19.79***	a+b<c
Teacher rating								
Externalizing	1.76 (.66)	1.60 (.72)	1.89 (.71)	1.56 (.46)	1.71 (.56)	1.36 (.40)	2.88	-
Internalizing	1.70 (.53)	1.93 (.51)	2.07 (.61)	1.95 (.64)	1.69 (.58)	1.70 (.63)	4.80**	b>c
Prosocial	3.29 (.69)	3.50 (.66)	3.22 (.60)	3.58 (.87)	3.58 (.71)	3.97 (.65)	8.64***	a+b<c

*Note.* Contrasts indicate that the groups differ significantly at  $p < .05$  using Games-Howell multiple comparisons. Numbers in parentheses represent Standard Deviations. \*\* $p < .01$ , \*\*\* $p < .001$ , <sup>A</sup> difference between groups was only significant for girls.

*Table 2.2* Peer-Nominated and Teacher-Rated Child Characteristics of Isolates, Children with Dyadic Friendships, and Clique Members in Second Grade

	(a) Isolate <i>n</i> = 36		(b) Dyad <i>n</i> = 52		(c) Clique <i>n</i> = 212		<i>F</i> -test	Contrast
	Boys <i>n</i> = 21	Girls <i>n</i> = 15	Boys <i>n</i> = 26	Girls <i>n</i> = 26	Boys <i>n</i> = 104	Girls <i>n</i> = 108		
Peer nomination								
Externalizing	.27 (.25)	.05 (.09)	.22 (.18)	.04 (.05)	.16 (.18)	.03 (.09)	3.11*	a>c
Internalizing	.15 (.16)	.06 (.07)	.07 (.08)	.09 (.09)	.04 (.06)	.09 (.08)	14.02*** <sup>B</sup>	a>b+c
Prosocial	.24 (.16)	.29 (.10)	.30 (.17)	.40 (.21)	.32 (.19)	.45 (.19)	5.95**	a<b+c
Social preference	-.97 (1.13)	-.28 (.97)	-.30 (1.03)	.40 (.77)	-.14 (.93)	.41 (.75)	10.91***	a<b+c
Teacher rating								
Externalizing	1.78 (.79)	1.60 (.66)	1.58 (.42)	1.47 (.55)	1.58 (.54)	1.33 (.44)	1.85	-
Internalizing	1.89 (.92)	1.87 (.70)	1.66 (.70)	2.01 (.70)	1.88 (.78)	1.81 (.72)	.15	-

*Note.* Contrasts indicate that the groups differ significantly at  $p < .05$  using Games-Howell multiple comparisons. Numbers in parentheses represent Standard Deviations. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , <sup>B</sup> difference between groups was only significant for boys.

***Child Characteristics and Stable versus Changing Clique Membership Status***

The means and standard deviations of the characteristics of children with a stable and changing clique membership status are given in Table 2.3. The analyses addressing the questions related to stability and change in clique membership status and associated behavioral characteristics were carried out in three steps. We first tested if, and how, children who changed their clique membership status from first to second grade were different from children who had stable positions. We included the gender-by-clique membership term in the model. If this interaction was significant, we analyzed the results separately for boys and girls. Two sets of MANCOVAs were conducted (one for each grade, corrected for intervention effects). Overall differences between groups were found on the peer-nominated and teacher-rated child characteristics in first grade,  $F(21, 813) = 4.27, p < .001$ , and in second grade,  $F(24, 821) = 2.94, p < .001$ . To explore the origins of these differences, planned contrasts were fitted<sup>1</sup>. We first compared the first-grade characteristics of children who were stable clique members (seventh column of Table 2.3) with children who became isolated in second grade (fifth column), to examine factors related to clique estrangement. Children who became estranged from cliques had lower levels of prosocial behavior than stable clique members in first grade. The interaction between gender and stability in clique membership status was significant for peer-nominated internalizing behavior,  $F(3, 289) = 5.62, p < .001$ . Only first-grade boys who became estranged from cliques ( $M = .08, SD = .10$ ) had higher levels of peer-nominated internalizing behavior than stable clique members ( $M = .05, SD = .05$ ). We next compared stable isolates (first column, Table 2.3) with isolates who became clique members (third column) on their first-grade characteristics, in order to examine factors related to clique entry. The results showed that stable isolates did not differ from children who joined a clique on any of the first-grade child characteristics.

Using second-grade data, we then tested whether newly-isolated children (sixth column, Table 2.3) were different from stable-isolated children (second column) on their second-grade characteristics. We found that stable-isolated children had lower levels of prosocial behavior and social preference than newly-isolated children in second grade. Finally, we tested whether the children who joined a clique (fourth column) were different from stable clique members (eighth column) in second grade. Results showed that only girls, but not boys, who were stable clique members in second grade had lower levels of externalizing behavior ( $M = .02, SD = .03$ ) and higher levels of social preference ( $M = .56, SD = .59$ ) than did those who joined a clique (externalizing behavior of new clique member girls:  $M = .11, SD = .22$ ; social preference of

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<sup>1</sup> The test results of the planned contrasts (indicating that the compared groups differ significantly at  $p < .05$ ) are available upon request.

*Table 2.3 Peer-Nominated and Teacher-Rated Child Characteristics of Stable Isolates, Children who Joined a Clique or Became Estranged from Cliques, and Stable Clique Members from First to Second Grade*

	Clique membership							
	Stable isolate <i>n</i> = 33		Isolate → Clique <i>n</i> = 44		Clique → Isolate <i>n</i> = 55		Stable clique <i>n</i> = 168	
	1 <sup>st</sup> Grade	2 <sup>nd</sup> Grade	1 <sup>st</sup> Grade	2 <sup>nd</sup> Grade	1 <sup>st</sup> Grade	2 <sup>nd</sup> Grade	1 <sup>st</sup> Grade	2 <sup>nd</sup> Grade
Peer nominations								
Externalizing	.13 (.19)	.16 (.22)	.18 (.20)	.14 (.19)	.16 (.18)	.15 (.16)	.10 (.16)	.09 (.14)
Internalizing	.08 (.08)	.09 (.12)	.06 (.07)	.07 (.09)	.08 (.08)	.10 (.11)	.05 (.04)	.07 (.07)
Prosocial	.26 (.13)	.27 (.17)	.29 (.16)	.28 (.17)	.32 (.15)	.33 (.18)	.41 (.16)	.42 (.20)
Social pref..	-.62 (1.00)	-.70 (1.18)	-.46 (.96)	-.43 (.99)	.00 (.93)	.02 (.93)	.30 (.90)	.29 (.79)
Teacher ratings								
Externalizing	1.80 (.66)	1.64 (.68)	1.65 (.64)	1.62 (.58)	1.62 (.51)	1.57 (.56)	1.51 (.51)	1.41 (.48)
Internalizing	1.92 (.56)	1.94 (.86)	1.92 (.61)	1.96 (.68)	1.60 (.44)	1.80 (.69)	1.73 (.64)	1.81 (.77)
Prosocial	3.41 (.84)	-	3.37 (.61)	-	3.66 (.61)	-	3.82 (.74)	-

*Note.* Numbers in parentheses represent Standard Deviations. Social pref = social preference.

## 2. Change and Stability in Clique Membership

new clique member girls:  $M = -.45$ ,  $SD = .97$ ; interaction gender and peer-nominated externalizing behavior:  $F(3, 290) = 3.78$ ,  $p < .05$ ; interaction gender and social preference:  $F(3, 290) = 3.88$ ,  $p < .01$ ).

Second, we tested whether children with changing clique membership status showed significantly larger changes in child characteristics scores between first and second grade than did children with a stable position. Repeated measures ANCOVAs (corrected for intervention effects) were conducted. We found an overall decrease in peer-nominated externalizing behavior ( $F(1,293) = 5.24$ ,  $p < .05$ ), and an interaction between externalizing behavior and clique membership status ( $F(3,293) = 2.90$ ,  $p < .05$ ). To study the origins of these differences, two planned contrasts were fitted. Contrasting stable isolates (Table 2.3, first and second column) with new clique members in second grade (third and fourth column) showed that new clique members' externalizing behavior declined from first to second grade, whereas stable isolates' externalizing behavior increased. Moreover, we found that new clique members (third and fourth column) decreased more in externalizing behavior than stable clique members (seventh and eighth column). This indicates that children who joined a clique changed their behavior to a larger extent than children who remained in a clique from first to second grade. No interaction with gender was found.

### ***Change in Clique Membership Status and Change in Given and Received Nominations***

Finally, we investigated the relation between change in friendship choices and change in clique membership status. To this end, we tested whether changes in clique membership status coincided with changes in given friendship, Like Most, and Like Least nominations *to* the other clique members, or with changes in received nominations *from* the other clique members. Results for children who joined a clique and for children who became estranged from cliques are given in Table 2.4. Repeated measures ANCOVAs (corrected for intervention effects) were used. The results showed that children who joined a clique between first and second grade did not significantly change in the number of friendships, Like Most, and Like Least nominations that they, themselves, gave to their (new, second grade) clique affiliates (Table 2.4, left panel). However, these children did receive significantly more friendship and Like Most nominations from their second grade clique affiliates than they did in first grade. Consequently, we found positive changes in friendship choices from the peers to the child, but no changes in friendship choices from the child to the peers.

*Table 2.4* First and Second Grade Given and Received Friendship, Like Most, and Like Least Nominations for Children who Changed in Clique Membership

	Isolate → Clique (n = 44)				Clique → Isolate (n = 55)			
	1 <sup>st</sup> Grade	2 <sup>nd</sup> Grade	<i>F</i> -ratio	ES	1 <sup>st</sup> Grade	2 <sup>nd</sup> Grade	<i>F</i> -ratio	ES
Friendship								
Given	.36 (.26)	.45 (.29)	1.74	.23	.62 (.27)	.38 (.24)	39.12***	.94
Received	.27 (.31)	.40 (.30)	5.86*	.43	.51 (.31)	.34 (.28)	18.99***	.58
Like most								
Given	.32 (.28)	.45 (.29)	2.69	.46	.50 (.32)	.50 (.29)	.00	.00
Received	.27 (.25)	.40 (.28)	7.93**	.50	.45 (.31)	.42 (.32)	1.02	.10
Like least								
Given	.07 (.10)	.08 (.10)	.11	.10	.08 (.14)	.09 (.15)	.08	.07
Received	.14 (.19)	.15 (.18)	.05	.05	.13 (.18)	.14 (.18)	.02	.06

*Note.* Numbers in parentheses represent Standard Deviations. ES = effect size using Cohen's *d*. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

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Children who became estranged from cliques from first to second grade (see Table 2.4, right panel) did not change significantly in the number of Like Most and Like Least nominations that they either gave or received from their first-grade clique affiliates. Newly isolated children, however, both gave and received fewer friendship nominations in second grade, as compared to first grade. No effects for either group were found for Like Least nominations. No interactions with gender were found.

### **Discussion**

This study aimed to investigate the role of clique membership and isolation from cliques in the psychosocial adjustment of early elementary school children. To this end, we tested (1) whether clique members differed from non-members in child characteristics; (2) whether we could identify children with a stable or changing clique membership status, and characteristics related to this change and stability; and (3) whether these findings were the same for boys and girls. Although ethnographic studies have investigated dynamics of inclusion and exclusion in adolescent cliques (e.g., see Adler & Adler, 1998; Eder, Evans, & Parker, 1995), until now our knowledge about change and stability in clique membership status and early elementary school children's behavioral adjustment has been limited. The insight into clique membership and isolation yielded by this study provides an important addition to our knowledge about childhood peer relations, and may complement the existing literature on aspects of peer interactions such as sociometric status and dyadic friendships.

We found that clique members were better adjusted than non-clique members. We compared isolated children with dyads (i.e., children who had dyadic friendships but were not clique members) and with clique members in first and second grade. The results indicated that the differences in level of adjustment between dyads and clique members seemed to be larger than the differences between isolates and dyads. These results were most specific for prosocial behavior, social preference, and internalizing behavior. Only according to peers in second grade did isolated children show more externalizing behavior than clique members.

Next, we found that although clique membership status was moderately stable over the period from first to second grade, there were also a fair number of children who changed their clique membership status over this period. This highlights the importance of conceptualizing and operationalizing clique membership and isolation in early elementary school as dynamic processes, rather than as static conditions. We showed that children who became estranged from cliques from first to second grade showed less prosocial behavior and more internalizing behavior than stable clique members. These findings indicate that internalizing behavior and low levels of prosocial behavior may be risk factors for clique estrangement. Moreover, stable-isolated children showed an increase in their level of externalizing behavior, whereas children who joined cliques showed a decrease in externalizing behavior. These results indicate that

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children who are stable isolates change their behavior in a negative way, according to the peers, whereas children who join a clique change their behavior in a positive way. Regarding change in friendship choices, we showed that becoming estranged from cliques reflects a decline in friendship choices received from the clique, as well as those given to the clique. On the other hand, joining a clique was reflected most of all by an increase in friendship choices received from the clique, and not by an increase in friendship choices given to the clique. Finally, we found some gender differences in these results. Only isolated girls showed more peer-nominated internalizing behavior in first grade in comparison to clique members. Further, differences in second-grade externalizing behavior and social preference existed only among girls. However, only isolated boys in second grade showed more internalizing behavior than clique members, and internalizing behavior was only found to precede clique estrangement for boys. These findings have several implications.

Differences between clique members and isolated children existed on all measured behavioral domains. Whereas differences between clique members and isolates were found, most of all, regarding prosocial and internalizing behavior, children who joined a clique and children who became estranged from cliques also showed changes in externalizing behavior. These results highlight the importance of taking a broad range of behaviors into account when studying the clique membership status of early school-age children. In this developmental period, clique members likely have more opportunities than children isolated from cliques to practice social skills that are important for their further development, and to experience social support from peers (Boivin et al., 2005; Rubin et al., 2006). This may explain why clique members show more prosocial and less internalizing behavior than isolated children, and why children who join a clique show a decrease in externalizing behavior. We found that internalizing behavior and an increase in externalizing behavior were related to childhood clique estrangement, whereas prosocial behavior and a decline in externalizing behavior promoted children's clique entry. Although risk factors for childhood peer rejection and factors that may promote childhood peer acceptance have been studied extensively (Cillessen & Mayeux, 2004a; Coie, Dodge & Kupersmidt, 1990), the predictors of children's clique membership and isolation from cliques are not well known. This study shows that efforts to prevent or reduce clique isolation in early school age may improve through focusing on early signs of adjustment problems in a broad range of behavioral domains.

Furthermore, our findings support the view that studying children's clique membership status provides unique information about children's social development. That is, our results suggest that clique membership is differently related to behavioral problems, compared to children's sociometric status. For instance, we found that children who were isolated from cliques showed more adjustment problems than clique members. In contrast, studies investigating differences between the sociometric status groups have not found that neglected

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children showed more behavioral problems than popular or average children (Cillessen & Mayeux, 2004a; Coie et al., 1990). To be able to investigate whether children's clique membership status is indeed uniquely related to children's adjustment, however, research is needed that simultaneously considers several aspects of peer relations, such as clique membership, sociometric status, and dyadic friendships.

An additional implication regarding our findings on clique entry is that children who joined a clique showed declines in peer-nominated externalizing behavior. This process coincided with an increase in friendship choices received from the clique members. These findings are consistent with the study of van Lier, Vuijk, and Crijnen (2005) about the impact of the universal classroom-based intervention the Good Behavior Game on the development of antisocial behavior in elementary school children. These authors found a reduction in antisocial behavior among intervention children who were initially highly antisocial. This reduction in antisocial behavior coincided with affiliations with non-deviant peers that were initiated by the non-deviant peers. In the present study, we found that the co-occurrence of positive behavioral change and the increase in friendship choices received from the clique (rather than increase in friendship choices given to the clique) was linked to the process of clique entry. In line with the van Lier et al. (2005) study, this suggests that active involvement of peers is a necessary ingredient in efforts to promote the child's entry into a clique, apart from efforts to directly reduce his/her disruptive behavior.

Finally, we found some gender-specific results. Our findings suggest that boys change more in clique membership status, while girls are more often stable in their clique membership status. Although the differences between boys and girls regarding internalizing behavior do not seem to be consistent, high social preference and low levels of externalizing behavior seem to especially characterize girls who are stable clique members. We would indeed expect that female clique members would show low levels of externalizing behavior, because this behavior is less accepted among female than among male clique members (Maccoby, 1998). Nonetheless, the results do not seem to imply that isolated girls have more behavioral problems than isolated boys, as we hypothesized in the introduction. We must note, though, that we may have had limited statistical power to identify gender differences in our study. That is, the number of participants in each of the clique membership classifications was relatively small. Our results suggest, however, that clique membership status may have different implications for boys and girls (see also Urberg et al., 1995). Future studies with larger sample sizes may shed more light on the specific gender effects related to children's clique membership status.

Some limitations of the present study must be addressed. One limitation involves the relatively short follow-up period of only one year. To identify whether stable-isolated children in the period of early elementary school are on a trajectory towards increasing social problems, we should follow these

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children, and contrast them with children with different clique membership statuses over a longer period of time. Ladd and Troop-Gordon (2003) showed that chronic peer problems, such as chronic friendlessness, rejection, and victimization, mediate the association between early child behavioral characteristics and later psychosocial problems. Similarly, Brendgen, Vitaro, Bukowski, Doyle, and Markiewicz (2001) found that stable-rejected children had especially high levels of externalizing problems from age 6 to 12 years. A longer follow-up would be needed, though, in order to explore the long-term effects of different clique membership positions and accompanying child characteristics on the further social development of children.

Also, we focused in this study on the distinction between clique members and clique isolates. However, investigating the characteristics of the clique to which a member belongs may further improve our knowledge about the processes of clique membership and clique isolation. That is, children affiliate mainly with children who show similar behavioral characteristics (e.g., Cairns et al., 1988; Espelage et al., 2003). We would therefore gain more insight into clique entry and clique estrangement if we knew not only about the behavior of the individual who joins or becomes estranged from cliques, but also the similarity between the individual's behavior and that of the clique. For instance, it is possible that children are more likely to join a clique if their behavior is already highly similar to the behavior of the other clique members. In contrast, children may be more likely to become estranged from cliques if their behavior is highly dissimilar to that of the other clique members. Therefore, future studies about children's change and stability in clique membership status would also benefit from taking the characteristics of the clique into account.

### ***Implications for Research, Policy, and Practice***

Despite these and possible other limitations, the results from this study provide new and valuable insights into childhood clique membership and isolation from cliques, which have implications for our research and prevention efforts pertaining to children's social development. This study indicates that, already in the period of early elementary school, clique membership and isolation from cliques should be conceptualized and operationalized as dynamic processes rather than as static conditions. Furthermore, by focusing on characteristics of children with stable and changing clique membership statuses, we were able to identify risk factors for (continued) clique isolation and factors that may promote clique membership. This knowledge, and the additional knowledge of the role played by the individual child and his/her peers in the process of clique entry and clique estrangement, provides insights that are useful in designing and improving preventive interventions targeting peer relations and childhood maladjustment.

### Chapter 3

## Peer Group Affiliation of Children: The Role of Perceived Popularity, Likeability, and Behavioral Similarity in Bullying

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### Abstract

To understand children's peer group affiliation, this study examined to what extent children in naturally occurring groups resemble each other on bullying, likeability, and perceived popularity. Participants were fourth- to sixth-grade pupils ( $N = 461$ ). Peer groups were identified using the Social Cognitive Map procedure. Resemblance on bullying, likeability, and perceived popularity was evaluated by means of variance components models. Resemblance in peer groups was strongest for perceived popularity, followed by bullying and likeability. Moreover, resemblance on bullying could for a large part be attributed to the high perceived popularity of the group, and to a lesser extent, to the low likeability of the group. It is concluded that children showing bullying seem to affiliate with each other most of all to attain or maintain their position in a perceived popular peer group. Results stress the importance of considering the functionality of bullying from a group perspective.

### Introduction

A great deal of aggression in schools involves bullying (Pellegrini & Long, 2002), which can be defined as a subset of aggression that occurs over time in a relationship characterized by an imbalance of strength and power (Olweus, 1994). Although individual characteristics such as high emotionality (Pellegrini, Bartini, & Brooks, 1999) and a low level of prosocial behavior (Perren & Alsaker, 2006) have been found to play a role in bullying, increasing attention is being paid to the group context in which bullying takes place (Atlas & Pepler, 1998; DeRosier, Cillessen, Coie, & Dodge, 1994; Rodkin & Hodges, 2003; Salmivalli, 2001).

It has been shown repeatedly that many bullies are a member of a peer group (Pellegrini et al., 1999; Salmivalli, Huttunen, & Lagerspetz, 1997). In addition, various studies demonstrated that children affiliate with children who show similar behavior, including those who engage in bullying, aggressive, or otherwise antisocial behavior. For example, Cairns, Cairns, Neckerman, Gest, and Gariépy (1988) showed in their study with fourth- and seventh-grade pupils that both aggressive and non-aggressive boys and girls tended to affiliate with children with the same aggression level. Haselager, Hartup, van Lieshout, and Riksen-Walraven (1998) found that children tended to be more similar to their

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friends on antisocial behavior than on shyness and cooperation. Furthermore, bullies seem to form social networks with other bullies, whereas non-bullying children tend to form networks with other non-bullying children (Salmivalli et al., 1997). Similarly, Espelage, Holt, and Henkel (2003) found that children show a resemblance to their peer group affiliates on fighting and bullying. These findings indicate that both children who bully and children who do not, tend to affiliate with each other. However, as will be discussed below, the explanation of this phenomenon is far from straightforward. The present study will address this issue by investigating the resemblance among fourth- to sixth-grade children belonging to naturally occurring peer groups with respect to bullying, likeability, and perceived popularity. Moreover, we will analyze to what extent peer resemblance in groups with regard to bullying can be attributed to peer resemblance in groups in terms of likeability and perceived popularity. Thus, this study searches for the explanation of the peer group affiliation of children by investigating peer group similarities on bullying, likeability, and perceived popularity.

#### ***Three Explanations***

The observed behavioral similarity within peer groups on bullying gives rise to the so-called *behavioral similarity hypothesis* (Cairns et al., 1988; Kupersmidt, DeRosier, & Patterson, 1995). This hypothesis suggests that behavioral similarity in peer groups occurs not only because affiliates become more alike in behavior through peer influence (socialization), but also because children are attracted to others who are behaviorally similar to themselves (selection). The abovementioned findings on the relation between being friends and behavioral similarity in aggression and bullying usually have been interpreted as supporting the behavioral similarity hypothesis. However, studies examining the reverse relation, that is, whether children who are behaviorally similar in terms of aggression or bullying actually like each other, provide evidence that contrasts with this hypothesis. For example, Olthof and Goossens (2008) showed that bullying children tend to dislike others who engage in bullying. Likewise, aggressive children do generally not accept similarly aggressive children (Hektner, August, & Realmuto, 2000). In line with these findings, some researchers proposed that other processes than behavioral similarity, such as rejection by peers, may contribute to the similarities between affiliates on antisocial behavior (Dishion, Andrews, & Crosby, 1995; Hanish, Martin, Fabes, Leonard, & Herzog, 2005; Hektner et al., 2000).

Peer rejection is a social process that has often been considered relevant to our understanding of aggression. Rejection is generally defined in terms of (lack of) likeability or sociometric popularity (Rodkin & Hodges, 2003). Children who bully are often not well liked and rejected by their peers (Goossens, Olthof, & Dekker, 2006; Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996). Because children who show bullying may be isolated from the socially desired non-aggressive peer groups, their rejected

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social status may be a reason to affiliate with other rejected children. What is more, belonging to a rejected peer group may provide bullying children a social context in which their rejected status is sustained and their bullying is reinforced (Dishion, Patterson, & Griesler, 1994). Support for this peer group similarity in rejection has been found in a study by Bagwell, Coie, Terry, and Lochman (2000), which showed that rejected children tend to be members of small peer groups that are comprised of other low status peers. We will refer to this account of bullying children's peer group affiliation as *the likeability explanation*. Note, however, that this account does not seem to explain why children who show bullying form deviant peer groups rather than remaining isolated in the classroom context. As was pointed out above, being similar in terms of bullying does not imply reciprocal social acceptance (Hektner et al., 2000; Olthof & Goossens, 2008). The potential gains derived from membership of a deviant peer group for children who show bullying, therefore, remain unclear. To arrive at a better explanation of children's peer group affiliation, it may be helpful to particularly focus on such gains. This is a key element in the next account, denoted as the *perceived popularity explanation*.

Although aggression in general and bullying in particular is often seen as reflecting social incompetence on the side of the child (Coie & Dodge, 1998), recently theorists have argued that such behaviors, along with other more prosocial behaviors, might also reflect children's skilled use of social strategies to further their own aims (Sutton, Smith, & Swettenham, 1999). The primary aim that has been identified is to obtain a dominant position in one's peer group, as indicated by having a reputation of being popular and having access to valuable resources (Hawley, 1999; Pellegrini & Long, 2002). These theories seem to be consistent with findings from ethnographic studies on school social dynamics. Adler and Adler (1998) showed that adolescents who are member of dominant peer groups often use bullying as a technique to maintain their exclusive position at the top of the social hierarchy. Likewise, Eder, Evans, and Parker (1995) found that children in high status peer groups tend to gossip and pick on lower status children to uphold a sense of superiority. These studies support the idea that bullying can be a social strategy to obtain or maintain membership of a dominant peer group.

The above account opens the possibility that the observed behavioral similarity within peer groups on bullying actually is a by-product of children's social dominance position in the social structure. Specifically, when dominant children would affiliate with each other they can also be expected to be somewhat similar in terms of bullying, because such behavior reflects one of the strategies that they may use to acquire or maintain dominance. Indeed, empirical evidence supports this relationship between bullying and social dominance in peer groups. That is, 'tough' children who show high levels of aggression, bullying, and perceived popularity have been found to affiliate with others who are also high in antisocial behavior and perceived popularity (Estell,

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Farmer, & Cairns, 2007; Farmer, Estell, Bishop, O'Neal, & Cairns, 2003; Kwon & Lease, 2007).

Indications that affiliation may be based on social dominance arise from several sources. For example, observations from the ethological literature suggest that social dominance is a characteristic involved in the process of group affiliation. Specifically, De Waal (1982) points out, that leaders in chimpanzee communities recognize that they need to form coalitions, because the group as a whole can overthrow one leader. Moreover, according to Corsaro and Eder (1990), children collectively produce a set of stratified peer groups in late childhood and early adolescence. That is, during (pre)adolescence, social hierarchies emerge in which social dominant children make up the most popular peer groups. What is more, individual children may gain a social dominant status by joining these popular peer groups (Adler & Adler, 1998; Eder et al., 1995). Therefore, it can be expected that affiliates in classrooms may show similarities on bullying and likeability, but even more so on measures of their dominance status in the social structure.

In the present study, children's social dominance is indexed by a measure of their perceived popularity. Perceived popularity reflects whether a child is thought to be popular, in contrast to being liked by classmates (indicating likeability). Whereas likeability has often been established as being associated with prosocial behavior, perceived popularity has been found to be related to both prosocial and antisocial behavior (Cillessen & Mayeux, 2004b; Lafontana & Cillessen, 2002; Rose, Swenson, & Waller, 2004). Lease, Kennedy, and Axelrod (2002) found that perceived popularity in elementary school was related to social visibility, social dominance, and social prerogatives, such as leadership, admiration, and social control. Similarly, Parkhurst and Hopmeyer (1998) showed that perceived popularity and likeability were related only moderately, while perceived popularity was linked more strongly with social dominance than was likeability. In sum, perceived popularity seems to be well suited as a measure of social dominance.

Based on the above ideas, it can be hypothesized that peer group affiliates show similarities on bullying and likeability, but even more so on perceived popularity. It appears that although children who bully are often not liked, some are perceived as popular and, therefore, have a large influence and a high social dominance status. The gains derived from this influence and dominance status may act as a major force countering the potential undesirable consequences of bullying in the process of peer group affiliation. Therefore, we propose the view that these perceived popular bullying children who succeed in belonging to identifiable peer groups tend to affiliate with other children who are perceived as popular as well. In this view, the perceived popularity status of children is a stronger possible explanation of the peer group affiliation of children than their behavioral similarity in terms of bullying.

#### ***Gender- and Age Differences in Peer Group Affiliation and Bullying***

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Several researchers have acknowledged a distinction between physical and relational subtypes of aggression. Physical aggression involves physical damage or the threat of physical damage, whereas relational aggression involves manipulation of and damage to peer relationships (Crick & Grotpeter, 1995). Although a number of studies have shown that girls tend to exhibit more relational aggression and boys more physical aggression (Bonica, Arnold, Fisher, Zeljo, & Yershova, 2003; Crick & Bigbee, 1998; Lagerspetz, Björkqvist, & Peltonen, 1988), other studies have not found a gender difference in relational aggression (Espelage et al, 2003; Underwood, Galen & Paquette, 2001). Crick and Grotpeter and Lagerspetz et al. have explained gender differences in aggression in terms of peer relations. Most children select same-sex friends, which results in different types of social relationships in boys' and girls' peer groups (Archer & Côté, 2005). A greater emphasis on physical dominance appears to exist in boys' peer groups, whereas in girls' peer groups, intimacy, cohesiveness, and inclusion and exclusion from the peer group play a larger role. Therefore, it can be expected that boys use physical types of aggression, including physical bullying, to achieve or maintain their membership in a perceived popular peer group. The organization of girls' peer groups on the other hand facilitates the use of relational types of aggression, including relational bullying. This study will test these possibilities.

Besides the investigation of gender differences in peer group affiliation and bullying, it is also important to acknowledge that factors related to children's peer group affiliation may change with age. For instance, according to Hawley (1999), especially young children use coercive strategies to compete for resources, while as children grow older, they develop other, more prosocial strategies to obtain or maintain social dominance. Similarly, Cillessen and Mayeux (2004b) found that physical aggression was decreasingly predictive of children's perceived popularity status, indicating that physical aggression becomes less effective as a means to gain a social dominant position as children grow older. Therefore, it can be expected that (especially physical) bullying is used less often in peer groups with older children to achieve or maintain a position in a perceived popular peer group than in peer groups with younger children. These potential age effects will be addressed in this study.

#### ***Research Aims***

In summary, the general aim of the present study was to investigate child characteristics relevant to understanding affiliation in naturally occurring peer groups. Several studies suggest that social dominance might be an important factor in children's peer group affiliation (e.g., Adler & Adler, 1998; Eder et al., 1995; Hawley, 1999). Moreover, some studies support the idea that the level of bullying in peer groups is related to the perceived popularity status of peer groups (Estell et al., 2007; Farmer et al., 2003; Kwon & Lease, 2007). In fact, children may use bullying as a strategy to obtain or maintain membership of high status peer groups. However, to our knowledge, no other study thus far

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has empirically investigated the perceived popularity perspective compared to the behavioral similarity and likeability perspectives in explaining the peer group affiliation of children. We add to the existing theories about bullying and peer group affiliation by empirically testing the relations between bullying, likeability, and perceived popularity at the level of the peer group. Our first question regards the relative importance of bullying, likeability and perceived popularity in the explanation of fourth- to sixth-grade children's peer group affiliation. To answer this question, we investigated the resemblance in peer groups on bullying, likeability, and perceived popularity. If the resemblance within peer groups on perceived popularity is larger than the resemblance between peer group members on likeability and bullying, this would lend support to the hypothesis that perceived popularity is, compared to likeability and bullying, a stronger explanation of children's peer group affiliation.

As a second question of this study, we raise the possibility that peer resemblance with regard to bullying in peer groups in fact may be accounted for in terms of the other proposed explanations, that is, likeability or perceived popularity. To this end, we examined to what extent resemblance on bullying in naturally occurring groups can be attributed to the resemblance in terms of likeability (i.e., peer groups low in likeability show high levels of bullying and peer groups that are highly liked show low levels of bullying) and perceived popularity (i.e., peer groups that are perceived as highly popular show high levels of bullying and peer groups low in perceived popularity show low levels of bullying). We hypothesize that the peer resemblance on bullying can most of all be attributed to the social dominance of the peer group, therefore, we expect that the resemblance on bullying is better explained by perceived popularity than by likeability.

In answering both research questions, we will also investigate gender and age differences in the peer group affiliation of fourth- to sixth-grade boys and girls. We hypothesize that, especially for boys, the similarities between peer group affiliates on physical bullying can be attributed to perceived popularity. In contrast, we hypothesize that especially for girls the similarities between peer group affiliates on relational bullying can be attributed to perceived popularity. Moreover, we hypothesize that (especially physical) bullying is more strongly related to the perceived popularity of the peer group for members of peer groups with younger children, because coercive strategies may become less effective for achieving or maintaining a position in a social dominant peer group as children grow older.

#### **Method**

##### ***Participants***

Participants included 461 (233 boys and 228 girls) fourth- to sixth-grade pupils from 19 classes in eight different elementary schools. The schools were located in a rural area and in a medium-sized town in the vicinity of Amsterdam, the Netherlands. Elementary schools in the Netherlands comprise

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grades 1 – 6. Most pupils do not change classes and remain in the same self-contained class during their elementary school period. The average age of participants was 11 years and 4 months (range 9 years and 7 months to 13 years and 6 months). The response rate was high: more than 90 percent of parents gave permission for their children to participate. Children's ethnicity was recorded for two thirds of the total sample and indicated that 82 percent of children had a Dutch/Caucasian background. Other ethnic backgrounds included other European countries, Surinam, Turkey, and Morocco.

#### *Measures*

*Social Cognitive Map (SCM) procedure.* To identify naturally occurring peer groups, the peer-report Social Cognitive Map procedure was administered (Cairns et al. 1988). The SCM procedure appears to be a valid and reliable method for identifying peer groups in classes (Gest, Farmer, Cairns, & Xie, 2003). To obtain social cognitive maps of peer groups in their class, children were asked: "Often in schools children hang around together a lot. Is that the case in your class? Which children in your class hang around together a lot?" Children were encouraged to name peer groups until they could not think of another peer group. If children did not name themselves in a peer group, they were asked: "And do you hang around together with other children a lot?"

These individual social cognitive maps were first aggregated into a co-nomination matrix using the NETWORKS 4.0 program (Kindermann, Kwee, & Sage, 2002). This co-nomination matrix represented a composite social cognitive map of the class. Next, binomial  $z$  tests were performed on the conditional probabilities that children were co-nominated into a peer group. Significant connections between children were determined at  $p < .01$ . From the significant connections between children provided by the composite social cognitive map, children were assigned to peer groups using the 50 percent decision rule. This means that children are classified as being members of a peer group when they have significant connections with at least 50 percent of the other children in the peer group. For more details about this method to identify peer groups in school classes, we refer to Kindermann (1993).

In total, 80 peer groups were identified. Because the focus of this study was to examine resemblance between affiliates, children who did not belong to a peer group (isolated children: 15 boys and 22 girls; dyad members: 17 boys and 25 girls) were left out of further analyses. Eighty-two percent of the boys and 83 percent of the girls belonged to same-sex groups. Furthermore, both boys' and girls' peer groups had an average size of approximately five members (range three to nine members).

*Perceived popularity.* Peer nominations were used to assess perceived popularity. Children were asked: "Who are the popular kids in your class?" The perceived popularity nominations were summed and logit transformations (i.e., the log of the odds of being nominated by other children in the class) were performed to normalize the distribution.

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*Sociometric Status Rating.* Likeability was measured by the Sociometric Status Rating (SSrat) procedure (Maassen, Akkermans, & Van der Linden, 1996). In this procedure, children rated their classmates on a 7-point rating scale ranging from *dislike very much* (assigned -3) to *like very much* (assigned +3), with the midpoint of the scale (0) reflecting neutral judgments. Likeability was then determined by the average received likeability rating. The natural log of the average rating was used to normalize the distribution. A rating approach was used in this study, because it provides more reliable, stable, and refined scores compared to nomination-based methods for the assignment of likeability (Hymel, Vaillancourt, McDougall, & Renshaw, 2002).

*Bullying Role Nomination Procedure.* To identify children who engage in bullying, the Bullying Role Nomination Procedure (BRNP) was used (Goossens & Olthof, 2005). The BRNP is based on the New Participant Role Scales (Goossens et al., 2006), an adaptation of the Participant Role Questionnaire (Salmivalli et al., 1996) that was developed to identify not only bullies and victims, but also other participants in bullying, including assistants, reinforcers, defenders, and outsiders. Research with the New Participant Role Scale showed that the questionnaire is a reliable and valid assessment of participation in bullying (Goossens et al.). In addition, the BRNP was developed to systematically measure different forms of bullying, such as physical, relational, material, and verbal bullying.

Although the full range of participant roles can be identified by the BRNP, only Bullying (Cronbach's  $\alpha = .85$ ) was used in the present study. Physical bullying was described as "Children who bully by hitting or kicking or pinching. Or children who bully another child by pushing that child, or threatening to hit that child, or by throwing something at that child, or by attacking that child in another way." Relational bullying was described as "Children who bully other children by not letting these children participate in games, just ignoring them, or saying mean things about these children to others. But instead of ignoring or saying mean things about others, you can also think of walking away from someone who wants to play a game, or not listening to another child, for example by putting your hands over your ears." Verbal bullying was described as "children who insult other children or laugh at other children". Material bullying was described as "Children who take things from other children, or destroy or loose those things on purpose". After describing each form of bullying, a list with illustrative examples was handed out and children were asked whether they knew children in their class who initiated bullying in that way.

Because testing the hypotheses concerning gender differences requires separate measures of physical and relational bullying, we computed such measures based on the corresponding items. Because our main hypotheses concern bullying in general, a corresponding measure was computed by summing children's two highest scores on all four bullying items. A Spearman's rho correlation of .84 was found between these two highest scores.

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Accordingly, the general bullying measure reflects the frequency of children's most used forms of bullying, without being affected by their not using those forms of bullying for which they lack the required skill or physical prowess. The bullying scores of a child were determined by counting the number of nominations that child received from classmates for these behaviors. Logit transformations were then computed to normalize the distribution.

#### **Procedure**

An interview was administered individually by trained undergraduate students in two sessions of 30 minutes for 2 days within a 1-week period in spring. The research was conducted in a quiet place somewhere in the school. Children were assured that their answers would be treated confidentially. During the first session, children were interviewed using the Social Cognitive Map procedure, and completed the Perceived Popularity measure and the Sociometric Status Ratings. Children received a small token reward after they had completed the interview.

#### **Data Analysis**

Resemblance of children within groups was quantified by means of Intra Unit Correlations (IUCs). Consider for purpose of illustration child  $i$  in peer group  $j$ . His or her behavioral score designated by  $y_{ij}$  is thought to consist of 1) the mean behavioral score in the sample ( $\beta_0$ ), 2) one part it has in common with all other children in the same group  $j$  ( $u_j$ ), and 3) an individual or unique part ( $e_{ij}$ ). Accordingly, the score of child  $i$  in group  $j$  can be expressed as  $y_{ij} = \beta_0 + u_j + e_{ij}$ .

All children in a peer group share the same score  $u_j$ . If child  $i$  belongs to a group that shows a typical common behavior this child's score  $u_j$  will be (highly) positive. If child  $i$  belongs to a group not showing this specific behavior his or her score  $u_j$  will be (highly) negative. Moreover, if children show similarities in peer groups on a specific attribute or behavior, some groups will have high scores of  $u_j$ , whereas other groups will have low scores of  $u_j$ . As a result, the between group variance  $\text{Var}(u_j) = \sigma_u^2$  will be relatively large. In contrast, if children do not show similarities on a specific attribute or behavior, the between group variance  $\text{Var}(u_j) = \sigma_u^2$  will be small.

Assuming the model  $y_{ij} = \beta_0 + u_j + e_{ij}$ , the variance of the scores  $y_{ij}$  ( $\text{Var}(y_{ij})$ ) can be split accordingly into the variance of common parts  $\text{Var}(u_j) = \sigma_u^2$  and the variance of the individual unique parts  $\text{Var}(e_{ij}) = \sigma_e^2$ . That is,  $\text{Var}(y_{ij}) = \text{Var}(u_j) + \text{Var}(e_{ij}) = \sigma_u^2 + \sigma_e^2$ . The IUC expresses  $\text{Var}(u_j)$  (resemblance within groups) as a fraction of the total variance. The IUC is  $\rho = \text{Var}(u_j) / (\text{Var}(u_j) + \text{Var}(e_{ij})) = \sigma_u^2 / (\sigma_u^2 + \sigma_e^2)$ . The IUC ranges from 0 to 1. Small values of  $\rho$  point to low resemblance and large values to strong resemblance within peer groups.

From a statistical point of view, the equation  $\text{Var}(y_{ij}) = \text{Var}(u_j) + \text{Var}(e_{ij})$  corresponds to a so-called variance components model, which can be

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interpreted from a multilevel perspective (Goldstein, 1995).  $\text{Var}(u_j)$  corresponds to the so-called level II variance, whereas  $\text{Var}(e_{ij})$  correspond to the level I variance. Both components can easily be estimated using Multilevel software. We used MLwiN (Rasbash et al., 2000) for that purpose. The program allows for the estimation of the IUC for boys and girls separately. Standard errors of estimated IUCs were computed using equations given in Snijders and Bosker (1999), and significance of differences in IUCs was tested by computing a z-statistic and comparing its value to the normal distribution (Young & Bhandary, 1998).

To describe to what extent children in naturally occurring groups resemble each other, IUCs were computed for the bullying variables, perceived popularity and likeability. It was hypothesized that the apparent resemblance between children in peer groups with respect to bullying can be attributed most of all to perceived popularity. To test this hypothesis, we examined the changes in the IUCs of bullying after controlling for group perceived popularity and group likeability (cf. Snijders & Bosker, 1999). The variables group perceived popularity ( $p_j$ ) and group likeability ( $l_j$ ) were specified, by computing group means for perceived popularity and likeability. To correct the IUC for group perceived popularity and likeability, the model  $y_{ij} = \beta_0 + u_j + e_{ij}$  was extended with the variables  $p_j$  and  $l_j$ . Gender (with boys coded as 1), the mean age in the peer group, and possible interactions were entered to the model to explore gender and age differences. The resulting model is  $y_{ij} = \beta_0 + \beta_1 \cdot g_{ij} + \beta_2 \cdot a_j + \beta_3 \cdot p_j + \beta_4 \cdot l_j + \beta_5 \cdot p_j \cdot g_{ij} + \beta_6 \cdot l_j \cdot g_{ij} + \beta_7 \cdot p_j \cdot a_j + \beta_8 \cdot l_j \cdot a_j + u_j + e_{ij}$ , where the coefficient  $\beta_1$  is the effect of gender; the coefficient  $\beta_2$  the effect of group age;  $\beta_3$  and  $\beta_4$  the effects of group perceived popularity and group likeability;  $\beta_5$  and  $\beta_6$  the interactions between gender and group perceived popularity and gender and group likeability; and  $\beta_7$  and  $\beta_8$  the interactions between group age and group perceived popularity and between group age and group likeability. Entering these variables will reduce the common term  $u_j$ , and thus  $\text{Var}(u_j)$ . As a consequence, the IUC of bullying will also be reduced. Significance of the estimates was tested by comparing the t-statistics of the regression coefficient to the normal distribution (Singer & Willett, 2003).

## Results

### *Peer Group Classification Using Bullying*

To get an initial idea about how bullying was distributed across the naturally formed peer groups, we first standardized bullying by gender ( $Z_g$ ). Children were classified as bullies when  $Z_g \geq +.50$  (Farmer et al., 2002). We then classified peer groups and labeled these groups as *bullying* if at least 50 percent of members were bullies, or, in large groups of more than six members, if these groups had at least three bullying members. Peer groups were labeled as *mixed* when there were bullies in the peer group, but, because there were only a small number of bullies, the group could not be classified as a *bullying* group. Peer groups were labeled *non-bullying* when there were one or no bullying

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members. By this procedure, 15 of the total of 80 identified peer groups were classified as *bullying* groups. Eight groups contained more than one bully, but less than 50 percent of the members could be classified as bully. Therefore, these eight peer groups were classified as *mixed* groups. Fifty-seven peer groups were classified as *non-bullying* groups. Of these 57 groups, 44 groups had no bullying members and the other 13 groups had one member that could be classified as bully. In addition, we found that six boys and five girls of the 79 children that did not belong to a peer group could be classified as bully.

#### ***Similarities between Affiliates on Perceived Popularity, Likeability, and Bullying***

To establish the extent to which children resemble their affiliates in peer groups, IUCs were estimated (see Table 3.1). Boys had significantly higher scores than girls on general bullying ( $t = 2.29, p < .05$ ) and physical bullying ( $t = 3.38, p < .01$ ), but not on perceived popularity ( $t = .43, p > .05$ ), likeability ( $t = 1.00, p > .05$ ), and relational bullying ( $t = .25, p > .05$ ). We found that children in peer groups with younger members showed more physical bullying than children in older peer groups ( $t = 2.25, p < .05$ ). No effect of the mean age in peer groups was found for the other variables. The results presented in Table 3.1 show a significantly different IUC ( $z = -4.45, p < .001, two\ sided$ ) on perceived popularity for boys ( $\rho = .42$ ) and girls ( $\rho = .58$ ), indicating that boys in groups share 42 % of their perceived popularity or lack thereof with their affiliates, whereas girls share 58%. The IUC for likeability (boys:  $\rho = .11$ ; girls:  $\rho = .27$ ) also differed significantly between boys and girls ( $z = -5.33, p < .001, two\ sided$ ).

Significant IUC differences between boys and girls were found for general bullying ( $z = -2.49, p < .01, two\ sided$ ), physical bullying ( $z = -2.50, p < .01, two\ sided$ ), and relational bullying ( $z = -4.69, p < .001, two\ sided$ ). Boys had 35 percent common variance on general bullying and 33 percent on physical bullying, whereas girls had 44 percent common variance on general bullying and 42 percent on physical bullying. For relational bullying, the IUC was somewhat lower;  $\rho = .22$  for boys and  $\rho = .38$  for girls. The IUC of perceived popularity differed significantly from the IUCs of likeability and bullying for both boys and girls. The IUC of perceived popularity was higher than the IUC of likeability (boys:  $z = 7.75, p < .001, two\ sided$ ; girls:  $z = 10.33, p < .001, two\ sided$ ), higher than the IUC of general bullying (boys:  $z = 1.75, p < .05, two\ sided$ ; girls:  $z = 4.67, p < .001, two\ sided$ ), higher than the IUC of physical bullying (boys:  $z = 2.25, p < .05, two\ sided$ ; girls:  $z = 5.33, p < .001, two\ sided$ ), and also higher than the IUC of relational bullying (boys:  $z = 5.00, p < .001, two\ sided$ ; girls:  $z = 6.67, p < .001, two\ sided$ ).

*Table 3.1* Parameter Estimates of the 2-Level Random Intercept Model for Perceived Popularity, Likeability, and Bullying

	Parameter	Perceived popularity	Likeability	General bullying	Physical bullying	Relational bullying
<b>Fixed</b>						
Intercept (Mean)	$\beta_0$	-2.31 (.21)**	1.53 (.02)**	-3.04 (.11)**	-3.56 (.09)**	-3.04 (.13)**
Gender (Boys)	$\beta_1$	-0.12 (.28)	-.02 (.02)	.39 (.17)*	.54 (.16)**	.05 (.20)
Mean age in peer group	$\beta_2$	-.002 (.017)	-.001 (.001)	-.012 (.010)	-.018 (.008)*	-.009 (.011)
<b>Random</b>						
Between-group variance	$\sigma_{u_{0jboys}}^2$	1.06 (.31)	.00 (.00)	.55 (.17)	.48 (.16)	.17 (.09)
	$\sigma_{u_{0jgirls}}^2$	1.66 (.42)	.01 (.00)	.41 (.12)	.25 (.07)	.31 (.12)
Within-group variance	$\sigma_{e_{0ijboys}}^2$	1.49 (.17)	.02 (.00)	1.01 (.12)	.96 (.11)	.61 (.07)
	$\sigma_{e_{0ijgirls}}^2$	1.21 (.14)	.02 (.00)	.53 (.06)	.35 (.04)	.51 (.06)
<b>Intra unit correlation</b>						
	$\rho_{boys}$	.42 (.04)	.11 (.04)	.35 (.04)	.33 (.04)	.22 (.03)
	$\rho_{girls}$	.58 (.03)	.27 (.04)	.44 (.04)	.42 (.04)	.38 (.04)

*Note.* Values enclosed in parentheses represent the standard errors. \*  $p < .05$ , \*\*  $p < .01$ .

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These results indicate that boys and girls within peer groups resemble each other strongly on perceived popularity. That is, children high in perceived popularity tend to affiliate with other children high in perceived popularity, and children with low perceived popularity tend to form peer groups with other children low in perceived popularity. The resemblances in likeability and several forms of bullying are significantly lower than the resemblance in perceived popularity.

#### ***Resemblance on Bullying Explained by Perceived Popularity and Likeability***

To establish to what extent similarity within peer groups on bullying can be attributed to the perceived popularity of the group and the low likeability of the group, we computed IUCs for bullying after controlling for group perceived popularity and group likeability. To account for gender and age differences, we also included gender and the mean age in the peer group as main effects and the interactions between gender and group perceived popularity, gender and group likeability, group age and group perceived popularity, and group age and group likeability into the multilevel model. Because the parameter estimates of the gender interactions and the interaction between group age and group likeability were not significant, we excluded them from the final multilevel model. Table 3.2 shows the parameter estimates of the final multilevel models for the different types of bullying.

Previous analyses showed different IUCs of general bullying, physical bullying, and relational bullying for boys and girls. For that reason, separate IUCs for boys and girls were estimated after controlling for perceived popularity and likeability. General bullying (Table 3.2) appeared to be higher for children who belonged to peer groups that were perceived as popular ( $\beta_3 = 2.11$ ,  $t = 2.60$ ,  $p < .01$ ) and not liked by classmates ( $\beta_4 = -2.49$ ,  $t = 4.21$ ,  $p < .001$ ). The significant interaction between group age and group perceived popularity ( $\beta_5 = -.012$ ,  $t = 2.00$ ,  $p < .05$ ) indicates that bullying was more strongly related to the perceived popularity of the peer group for children in younger peer groups. After controlling for group perceived popularity and group likeability, the IUC of general bullying reduced from  $\rho = .35$  to  $\rho = .15$  for boys and from  $\rho = .44$  to  $\rho = .23$  for girls, indicating that approximately half of the similarity in peer groups on bullying could for both boys and girls be attributed to the perceived popularity and the low likeability of the peer group, with perceived popularity accounting for the largest part of the reduction in the IUC (from  $\rho = .35$  to  $\rho = .19$  for boys and from  $\rho = .44$  to  $\rho = .29$  for girls).

Also for physical bullying, perceived popularity of the group ( $\beta_3 = 2.47$ ,  $t = 3.35$ ,  $p < .001$ ) and low likeability of the group ( $\beta_4 = -2.21$ ,  $t = 4.14$ ,  $p < .001$ ) were associated with physical bullying. Moreover, physical bullying was more strongly related to the perceived popularity of the group for children in younger peer groups (interaction group perceived popularity and group age:  $\beta_5 = -.018$ ,  $t = 2.57$ ,  $p < .01$ ). For boys, the IUC of physical bullying reduced from  $\rho = .33$  to  $\rho = .16$  after controlling for group perceived popularity and group

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likeability, with perceived popularity accounting for the largest part of the reduction in the peer group resemblance of physical bullying (from  $\rho = .33$  to  $\rho = .21$ ). For girls, the IUC of physical bullying reduced from  $\rho = .42$  to  $\rho = .35$  after controlling for group perceived popularity and group likeability. As expected, group perceived popularity and group likeability account for a large part of the boys' similarity on physical bullying, relative to girls.

The final analyses (Table 3.2) showed that relational bullying appeared to be higher for children who belonged to peer groups that were perceived as popular ( $\beta_3 = 1.51, t = 2.48, p < .01$ ) and not liked by classmates ( $\beta_4 = -1.63, t = 3.40, p < .001$ ). The significant interaction between group perceived popularity and group age ( $\beta_5 = -.008, t = 2.00, p < .05$ ) indicates that relational bullying was more strongly related to the perceived popularity of the group for children in younger peer groups. For boys, the IUC of relational bullying reduced from  $\rho = .22$  to  $\rho = .02$  after controlling for group perceived popularity and group likeability, corresponding to a reduction in similarity of approximately nine tenth of its original value. The IUC of relational bullying for boys was most of all reduced by controlling for group perceived popularity (from  $\rho = .22$  to  $\rho = .03$ ). After controlling for group perceived popularity and group likeability, the IUC of relational bullying for girls reduced from  $\rho = .38$  to  $\rho = .02$ , which could be attributed most of all to the perceived popularity of the group (i.e., a reduction from  $\rho = .38$  to  $\rho = .09$ ). The reduction from 38 percent to 2 percent is very large and indicates that a large part of the resemblance in peer groups on relational bullying could be attributed especially to the perceived popularity of the peer group.

In sum, these results show that the perceived popularity and the low likeability of the peer group accounted for the resemblance within naturally occurring peer groups on bullying. That is, peer groups high in perceived popularity and low in likeability tend to show a large amount of bullying, whereas peer groups low in perceived popularity and high in likeability tend to show little bullying. Compared to the level of likeability of the group, the resemblance in peer groups on bullying could for the largest part be attributed to the level of perceived popularity of the group. Moreover, the perceived popularity of the group seems to predict bullying especially for children in younger peer groups. The group perceived popularity and low group likeability accounted for similarity of boys on both physical and relational bullying and similarity of girls on especially relational bullying.

*Table 3.2* Parameter Estimates of the Multilevel Model

		General bullying			Physical bullying			Relational bullying		
		Estimate	<i>t</i>	<i>p</i>	Estimate	<i>t</i>	<i>p</i>	Estimate	<i>t</i>	<i>p</i>
Intercept (mean)	$\beta_0$	7.16 (2.33)	3.07	< .01	7.88 (2.11)	3.73	< .01	4.41 (2.06)	2.14	< .05
Gender (Boys)	$\beta_1$	.40 (.13)	3.08	< .01	.54 (.12)	4.50	< .01	.03 (.18)	.17	> .05
Mean age in peer group	$\beta_2$	-.012 (.007)	1.71	> .05	-.018 (.007)	2.57	> .05	-.011 (.009)	1.22	> .05
Perceived popularity	$\beta_3$	2.11 (.81)	2.60	< .01	2.47 (.74)	3.34	< .01	1.51 (.61)	2.48	< .01
Likeability	$\beta_4$	-2.49 (.59)	4.22	< .01	-2.21 (.54)	4.09	< .01	-1.63 (.48)	3.40	< .01
Perceived popularity *group age	$\beta_5$	-.012 (.006)	2.00	< .05	-.016 (.005)	3.20	< .01	-.008 (.004)	2.00	< .05
Between-group variance	$\sigma^2_{u,boys}$	.18 (.09)			.18 (.09)			.01 (.05)		
	$\sigma^2_{u,girls}$	.16 (.06)			.19 (.06)			.01 (.00)		
Within-group variance	$\sigma^2_{e,boys}$	1.01 (.12)			.95 (.11)			.61 (.07)		
	$\sigma^2_{e,girls}$	.53 (.06)			.35 (.04)			.51 (.06)		
Intra unit correlation										
	$\rho_{boys}$	.15 (.03)			.16 (.03)			.02 (.03)		
	$\rho_{girls}$	.23(.04)			.35 (.04)			.02 (.03)		

*Note.* Values enclosed in parentheses represent the standard errors.

#### **Discussion**

The results of the present study support and extend existing perspectives on the social dynamics of bullying. The major contribution of this study is that it compared competing hypotheses regarding the explanation of children's peer group affiliation through the investigation of actually occurring patterns of similarity in peer groups. This comparison showed that especially the perceived popularity hypothesis has a strong explanatory value. In accordance with the behavioral similarity hypothesis, we found that peer group affiliates showed resemblance to each other on bullying. However, peer group affiliates were even more similar to each other on perceived popularity. Moreover, we also found that the perceived popularity of the group and to a lesser extent the low likeability of the group accounted for a large proportion of the resemblance between affiliates on bullying. The resemblance in peer groups on bullying could for boys be attributed for 67 percent and for girls for 53 percent to the perceived popularity of the group and the low group likeability. These findings indicate that naturally occurring peer groups that are perceived as highly popular and, in addition, low in likeability tend to show a large amount of bullying; whereas groups that are low in perceived popularity and, in addition, highly liked tend to show little bullying. These results suggest that children's peer group affiliation is, compared to similarity in bullying and likeability, best explained by similarity in perceived popularity.

Although the resemblance between affiliates on aggression is often described in terms of behavioral similarity (Kupersmidt et al., 1995) or likeability (Bagwell et al., 2000; Dishion et al., 1995; Hektner et al., 2000), this study shows that the perceived popularity hypothesis can be considered as an important additional perspective on children's peer group affiliation. Variance components models were evaluated in this study to empirically compare the perceived popularity perspective on peer group affiliation with the behavioral similarity hypothesis and the likeability hypothesis. The use of variance components models enabled us to investigate more accurately the relationship between different forms of popularity and bullying for children who are grouped within peer groups; it therefore appears to be a valuable approach to investigate the relationship between bullying and peer group affiliation.

Our finding that children in peer groups showed considerable similarities on perceived popularity is consistent with previous research in suggesting that there is a connection between peer group affiliation and perceived popularity. Different studies showed that in (pre)adolescence, social hierarchies emerge in which socially dominant children make up the most perceived popular peer groups. Some children may become perceived as popular because they join these popular groups, while other children may lose their social status because they become excluded from the popular peer groups (Adler & Adler, 1998; Corsaro & Eder, 1990; Eder et al., 1995). When taking into account that social dominance appears to be an important characteristic in the peer group affiliation of children, several theorists have in addition proposed

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that children may use antisocial strategies such as bullying to obtain or maintain membership of a dominant peer group. Children may use bullying as an inclusion technique to get into favor with leaders of the high status peer groups. At the same time, members of the perceived popular peer groups may use bullying to exclude lower status children from their peer group; thereby maintaining their exclusive status in the social structure (Adler & Adler, 1998). Likewise, Xie, Swift, Cairns and Cairns (2002) showed by using conflict narrative reports that social aggression, including gossiping, social exclusion, and social isolation, was associated with network centrality. Xie et al. concluded from these findings that a central position in the social network may be needed to effectively use social aggression. We found that resemblance in peer groups on bullying was related to the perceived popularity of the group. That is, peer groups perceived as highly popular tend to show a large amount of bullying, whereas peer groups with low levels of perceived popularity tend to show little bullying. As a result, this study is consistent with the abovementioned theories and findings about bullying as a social strategy to obtain or maintain membership of a perceived popular peer group. Building on previous research that found a connection between the level of perceived popularity and antisocial behavior in peer groups (Estell et al., 2007; Farmer et al., 2003; Kwon & Lease, 2007), the present study demonstrated that considering the group affiliation of those children who bully and those who do not from a perceived popularity view may be a useful perspective for the explanation of children's peer group affiliation.

Some differences emerged in this study concerning physical and relational subtypes of bullying. The resemblance in peer groups on relational bullying could be attributed for a large part to the perceived popularity of the group for both boys and girls. However, although the resemblance on physical bullying could also be attributed to perceived popularity for both boys and girls, this was less true for physical when compared to relational bullying. This indicates that the perceived popularity hypothesis seems to have more explanatory power for relational bullying than for physical bullying. Concerning gender differences, we found that girls showed more resemblance in peer groups on both relational and physical bullying than boys. However, a substantially larger part of the resemblance on physical bullying could be attributed to perceived popularity for boys than for girls. These results suggest that in particular, boys use physical bullying in addition to relational bullying as a strategy to achieve or maintain their membership of a peer group that is perceived as popular. Consequently, the hypothesis that physical dominance is more important in boys' peer groups than in girls' peer groups (Crick & Grotpeter, 1995; Lagerspetz et al., 1988) appears to be supported by this study. However, this hypothesis should be qualified by the consideration that for boys relational bullying seems to be at least as important as physical bullying.

Our findings indicate that members of peer groups with younger children show more physical bullying than members of peer groups with older

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children. Moreover, we found that bullying was less predicted by the perceived popularity of the peer group for members of peer groups with older children. These results suggest that in preadolescence, (especially physical) bullying may become a less effective strategy to achieve or maintain a position in a perceived popular peer group (Cillessen & Mayeux, 2004b; Hawley, 1999). Our sample consisted of children who were all still in elementary school. It would, however, also be interesting to see how bullying and perceived popularity in peer groups are related as children move into secondary school where they are confronted with a much larger group of often unfamiliar peers (see, e.g., Pellegrini & Long, 2002).

Some limitations of the present study need to be addressed. First, it is important to note that no causal inferences can be made based on our findings. Although we found support for the perceived popularity hypothesis compared to the behavioral similarity and likeability hypotheses, these hypotheses were not tested directly in terms of their influence in the formation of peer groups. The importance of selection and peer influence processes in the explanation of the perceived popularity similarity in peer groups could not be addressed in the present study and can only be investigated longitudinally. Moreover, this study did not address the question of whether bullying is a strategy to obtain *or* to maintain membership of a perceived popular peer group. Aggression as a means to achieve high status is supported by Pellegrini and Long (2002), who showed in their longitudinal study that bullying increased as children made the transition from primary to middle school. After this transition period, bullying decreased and dominance increased. On the other hand, several studies (Adler & Adler, 1998; Cillessen & Mayeux, 2004b) have indicated that children may use aggression mainly for the maintenance of their high status. In conclusion, further longitudinal research is needed to be able to draw conclusions about the direction of the relationship between perceived popularity and bullying and their influence in the formation of peer groups.

Furthermore, future research should be directed toward the notion that children may use more prosocial strategies as well as bullying to become perceived as popular in the social structure. Hawley (1999) explains that children can use coercive strategies, such as aggression, but also prosocial strategies, such as cooperation and helping, to compete with other children for resources and achieve social dominance. Hawley (2003) showed that children who used both coercive and prosocial strategies were highly effective, socially central and socially skilled. Moreover, Rodkin et al. (2000) found two subtypes of popular fourth- to sixth-grade boys. Popular-prosocial (model) boys were perceived as cool, athletic, leaders, cooperative, studious, not shy, and non-aggressive. Popular-antisocial (tough) boys were perceived as cool, athletic, and antisocial. These findings may indicate that besides bullying, children can use other strategies to become perceived as popular and to attain membership of a peer group that is perceived as popular. In addition, future research could benefit from including subtypes of bullies. That is, recent evidence indicates

### 3. Peer Group Affiliation of Children

that there may be some children who bully and show aggressive behavior who belong to popular peer groups, while others belong to unpopular groups (Estell et al., 2007; Farmer et al., 2002; 2003). Therefore, acknowledging that bullies may not be a homogeneous group may shed more light on the peer group affiliation of these children.

To conclude, this study examined the relative importance of behavioral similarity in bullying, likeability, and perceived popularity in explaining the peer group affiliation of children. We found that children showed the largest amount of peer group similarity in perceived popularity, compared to bullying and likeability. We also found that the resemblance in peer groups on bullying could be attributed, to a large extent, to the level of perceived popularity of the group, and to a lesser extent, to the level of likeability of the group. Our results lend most support for the perceived popularity hypothesis regarding children's peer group affiliation. In fact, perceived popularity can be considered as an important force countering the potential undesirable effects of bullying in the process of peer group affiliation. Moreover, these results highlight the importance of regarding bullying as a problem involving the whole group, rather than considering it as an individual problem (Juvonen & Graham, 2004). Although additional longitudinal research is needed to gain more knowledge about the influence of perceived popularity on bullying and peer group affiliation, the present findings indicate that considering the functionality of bullying from a group perspective contributes significantly to our understanding of children's peer group affiliation.



## **Chapter 4**

# **Longitudinal Associations between Clique Membership Status and Internalizing and Externalizing Problems during Late Childhood**

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Submitted for publication*

### **Abstract**

This study examined the longitudinal link between clique membership status and the development of psychopathology in 451 children followed annually from age 9-12 years. Classroom clique membership status was identified through social network analysis and internalizing and externalizing problems were assessed using peer nominations. While controlling for concurrent experiences of social preference and having dyadic friendships, a high clique membership probability was related to low levels of internalizing problems and to an increase in externalizing problems from age 9-12 years. The link between clique membership and the increase in externalizing problems was found for boys only. These results indicate that while clique members appear to have fewer internalizing problems than children who are isolated from cliques, the externalizing problems of boys seem to be fostered within cliques.

### **Introduction**

Peer relations form an important context for children's social development (for reviews, see Hay, Payne, & Chadwick, 2004; Rubin, Bukowski, & Parker, 2006). Children's peer interactions, including their dyadic friendships, are often nested within larger social networks, for instance in cliques. Cliques are cohesive groups of children who interact more with each other than with other children (Shrum & Cheek, 1987; Urberg, Degirmencioglu, Tolson, & Halliday-Sher, 1995). It has been theorized that clique members show lower levels of psychopathology than children who are isolated from cliques. Specifically, because children may regard clique membership as highly important, being isolated from cliques may negatively impact children's self-esteem and may lead to feelings of loneliness (Brown & Lohr, 1987; Hoza, Bukowski, & Beery, 2000). Moreover, being isolated from cliques may deprive children of the opportunity to attain social skills and to learn social norms and rules (Boivin, Vitaro, & Poulin, 2005; Rubin et al., 2006), and can therefore be assumed to be associated with children's behavior problems.

Scant research has focused on the importance of clique membership status in childhood, however. That is, most studies investigating cliques have centered on adolescence (e.g., Cohen, 1977; Ennett & Bauman, 1994; Espelage, Holt, & Henkel, 2003; Urberg et al., 1995). Being a member of a clique may,

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nonetheless, be salient during late childhood, as this is the period where achieving group identity and group acceptance is believed to be a central developmental task (Buhrmester, 1990; Buhrmester & Furman, 1987; Parker & Gottman, 1989). Indeed, studies focusing on social withdrawal in childhood have demonstrated that withdrawn children experience feelings of anxiety, loneliness, depressed mood, and show more externalizing behavior than other children (Bell-Dolan, Reaven, & Peterson, 1993; Bowker, Bukowski, Zargarpour, & Hoza, 1998; Harrist, Zaia, Bates, Dodge, & Pettit, 1997; Rubin, Burgess, & Coplan, 2002; Rubin & Mills, 1988; Younger & Daniels, 1992). Further, there is some evidence from studies that have directly focused on clique membership status that children who are members of a clique are indeed better adjusted than children who are isolated from cliques. For instance, Wentzel and Caldwell (1997) demonstrated in their study with sixth-grade students that clique members showed higher levels of academic achievement than children isolated from cliques. In addition, Henrich, Kuperminc, Sack, Blatt, and Leadbeater (2000) found that sixth- and seventh-grade clique members not only had higher GPAs, but also showed, according to the teacher, fewer internalizing problems than isolated children.

Thus, there is some theoretical and empirical support for the notion that clique members show lower levels of psychopathology than children who are isolated from cliques. The knowledge about this association is limited, however, because the link with psychopathology has rarely been studied longitudinally over multiple years of children's lives. The role of clique membership status in the *development* of children's internalizing and externalizing problems remains, therefore, uncertain. Moreover, studies that investigated cliques in a longitudinal design (Cairns, Leung, Buchanan, & Cairns, 1995; Degirmencioglu, Urberg, Tolson, & Richard, 1998; Shrum & Cheek, 1987) have, to our knowledge, not linked clique membership to psychopathology. To gain more knowledge about the proposed beneficial role of clique membership in late childhood, we focused on three specific topics in the present study: (a) whether clique membership status from age 9-12 years was related to the development of psychopathology during this age period; and specifically, whether this relation was different for internalizing versus externalizing problems; (b) whether the association between clique membership status and psychopathology development remained significant after controlling for the co-occurrence of known risk and protective factors in the peer relations domain; and (c) whether the association between clique membership status and psychopathology was similar for boys and girls.

The theoretical knowledge and limited empirical evidence there is about the link between clique membership status and psychopathology in childhood seem to support the idea that clique members show lower levels of psychopathology than children who are isolated from cliques. This presumed beneficial effect may only pertain to internalizing problems, however. In contrast, there are reasons to assume that clique membership status may actually

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be *positively* related to children's externalizing problems. That is, evidence shows that children with externalizing problems often affiliate in cliques (Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988). Moreover, children who show externalizing problems and who nonetheless manage to be clique members, tend to affiliate with children who display similar externalizing problems (Cairns et al., 1988; Espelage et al., 2003; Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998). Possibly as a consequence, being a member of a clique may enhance the development of externalizing problems through socialization processes such as peer pressure, conformity, and reinforcement. For instance, deviancy training (i.e., talking and joking with friends about deviant topics such as substance use and breaking the law) has been found to be associated with an increase in adolescent delinquent behavior (Dishion, Spracklen, Andrews, & Patterson, 1996; Dishion, McCord, & Poulin, 1999). Also, Adler and Adler (1995) showed that adolescents tend to use aggression as a technique to maintain their position in a clique. These findings indicate that externalizing problems may develop with support from the peer network, in particular when children affiliate with others who show externalizing problems. Besides clique membership status as a factor associated with low levels of psychopathology in general, clique membership can thus, alternatively, be hypothesized to foster the development of externalizing problems. Therefore, the first objective in the present study was to investigate the association between clique membership status during late childhood and the development of both internalizing and externalizing problems during this age period.

In addition to the uncertain role of clique membership status as beneficial or, on the other hand, as a risk factor associated with the development of psychopathology, it is unknown whether clique membership status is related to psychopathology above and beyond correlated peer experiences, such as social preference and having dyadic friendships. An abundance of studies have demonstrated that these peer experiences play an important role with respect to children's behavioral and emotional development. More specifically, peer rejection has been found to predict the development of internalizing and externalizing problems independent of children's initial characteristics (Ladd & Troop-Gordon, 2003; Snyder, Prichard, Schrepferman, Patrick, & Stoolmiller, 2004; Vitaro, Pedersen, & Brendgen, 2007). Also, not having dyadic friendships has been found to predict internalizing problems (Bagwell, Newcomb, & Bukowski, 1998; Pedersen, Vitaro, Barker, & Borge, 2007; Pelkonen, Marttunen, & Aro, 2003). Clique members often have more reciprocated friendships and are better accepted by their peers than children who are isolated from cliques (Wentzel & Caldwell, 1997). Consequently, it is possible that the association between clique membership status and the development of internalizing and externalizing problems is confounded by the co-occurrence of other aspects of peer relations. The second objective in the present study was, therefore, to test the link between clique membership status and the

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development of psychopathology, while simultaneously accounting for the associations between clique membership status, social preference, and having dyadic friends.

Finally, it is unknown whether the link between clique membership status and psychopathology is similar for boys and girls. At least in adolescence, girls tend to be more often members of a clique than boys (Cohen, 1977; Urberg et al., 1995). Yet, it is unclear whether this sex difference in frequency of clique membership also translates in sex-specific links between clique membership status and psychopathology. Although not specifically found for clique membership status, social preference has been found to be more strongly related to psychopathology for boys than for girls (DeRosier, Kupersmidt, & Patterson, 1994). However, others have failed to find sex differences in the link between peer relations and psychopathology (Ladd & Troop-Gordon, 2003; Pedersen et al., 2007; van Lier, Vuijk, & Crijnen, 2005; Vitaro et al., 2007). Therefore, the final objective in this study was to explore possible sex differences in the link between clique membership status and internalizing and externalizing problems.

In sum, in the present study we aimed to investigate the role of clique membership status from age 9-12 years in the development of psychopathology during this age period. Specifically, we aimed to test the hypothesis that clique membership would help children against developing internalizing problems. Moreover, we aimed to test two competing hypotheses about the link between clique membership status and externalizing problems. According to the first hypothesis, clique membership would be beneficial for children's behavioral development and, therefore, would be associated with low levels of externalizing problems. In contrast, the competing hypothesis states that clique membership would foster externalizing problems, in particular when clique members affiliate with others who show externalizing problems. Further, to test whether clique membership status is linked to psychopathology above and beyond other known risk- and protective factors in the peer relations domain, the co-occurrence of social preference and of dyadic friendships was taken into account. Finally, we explored possible sex differences in clique membership status and in the link between clique membership status and psychopathology.

#### **Method**

##### ***Participants***

Participants included 451 children (236 boys and 215 girls) from five different elementary schools in a small community in northwestern Quebec, Canada. In each year of data collection, all French speaking children in the community were targeted for participation in the study. At least 90 percent of children from the targeted classrooms participated in the study in each year. Children included in the study were on average 9.11 years ( $SD = .36$ ) at the initial time point of this study (at the end of grade 3) and were followed over 3 years, until age 12 years (at the end of grade 6). The majority of the children (>

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90%) had a French Canadian background. Participants' socioeconomic status, measured with the Blishen, Carroll, and Moore (1987) occupational prestige scale ( $M = 43.21$ ,  $SD = 15.53$ ), was in accordance with a representative sample throughout the Province of Quebec, Canada ( $M = 43.99$ ,  $SD = 13.00$ ). Eighty-one percent of children lived in intact families, 10 percent lived in blended family households, 8 percent in single parent families, and 1 percent lived in other family configurations.

To be included in the present study, information needed to be available for a child on at least two out of four time points on all study variables. In total 451 children were included in the study sample by virtue of this criterion. Of these 451 children, 338 children (75%) had information on at least three time points on the study variables. Attrition was due to a lack of parental permission, moving out of the school district, or absence on the day of data collection. For children who had missing data on any of the four time points, missing values were estimated by using a full information maximum likelihood method. The children included in the final sample were compared with children who did not meet our study criteria on the study variables in grade 3. No gender differences and differences in parent occupational prestige were found. However, we did find that children who were included in the study showed less internalizing behavior ( $F(1, 444) = 14.88$ ,  $p < .01$ ), less externalizing behavior ( $F(1, 444) = 8.91$ ,  $p < .01$ ), were more often clique members ( $\chi^2(1, N = 445) = 12.66$ ,  $p < .01$ ), had a higher social preference ( $F(1, 444) = 10.19$ ,  $p < .01$ ), and more dyadic friendships ( $F(1, 444) = 12.09$ ,  $p < .01$ ) than children who did not meet our study criteria.

#### **Measures**

All instruments were administered in French. Instruments that were originally in English were translated into French and then translated back into English. English-speaking judges verified the semantic similarity between the back-translated items and the original items in the questionnaires.

*Peer nominations of externalizing and internalizing behavior* from age 9-12 years were obtained through behavioral descriptions of the Pupil Evaluation Inventory (PEI, Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976). Names of all children in a given class were handed out to the participants. Two research assistants ensured that all participants recognized the names of all classmates by reading them aloud in front of the class. The children were then asked to circle the names of the children who fitted the behavioral descriptions. Scores were corrected for class size by dividing the received nominations by the number of children in the class minus one (self-nomination was not allowed). Externalizing behavior was assessed by 8 items (e.g., 'starts fights' and 'is disruptive'). Internalizing behavior was also assessed by 8 items (e.g., 'is too shy to make friends easily' and 'is unhappy or sad').

*Clique membership status* of all children from age 9-12 years was identified through social network analysis (SNA) using the program

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Kliquefinder (Frank, 1995; 1996). Kliquefinder is based on a clustering algorithm to detect cohesive subgroups. The algorithm identifies cliques by maximizing an objective function, which looks at the probability that a child interacts with someone in his or her clique. The program detects cohesive cliques in terms of a concentration of interactions within the cliques relative to the extent of interactions across cliques. For more information about the Kliquefinder program, see Frank (1995). Children's friendship choices were used as input for the identification of cliques, and for assessing children's clique membership. Children were asked each year to nominate up to four friends in the classroom. Children were considered to have a reciprocated friendship when the nominated friend also nominated the target child as one of his/her four best friends (Bukowski & Hoza, 1989). Clique membership was conceptualized in the present paper as having a minimum of two (un-)reciprocated friendship nominations with other members of the clique. Following Ennett and Bauman (1994), we used both reciprocated and unreciprocated friendship nominations of all children within a classroom for input of the program. We weighted the friendship nominations so that reciprocated friendships represented twice the interaction of unreciprocated friendships (i.e., reciprocated friendships received a weight of 2 and unreciprocated friendships a weight of 1).

A dummy-coded variable was created each year to measure clique membership (clique member = 1; isolated from cliques = 0). The output of the Kliquefinder program with the final clique solution showed that children with only one link to a clique were sometimes identified as clique members. Moreover, some cliques consisted of strings of (un-) reciprocated friendships where children were only connected to one other child in the clique. We decided to reclassify these children as isolates, because these children did not meet our predefined criteria of clique membership. No cliques were detected in 2 out of 19 classrooms in grade 4 and in 3 out of 17 classrooms in grade 6. Because it is uncertain whether Kliquefinder was unable to detect cliques in these classes or whether cliques truly didn't exist in these classes, the clique membership status of these participants was handled as missing for the relevant time point.

*Social preference* from age 9-12 years was assessed through peer nominations. Based on the peer nomination procedure of Coie and Dodge (1988), children were asked to nominate three children in their class whom they liked least (Like Least nominations) and three children whom they liked most (Like Most nominations). The Like Least and Like Most nominations were corrected for class size by dividing the nominations by the number of children in the class minus one (self-nomination was not allowed). Social preference was determined by subtracting the Like Least nominations from the Like Most nominations. Social preference is generally regarded as a reliable and valid measure of sociometric status (Cillessen & Mayeux, 2004a).

*Dyadic friendships* from age 9-12 years were measured with the friendship nomination procedure described above. Only reciprocated friends (i.e., when the nominated friend also nominated the target child as one of his/her

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four best friends) were used in the present study. We summed the total number of reciprocated friendship nominations of children per time point to assess dyadic friendships.

*Disruptiveness of clique affiliates* from age 9-12 years was measured for children who were members of a clique. To assess clique affiliates' disruptiveness, the peer-nominated externalizing problems of all members of a clique were summed. The externalizing score of the target child was then subtracted from the summed clique score. The resulting score was divided by the number of children in a clique minus one to correct for the size of the clique.

*Sociodemographic information* was obtained through mother-reported parental occupation using the Blishen et al. (1987) occupational prestige scale. The scores are based on the average income and average education level associated with occupations in Canada. Scores were first averaged across the two parents and next across the years the data were collected.

#### **Procedure**

Each spring, children spent 2 hours of classroom time answering questionnaires. After children were informed about the purpose of the study, they were assured that their answers would be held confidential and that they did not have to answer any of the questions if they did not want to. Trained research assistants administered the questionnaires in the absence of the teachers to emphasize that participants' answers would not be revealed to the teachers.

#### **Results**

##### ***Descriptive Statistics***

Two hundred seventy-three (71%), 298 (76%), 277 (77%), and 250 (83%) children were members of cliques at age 9, 10, 11, and 12 years, respectively. No significant differences between boys and girls were found in their clique membership status from age 9-12 years. Cliques had an average size of 6.43 (range 3 to 12), 5.64 (range 3 to 10), 5.43 (range 3 to 11), and 5.47 (range 3 to 11) members from age 9 to age 12 years, respectively. The means and standard deviations of clique members' and isolated children's peer-nominated internalizing and externalizing problems, social preference, and dyadic friendships from age 9-12 years are in Table 4.1. We tested the associations between clique membership, social preference, and having dyadic friends from age 9-12 years with Kendall's  $\tau$  correlations. We found that clique membership was moderately correlated with social preference (range  $r = .24$  to  $.31$ ,  $p < .05$ ), and also moderately correlated with having dyadic friends (range  $r = .35$  to  $.39$ ,  $p < .05$ ) across the years.

##### ***Model Building***

All estimates in the tested models were controlled for parent occupational prestige and sex. The models were fitted using Mplus 4.21

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(Muthén & Muthén, 1998-2007). First, a latent growth model for categorical data was specified to model clique membership from age 9-12 years. In this model, the intercept of clique membership represented individual differences in the probability of being a clique member, whereas a significant slope parameter would indicate that with age, children's clique membership probability would change. For such a model, a MLR estimator is needed. Note that conventional model-fit indices, such as chi-square values for model fit, are not provided for latent factor models with categorical data using MLR (Muthén & Muthén, 1998-2007).

Continuous latent growth models with an intercept (level) and linear slope (growth) were specified to model growth in externalizing and internalizing problems. The model fit was assessed through the Comparative Fit Index and Tucker Lewis Index (CFI and TLI, values  $> .90$  indicate acceptable to good fit; Bentler & Bonett, 1980; Marsh, Hau, & Wen, 2004), and the Root Mean Square Error of Approximation (RMSEA, value  $\leq .08$ ; Browne & Cudeck, 1993).

The variance of the intercept of clique membership probability was significant ( $\text{var}_{\text{intcp}} = .69$ ,  $\text{SE} = .24$ ,  $p < .01$ ), indicating individual differences in the probability of being a clique member. The non-significant estimate of the slope parameter of clique membership probability ( $B_{\text{slope}} = .20$ ,  $\text{SE} = .26$ ,  $p > .05$ ) indicated that on average, children did not change in their probability of being a member of cliques from age 9-12 years. Moreover, the non-significant variance of the slope estimate of clique membership probability ( $B_{\text{varslope}} = .07$ ,  $\text{SE} = .15$ ,  $p > .05$ ) indicated that there were no individual differences in the growth of clique membership probability. Therefore, the slope parameter was excluded from the model.

The growth model with an intercept and linear slope parameter on peer-nominated externalizing problems fitted the data well (CFI = .99, TLI = .98, RMSEA = .04). A non-significant estimate of the slope parameter indicated that on average, children did not change in externalizing behavior from age 9-12 years ( $B_{\text{slope}} = .007$ ,  $\text{SE} = .007$ ,  $p > .05$ ). However, the variance of the slope parameter was significant ( $\text{var}_{\text{slope}} = .00$ ,  $\text{SE} = .00$ ,  $p < .05$ ), and therefore, this parameter was kept in the model. The growth model with intercept and linear slope parameter on peer-nominated internalizing behavior also fitted the data well (CFI = .96, TLI = .94, RMSEA = .05). A significant positive estimate of the slope parameter indicated that on average, children increased in their peer-nominated internalizing behavior from age 9-12 years ( $B_{\text{slope}} = .027$ ,  $\text{SE} = .007$ ,  $p < .01$ ). The variance of the slope parameter was significant ( $\text{var}_{\text{slope}} = .00$ ,  $\text{SE} = .00$ ,  $p < .05$ ).

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*Table 4.1* Means and SDs of Peer-Nominated Externalizing and Internalizing Problems, Social Preference, and Dyadic Friendships

	Clique members				Isolates			
	Boys		Girls		Boys		Girls	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Externalizing								
9 years	.09	.11	.01	.01	.11	.15	.03	.04
10 years	.10	.13	.02	.04	.10	.12	.02	.02
11 years	.14	.13	.03	.04	.16	.17	.04	.05
12 years	.17	.17	.03	.04	.12	.14	.03	.04
Internalizing								
9 years	.04	.05	.03	.04	.06	.06	.05	.05
10 years	.04	.06	.04	.05	.05	.06	.07	.07
11 years	.05	.06	.07	.07	.08	.09	.12	.11
12 years	.06	.09	.06	.08	.14	.19	.09	.11
Social preference								
9 years	.04	.19	.10	.14	-.13	.26	-.08	.19
10 years	.02	.20	.06	.16	-.11	.20	-.09	.14
11 years	.02	.22	.06	.20	-.12	.24	-.09	.21
12 years	.01	.25	.05	.17	-.21	.29	-.06	.17
Dyadic friendships								
9 years	1.07	1.13	1.44	1.19	.36	.61	.27	.49
10 years	1.34	1.09	1.41	1.25	.24	.54	.44	.61
11 years	1.84	1.16	1.94	1.21	.69	.83	.57	.69
12 years	1.80	1.20	1.76	1.14	.59	.67	.63	.68

#### ***The Link between Clique Membership Status and Internalizing and Externalizing Problems***

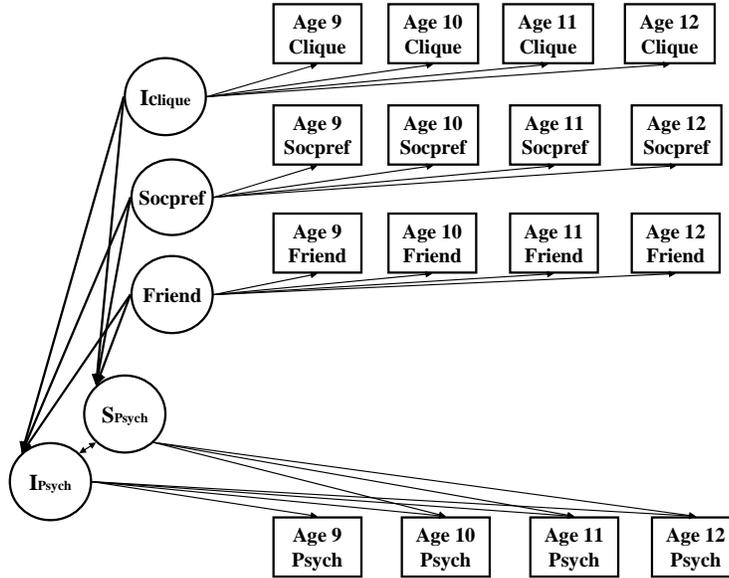
To test for associations between clique membership probability and the development of internalizing and externalizing problems from age 9-12 years, the growth parameters of internalizing and externalizing problems were regressed on the intercept of clique membership probability. Although the links between clique membership probability, internalizing problems, and externalizing problems were tested in one model, we will for the sake of clarity describe the results separately for internalizing problems and externalizing problems. To control for the co-occurrence of clique membership, social preference, and having dyadic friendships, latent factor scores of social preference and having dyadic friendships were computed, in which the age 9-12 year observed scores were used as indicators of the latent factor scores. This model is depicted in Figure 4.1.

The results for internalizing problems are in Figure 4.2. Results showed that clique membership probability negatively predicted the intercept of internalizing problems ( $B = -.017$ ,  $SE = .008$ ,  $\beta = -.36$ ,  $p < .05$ ), but not the slope

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of internalizing problems ( $B = -.003$ ,  $SE = .005$ ,  $\beta = -.14$ ,  $p > .05$ ). This indicated that clique members had on average lower levels of internalizing problems throughout the four data points examined in this study, which was not accounted for by social preference or having dyadic friendships.

The results for externalizing problems are in Figure 4.3. Clique membership probability significantly predicted the slope of externalizing problems ( $B = .019$ ,  $SE = .008$ ,  $\beta = .65$ ,  $p < .01$ ), but not the intercept of externalizing problems ( $B = .007$ ,  $SE = .016$ ,  $\beta = .06$ ,  $p > .05$ ). Thus, compared to children isolated from cliques, clique members increased on average in their level of externalizing problems from age 9-12 years, which was not accounted for by social preference and having dyadic friendships.



*Figure 4.1.* The associations between clique membership probability and psychopathology. Estimates were controlled for sex and parental occupational prestige.  $I_{\text{clique}}$  = intercept of clique membership probability, Socpref = social preference, Friend = having dyadic friends,  $I_{\text{psych}}$  = intercept of psychopathology,  $S_{\text{psych}}$  = slope of psychopathology.

#### ***The Disruptiveness of a Child's Clique Affiliates***

The finding that clique members showed an increase in externalizing problems with age led us to further explore whether the growth in children's externalizing problems coincided with the growth in externalizing problems of children's clique affiliates. To test this, a parallel growth model was specified for children who were members of cliques, in which we linked the growth in children's externalizing problems to the growth in externalizing problems of children's clique affiliates. As already described in the method section, the peer-nominated externalizing score of the target child was subtracted from the

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summed score of the clique this child belonged to, in order to compute the externalizing problems of children's clique affiliates.

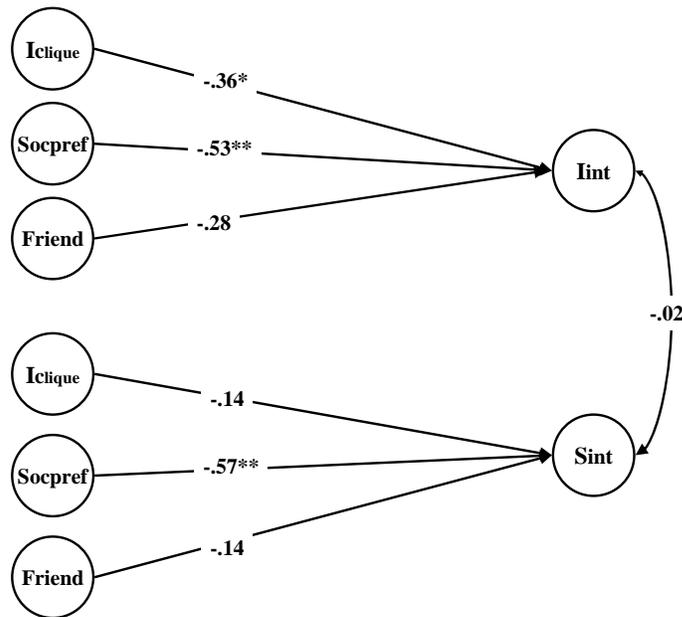


Figure 4. 2. Links between clique membership probability and internalizing problems from age 9-12 years.  $I_{clique}$  = intercept of clique membership probability, Socpref = social preference, Friend = having dyadic friends,  $I_{int}$  = intercept of internalizing problems,  $S_{int}$  = slope of internalizing problems.  
\*  $p < .05$ , \*\*  $p < .01$ .

Therefore, the externalizing score of a given target child is not included in the externalizing score of this child's clique affiliates. This model had a good fit (CFI = .95, TLI = .93, RMSEA = .05). The slope of individual externalizing problems was significantly correlated with the slope of the clique affiliates' externalizing problems ( $B = .00$ ,  $SE = .00$ ,  $\beta = .40$ ,  $p < .01$ ). This indicated that clique member's growth in externalizing problems between age 9 and 12 years coincided with the growth in similar problem behavior of their clique affiliates.

#### 4. Clique Membership and Psychopathology

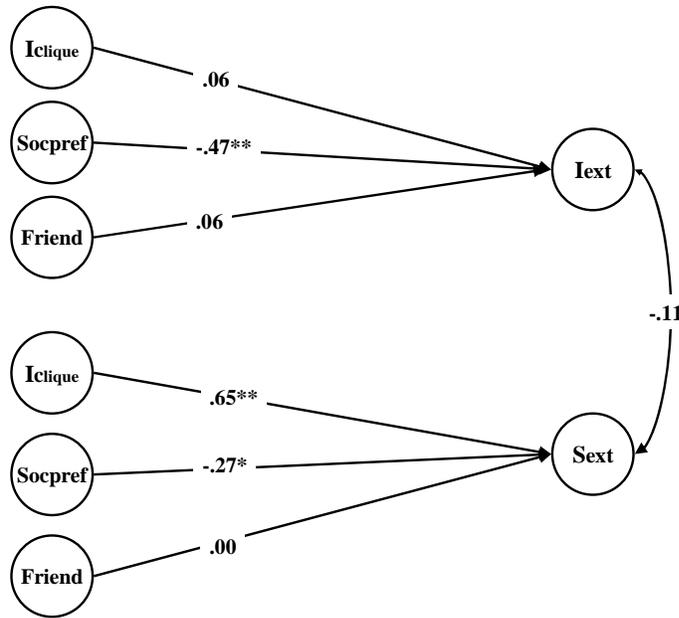


Figure 4.3. Links between clique membership probability and externalizing problems from age 9-12 years.  $I_{\text{clique}}$  = intercept of clique membership probability, Socpref = social preference, Friend = having dyadic friends,  $I_{\text{ext}}$  = intercept of externalizing problems,  $S_{\text{ext}}$  = slope of externalizing problems.  
\*  $p < .05$ , \*\*  $p < .01$ .

#### Sex Differences

To test for sex differences in the link between clique membership status and internalizing and externalizing problems, the model in Figure 4.1 was re-specified as a two-group model. Potential sex differences in the associations between the growth parameter estimates of clique membership probability and psychopathology were tested with nested chi-square difference tests. No significant differences in the links between clique membership probability and peer-nominated internalizing problems were found ( $\chi^2(2, N = 451) = .01, p > .05$ ). However, we did find sex differences in the observed positive association between the intercept of clique membership probability and the slope of externalizing problems ( $\chi^2(1, N = 451) = 46.22, p < .01$ ). That is, the intercept of clique membership probability significantly predicted an increase in externalizing problems for boys, but not for girls.

#### Discussion

In this study, we investigated the longitudinal links between clique membership and internalizing and externalizing problems during late childhood. While controlling for concurrent peer experiences, namely social preference and having dyadic friends, we found that clique members had lower levels of internalizing problems than children isolated from cliques between age 9 and 12

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years. Moreover, we found that clique members, compared to isolated children, showed on average an increase in externalizing problems over the same period. To further investigate the increase in externalizing problems among clique members, we tested whether this growth in externalizing problems coincided with a growth in externalizing problems among children's clique affiliates. Results showed that the increase in individual's externalizing problems indeed corresponded with the increase in the externalizing problems of children's clique affiliates. No sex differences were found in the link between clique membership status and internalizing problems. However, the link between clique membership and the increase in externalizing problems was found for boys only. These results have several implications.

First, our results suggest that being a clique member does not simply protect children against developing any type of psychopathology. We found support for the hypothesis that clique members would show lower levels of peer-nominated internalizing problems than children who are isolated from cliques. In line with earlier findings about the link between peer relations and internalizing problems during childhood (Ladd & Troop-Gordon, 2003; Pedersen et al., 2007), we did not find sex differences in this association. However, boys who were more often members of a clique appeared to have a higher chance of increasing in externalizing problems. This latter finding opposes the notion that clique members in late childhood engage in less externalizing behavior because they have more opportunities to practice social skills than children who are isolated from cliques. Rather, the finding that boys who were clique members showed an increase in externalizing problems seems to support previous evidence that children who engage in externalizing behavior are often in cliques with other members who show externalizing problems (Cairns et al., 1988; Espelage et al., 2003). Specifically, children with externalizing problems may select others with similar problems as their clique affiliates (Cairns & Cairns, 1995); at the same time, clique members may influence children's externalizing problems through internal clique dynamics such as mutual and selective reinforcement of deviant behavior (i.e., deviancy training) and processes of peer pressure (Adler & Adler, 1995; Dishion et al., 1996; Merten, 1997). In line with findings about adolescent selection and socialization processes in cliques (Cohen, 1977; Espelage et al., 2003), our results indicate that for boys in late childhood, externalizing problems seem to develop within the context of a clique, in particular when the other members of the clique show externalizing behavior. Moreover, our results seem to support the notion that especially boys tend to use externalizing behavior to enhance their status in peer groups (Eder, Evans, & Parker, 1995). Further, the finding that clique membership status was not related to the initial level of externalizing problems in grade 3 when children were 9 years old on average, is in line with the Confluence model proposed by Dishion and colleagues (Dishion, Patterson, & Griesler, 1994). According to this model, children with externalizing

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problems intensify their tendency to aggregate with each other and to influence each other's problem behavior by age 10 onwards.

Furthermore, our findings support the view that studying children's clique membership provides unique information on children's social development. Even when controlling for concurrent experiences of social preference and having dyadic friendships, the links between clique membership status and psychopathology was significant. This finding is in line with the notion that sociometric status, friendships, and clique membership are distinct aspects of children's peer relations. That is, sociometric status is an indication of children's reputation within the peer group (Coie & Dodge, 1988), whereas clique membership reflects children's actual affiliations with peers (Cairns et al., 1988). Moreover, cliques have specific characteristics, such as transitivity, stratification, and cohesiveness that move beyond characteristics of dyadic friendships (Adler & Adler, 1998; Wasserman & Faust, 1994). Importantly, clique membership may provide children with assets such as collective participation and group support, which dyadic friendships cannot offer (Rubin, 1980). The findings of the present study indicate that cliques are important social contexts in late childhood that play a unique role in the development of psychopathology. Therefore, future studies could benefit from taking the role of clique membership status, besides the role of imperative aspects of peer relations such as social preference and dyadic friendships, in children's psychopathology development into account.

In regard to sex differences, several studies focusing on adolescence have found that boys are more often isolated from cliques than girls (Cohen, 1977; Urberg et al., 1995). In the present study, which focused on late childhood, we did not find sex differences in clique membership status. This discrepancy in findings may have been the result of the difference in the investigated age periods. In adolescence, the concept of friendship changes and the emphasis on intimacy increases (Buhrmester, 1990; Buhrmester & Furman, 1987; Sullivan, 1953). Because intimacy is believed to play a larger role among girls than among boys (Maccoby, 1998), sex differences in clique membership status may become apparent particularly in adolescence when intimacy is a more important friendship goal.

#### ***Limitations and Conclusions***

Some limitations of the present study must be addressed. First, although we used a longitudinal design, it is important to note that no causal inferences can be made based on our findings. For instance, other processes not measured in the present study may underlie the observed associations between clique membership and psychopathology. Moreover, we cannot draw conclusions about clique membership *leading* to increases in externalizing problems. That is, class compositions changed each year in our sample, giving children the opportunity to form new cliques every year. Consequently, an increase in externalizing problems among boys who are clique members may have been the

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result of active selection of increasingly deviant peers as well as of socialization processes within cliques. Future studies should further test the directionality between clique membership status and psychopathology and the role of clique membership status as marker, contributor, or mediator of children's psychopathology development.

Second, the sample size in the present study was not large enough to be able to investigate different trajectories of clique membership status. Brendgen, Vitaro, Bukowski, Doyle, and Markiewicz (2001) found that in particular stably rejected children have high levels of externalizing problems from age 6-12 years. Further, Ladd, Herald-Brown, and Reiser (2008) showed in a longitudinal study following children from age 5-12 years that children show negative growth in classroom participation when they are rejected, whereas positive growth in classroom participation is seen when they are nonrejected. Similarly, by studying trajectories of clique membership status, we would be able to investigate whether children who are chronically isolated from cliques show a different psychopathology development compared to children who fluctuate in clique membership status.

Finally, this study used an ethnically homogeneous sample of children. That is, most children in the present study had a French Canadian background. Therefore, studies with a more ethnically diverse sample are needed to increase the generalizability of the present findings.

To conclude, our findings suggest that cliques are important social contexts linked to the development of psychopathology in late childhood. Results from the present study indicate that clique membership status is differently related to the development of internalizing and externalizing problems during late childhood. While clique members appear to have fewer internalizing problems than children who are isolated from cliques, boys' externalizing problems seem to be fostered within cliques. Consequently, viewing peer relations from a group perspective contributes significantly to our understanding of the importance of the peer context for children's psychopathology development.



## Chapter 5

### Early Adolescent Depressive Symptoms: Prediction from Clique Isolation, Loneliness, and Social Self-Esteem

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*Submitted for publication*

#### **Abstract**

This study examined whether clique isolation predicted subsequent depressive symptoms and whether this association was mediated by loneliness and social self-esteem in 356 children followed from age 11-14 years. Clique isolation was identified through social network analysis, whereas depressive symptoms, loneliness, and social self-esteem were assessed using self ratings. While accounting for initial levels of depressive symptoms, peer rejection, and friendlessness at age 11 years, a high probability of being isolated from cliques from age 11 to 13 years predicted depressive symptoms at age 14 years. The link between clique isolation and depressive symptoms was mediated by loneliness, but not by social self-esteem. No sex differences were found in the associations between clique isolation and depressive symptoms. These results suggest that clique isolation is a social risk factor for depressive symptoms in early adolescence. Implications for research and prevention are discussed.

#### **Introduction**

Symptoms of depression increase sharply in adolescence and are common during this age period (Birmaher et al., 1996; Hankin et al., 1998; Petersen et al., 1993). Furthermore, symptoms of depression may develop into more serious psychiatric problems including major depressive disorder (Pine, Cohen, Cohen, & Brooks, 1999). Depression is believed to occur within an interpersonal context, and problematic interpersonal relations are often identified as predictors of depression (Coyne, 1976; Joiner, 1997). This interpersonal perspective of depression is frequently included in contemporary theories of depression in childhood and adolescence (Rudolph, Flynn, & Abaied, 2008).

In line with the notion that childhood and adolescent depression arises within an interpersonal context, empirical evidence has been found for an association between problematic peer relations and depressive symptoms among children and adolescents. For instance, peer rejection in childhood and adolescence has been shown to be associated with a heightened risk for depressed mood (Boivin, Hymel, & Bukowski, 1995; Boivin, Poulin, & Vitaro, 1994; Brendgen, Wanner, Morin, & Vitaro, 2005; Ladd & Troop-Gordon, 2003). Children and adolescents who are friendless are also more depressed than others (Pedersen, Vitaro, Barker, & Borge, 2007). Moreover, the predictive link of low peer acceptance to concurrent depressive seems to be, at least in

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part, mediated by low friendship quantity (Nangle, Erdley, Newman, Mason, & Carpenter, 2003).

However, it can be argued that, in addition to peer rejection and dyadic friendship problems, there is another aspect of peer relationship problems that may be uniquely associated with depressive symptoms in adolescence, namely clique isolation. Clique isolation reflects not being a member of cliques, which can be defined as cohesive groups of youth who interact more with each other than with others children (Shrum & Cheek, 1987; Urberg, Degirmencioglu, Tolson, & Halliday-Sher, 1995). In contrast to friendlessness, which is a *dyadic-level* experience, clique isolation reflects a *group-level* negative peer experience. Indeed, children isolated from cliques may still have dyadic friendships, but they are not members of naturally occurring peer groups (i.e., cliques) and thus experience group-level problems. As a consequence, isolated children are deprived of the assets of clique membership, including collective participation and group support (Rubin, 1980). Moreover, while peer rejection is an indication of a child's negative reputation in the classroom, being isolated from cliques reflects a lack of actual affiliations with peers. In fact, peer rejected children may still affiliate in cliques (Bagwell, Coie, Terry, & Lochman, 2000). Nevertheless, although clique isolation, peer rejection, and friendlessness are distinct aspects of negative peer relations, they likely co-occur to a certain extent. Indeed, children who are isolated from cliques often have fewer reciprocated friendships and are less accepted by their peers than clique members (Wentzel & Caldwell, 1997).

### ***Clique Isolation and Depressive Symptoms***

Being a member of a clique may be particularly important in late childhood and early adolescence, as this is the period where achieving group identity and group acceptance is believed to be a central developmental task (Parker & Gottman, 1989; Buhrmester, 1990; Buhrmester & Furman, 1987). As said, being a member of a clique may provide children with resources such as a sense of collective participation and group support (Rubin, 1980). Hence, being isolated from cliques may deprive children of these positive group experiences and may therefore lead to internalizing problems (Brown & Lohr, 1987; Hoza, Bukowski, & Beery, 2000). In line with this notion, initial evidence from a cross-sectional study showed that sixth- and seventh-grade clique isolates show more teacher-rated internalizing problems – including more depressed mood – than clique members (Henrich, Kuperminc, Sack, Blatt, & Leadbeater, 2000). Indeed, in addition to problematic peer experiences such as peer rejection and friendlessness, being isolated from cliques may be a social risk factor for the development of depressive symptoms in adolescence. However, empirical research about clique isolation as a prospective predictor of depression is scarce. To increase our knowledge about the possible unique association between clique isolation and depressive symptoms, the first objective of the present study was to investigate whether being isolated from cliques from age 11 to 13

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years predicted depressive symptoms at age 14 years, while controlling for initial levels of depressive symptoms at age 11 years and for other problems in the peer relations domain. As we noted above, clique isolation may co-occur with the experiences of being rejected by peers and being friendless (Wentzel & Caldwell, 1997), which were therefore controlled.

### ***Loneliness and Social Self-esteem as Potential Mediators of the Link between Clique Isolation and Depressive Symptoms***

In addition to studying clique isolation as a social risk factor for depressive symptoms in early adolescence, it is also important to examine whether clique isolation directly predicts depressive symptoms or whether the association between clique isolation and depressive symptoms is mediated by other variables. Loneliness and poor self-esteem are theorized to be two cognitive-emotional processes underlying depressive symptoms (Beck, 1987; Joiner, 1997; Joiner, Lewinsohn, & Seeley, 2002; Kovacs & Beck, 1978). Moreover, negative peer experiences have been found to predict loneliness and poor self-esteem. (Boivin et al., 1995; Harter, Stocker, & Robinson, 1996). Therefore, it is likely that clique isolation is indirectly linked to depressive symptoms via these cognitive-emotional processes.

Feelings of loneliness have been identified as an important risk factor for depression in adolescence (Brage & Meredith, 1994; Joiner, 1997; Joiner et al., 2002). Moreover, loneliness is not regarded as a synonym of having poor social ties, but rather is believed to be the *internalized* emotional experience of interpersonal problems (Joiner, 1997). Hoza et al. (2000) introduced the concept of 'network loneliness', which reflects the absence of successful peer group relations. Hence, loneliness is theorized to be the internalized emotional experience of not only problems with dyadic friendships, but also of being isolated from cliques. Despite this theoretical evidence, studies on the link between clique isolation, loneliness and depression are scarce. Nonetheless, studies that focused on peer rejection and friendlessness found that children who experience these negative peer relations show elevated levels of loneliness (Ladd & Troop-Gordon, 2003; Parker & Asher, 1993; Pedersen et al., 2007). In a study with 9-12 year old children, Boivin et al. (1995) showed that children's feelings of loneliness mediated the link between problematic peer experiences (i.e., peer rejection and victimization) and subsequent depressed mood. Based on these findings, loneliness can be expected to be a potential (emotional) mediating factor in the link between clique isolation and subsequent depressive symptoms in adolescence.

The importance of self-esteem in the development of depression has been stressed in cognitive theories of depression (Abramson, Metalsky, & Alloy, 1989; Beck, 1987; Kovacs & Beck, 1978). According to vulnerability-stress models, negative stressful life events can be internalized into maladaptive self-schemata. These negative cognitions about the self may, subsequently, cause increases in depressive symptoms. Indeed, the association between low

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self-esteem and depressive symptoms in adolescence has been demonstrated in numerous studies (e.g., MacPhee & Andrews, 2006; Orth, Robins, & Roberts, 2008; Pelkonen, Marttunen, Kaprio, Huurre, & Aro, 2008). Mead (1934) suggested that the self-concept of children and adolescents is largely formed through peer interactions. In a similar way, Harter et al. (1996) found support for a 'looking glass self-orientation' among adolescents: adolescents like themselves based on the approval from peers. In line with this notion, it can be proposed that negative group experiences, such as the experience of being isolated from cliques, may negatively impact children's self-esteem, and particularly children's self-esteem in the social domain (Harter, 1982). This sense of low social self-esteem can be expected to predict an increase in depressive symptoms. We therefore examined social self-esteem as another potential (cognitive) mediating factor in the link between clique isolation and subsequent depressive symptoms in adolescence.

### ***The Child's Sex and the Link between Clique Isolation and Depressive Symptoms***

Depressive symptoms have been found to be more prevalent among adolescent girls than boys (Allgood-Merten, Lewinshon, & Hops, 1990; Brage & Meredith, 1994). However, it is unknown whether this sex difference in prevalence of depressive symptoms also translates into sex-specific links between clique isolation and depressive symptoms. The link between depressive symptoms and problematic peer relations, such as peer rejection and friendlessness, has often been reported to be sex-invariant (Ladd & Troop-Gordon, 2003; La Greca & Moore Harrison, 2005; Pedersen et al., 2007). In contrast, Brendgen et al. (2005) found that peer rejection was only linked to an increasing trajectory of depressed mood for girls, not for boys. However, because these studies have not focused on clique isolation specifically, it is uncertain whether the link between clique isolation and depressive symptoms is different for boys and girls.

### ***The Present Study***

In sum, the present study aimed to investigate whether clique isolation is a social risk factor for depressive symptoms in early adolescence. We hypothesize that clique isolation at age 11 to 13 years would predict self-reported depressive symptoms at age 14 years, even if initial levels of depressive symptoms at age 11 years and other problems in the peer relations domain (i.e., peer rejection and friendlessness) would be controlled for. The second objective was to study whether the association between clique isolation and depressive symptoms is mediated by cognitive-emotional processes. We hypothesize that the association between clique isolation and depressive symptoms would be mediated by loneliness and social self-esteem. In each of these objectives, we explored whether the results were different for boys and girls.

### **Method**

#### ***Participants***

Participants included 356 children (53% boys) from a small community in northwestern Quebec, Canada. These children participated in a longitudinal study that included 381 participants at the first assessment point relevant to this study (grade 5). Participants attended five elementary schools up to grade 6, after which they transferred to one large high school. The majority of children (> 90%) had a French Canadian background. In each year of data-collection, all French speaking children in the community were targeted for participation in the study. At least 90 percent of children from the targeted classrooms participated in the study in each year. The average age of the included children was 11.10 years ( $SD = .36$ ) in grade 5 (i.e., the initial time point of the present study). Participants were followed over 3 years, until age 14 (the end of grade 8). Participant's socioeconomic status, measured with the Blishen, Carroll, and Moore (1987) occupational prestige scale ( $M = 40.16$ ,  $SD = 13.59$ ), was in accordance with a representative sample throughout the Province of Quebec, Canada ( $M = 43.99$ ,  $SD = 13.00$ ). Seventy-four percent of children lived in intact families, 10 percent lived in blended family households, 13 percent in single parent families, and 3 percent lived in other family configurations.

To be included in the present study, children needed to have information on at least two data points on clique isolation measured from age 11-13 years and depressive symptoms measured at age 14 years. In total 356 children were included in the study sample by virtue of this criterion. Of these 356 children, 292 (82%) had information on at least three out of four data points. Attrition was due to no availability of parental permission, moving out of the school district, or absence on the day of data collection. For children who had missing data on any of the four time points, missing values were estimated by using a full information maximum likelihood method. The children included in the final sample were compared with children who did not meet the study criteria on the study variables in grade 5. No differences were found in depressive symptoms, loneliness, social self-esteem, clique membership status, peer rejection, friendlessness, sex, and parental occupational prestige.

#### ***Measures***

*Depressive symptoms.* The Children's Depression Inventory (CDI; Kovacs, 1992) was used to obtain children's self-reported depressive symptoms at age 11 and age 14 years. The CDI has been validated using normative and clinic-referred samples and has been found to be reliable (Fundulis et al., 1991). Using 26 out of the 27 items of the CDI, children indicated for each item whether they had an absence of symptoms (0), had mild symptoms (1), or definite symptoms (2). The suicidal ideation item was left out of the questionnaire due to concerns of the school administration. The severity of a

## 5. Depressive Symptoms and Clique Isolation

given child's depressive symptoms was measured by summing his or her item scores ( $\alpha = .86$  at age 14 years).

*Loneliness-social dissatisfaction.* To obtain children's self-reported feelings of loneliness and dissatisfaction with peer relations, the Loneliness and Social Dissatisfaction Scale designed by Asher, Hymel, and Renshaw (1984) was completed by children each year from age 11 to 13 years. The scale has been found to be valid and reliable (Asher & Wheeler, 1985). Children indicated whether items did not apply (1), did sometimes apply (2), or did apply (3). A total score was computed by summing the 16 items measuring loneliness and social dissatisfaction. Cronbach's alpha ranged from .85 to .88 across the years.

*Social self-esteem.* The Self-Perception Profile for Children (SPPC; Harter, 1985) was completed by children each year from age 11 to 13 years to assess self-esteem. The SPPC measures children's sense of competence across domains of scholastic, athletic, physical, behavioral, and social competencies, as well as global self-worth. We used the 6 items from the social acceptance domain to measure social self-esteem. The items are scored from 1 to 4, with higher scores reflecting more positive self-perceptions. The SPPC has been found to be a reliable and valid measure of children's sense of competence (Boivin, Vitaro, & Gagnon, 1992; Harter, 1985).

*Clique isolation.* Children's friendship choices were used as input for the identification of cliques, and for assessing clique isolation. Children were asked each year to nominate up to four friends in the classroom. Children were considered to have a reciprocated friendship when the nominated friend also nominated the target child as one of his/her four best friends (Bukowski & Hoza, 1989). Based on these friendship nominations, the social network analysis (SNA) program Kliquefinder (Frank, 1995; 1996) was used to identify clique isolation from age 11 to 13 years. Kliquefinder is based on a clustering algorithm to detect cohesive subgroups. The algorithm identifies cliques by maximizing an objective function, which looks at the probability that a child interacts with someone in his or her clique. The program detects cohesive cliques in terms of a concentration of interactions (i.e., friendship nominations) within the cliques relative to the extent of interactions across cliques. For more information about the Kliquefinder program, see Frank (1995). Clique membership was conceptualized in the present paper as having a minimum of two (un-)reciprocated friendship nominations with other members of the clique. Following Ennett and Bauman (1994), we used both reciprocated and unreciprocated friendship nominations of all children within a classroom for input of the program. We weighted the friendship nominations so that reciprocated friendships represented twice the interaction of unreciprocated friendships (i.e., reciprocated friendships received a weight of 2 and unreciprocated friendships a weight of 1).

A dummy-coded variable was created each year to measure clique isolation (isolated from cliques = 1; clique member = 0). The output of the

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Kliquefinder program with the final clique solution showed that children with only one link to a clique were sometimes identified as clique members. Moreover, some cliques consisted of strings of (un-) reciprocated friendships where children were only connected to one other child in the clique. We decided to reclassify these children as isolates, because these children did not meet our predefined criteria of clique membership. We could not detect cliques in 3 out of 17 classrooms in grade 6 and in 2 out of 19 classrooms in grade 7 with the Kliquefinder program. Because it is uncertain whether Kliquefinder was unable to detect cliques in these classrooms or whether cliques truly didn't exist in these classrooms, the clique isolation status of these participants was handled as missing for the relevant time point.

*Peer rejection.* Children's sociometric status at age 11 years was assessed through peer nominations. Children were asked to nominate three children in their class whom they liked most and three children whom they liked least. The sociometric status was then computed for each participant following the criteria outlined by Coie, Dodge, and Coppotelli (1982). A dummy coded variable (1 = rejected; 0 = not rejected) was created to indicate whether children belonged to the rejected category or not.

*Friendlessness.* To measure friendlessness at age 11 years, a dummy coded variable (1 = having no reciprocated friendships; 0 = having at least one reciprocated friendship) was created. Reciprocated friendships were based on the friendship nomination procedure described above.

*Sociodemographic information.* The Blisshen et al. (1987) Occupational Prestige Scale was used to obtain mother-reported parental occupation. The scores are based on the average income and average education level associated with occupations in Canada. Scores were first averaged across the two parents and next across the four years the data were collected.

### **Procedure**

Each spring, children spent 2 hours of classroom time answering questionnaires. After children were informed about the purpose of the study, they were assured that their answers would be held confidential and that they did not have to answer any of the questions if they did not want to. Trained research assistants administered the questionnaires in the absence of the teachers to emphasize that participants' answers would not be revealed to the teachers.

### **Results**

#### ***Descriptive Statistics***

Fifty-six (19%), 41 (16%), and 47 (16%) children were isolated from cliques at age 11, 12, and 13 years, respectively. No sex differences were found in the number of clique isolates from age 11 to age 13 years. In the analyses, children who were isolated from cliques were contrasted with children who were members of cliques. These clique members belonged to cliques with an

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average size of 5.34 (range 3 to 11), 5.39 (range 3 to 11), and 5.70 (range 3 to 11) members from age 11 to age 13 years, respectively. The bivariate correlations among the continuous self-reported variables loneliness, social self-esteem, and depressive symptoms are in Table 5.1.

### *The Link between Clique Isolation and Depressive Symptoms*

We tested the link between clique isolation and depressive symptoms through latent growth modeling using Mplus 4.21 (Muthén & Muthén, 1998-2007). All tested models controlled for sex and parental occupational prestige. Because clique isolation was measured as a binary variable (i.e., clique isolation versus clique membership), we specified a latent growth model for categorical data using an intercept and linear slope. In this model, the intercept of clique isolation represented individual differences in the probability of being isolated from cliques, whereas a significant slope parameter would indicate that with age, children's probability of clique isolation would change. The model fit was assessed through the Comparative Fit Index and Tucker Lewis Index (CFI and TLI, values  $> .90$  indicate acceptable to good fit; Bentler & Bonett, 1980; Marsh, Hau, & Wen, 2004), and the Root Mean Square Error of Approximation (RMSEA, value  $\leq .08$ ; Browne & Cudeck, 1993).

*Table 5.1* Bivariate Correlations among Self-reported Depression, Loneliness, and Social Self-esteem

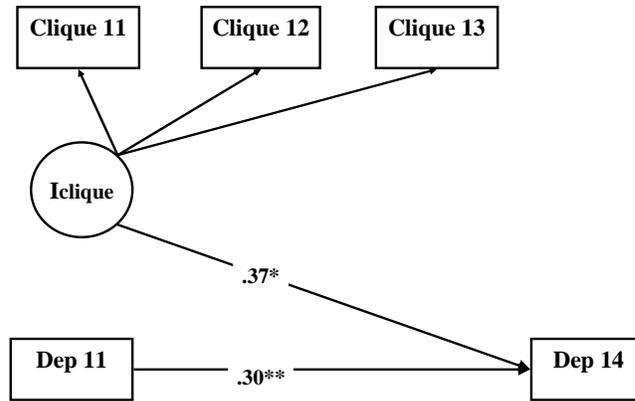
	1.	2.	3.	4.	5.	6.	7.
1. Depression 11	-						
2. Depression 14	.35**	-					
3. Loneliness 11	.60**	.30**	-				
4. Loneliness 12	.34**	.19**	.45**	-			
5. Loneliness 13	.30**	.24**	.42**	.55**	-		
6. Soc self-est 11	-.56**	-.19**	-.75**	-.41**	-.36**	-	
7. Soc self-est12	-.36**	-.18**	-.47**	-.71**	-.53**	.55**	-
8. Soc self-est 13	-.26**	-.28**	-.36**	-.47**	-.71**	.41**	.59**

*Note.* Soc self-est = Social self-esteem. \*\*  $p < .01$ .

The variance of the intercept of clique isolation probability was significant ( $\text{var}_{\text{intcp}} = .40$ ,  $\text{SE} = .20$ ,  $p < .05$ ), indicating individual differences in the probability of clique isolation. The non-significant estimate of the slope parameter of clique isolation probability ( $B_{\text{slope}} = -.02$ ,  $\text{SE} = .35$ ,  $p > .05$ ) indicated that on average, children did not change in their probability of being isolated from cliques from age 11 to 13 years. Moreover, the non-significant variance of the slope estimate of clique isolation probability ( $B_{\text{varslope}} = -.09$ ,  $\text{SE} = .17$ ,  $p > .05$ ) indicated that there were no individual differences in the growth of clique isolation probability. Therefore, the slope parameter was excluded from the model.

## 5. Depressive Symptoms and Clique Isolation

To test for associations between clique isolation and depressive symptoms, depression at age 14 years was regressed on the intercept of clique isolation probability. Depression at age 14 years was also regressed on depression at age 11 years. In this way, we tested whether individual differences in clique isolation probability from age 11 to 13 years predicted change in depression from age 11 to 14 years. The results of the test of this model are in Figure 5.1. The model had a good fit to the data (CFI = .96, TLI = .92, RMSEA = .03). We found that a higher probability of being isolated from cliques from age 11 to 13 years was significantly related to an increase in depressive symptoms from age 11 to 14 years ( $B = 3.81$ ,  $SE = 1.87$ ,  $\beta = .37$ ,  $p < .05$ ).



*Figure 5.1.* Model testing the associations between clique isolation probability and depressive symptoms. Estimates were controlled for sex and parental occupational prestige.  $I_{\text{clique}}$  = intercept of clique isolation probability, Dep = depressive symptoms. \*  $p < .05$ , \*\*  $p < .01$ .

To test for possible sex differences in the observed association between clique isolation probability and depressive symptoms, we re-specified the above model as a two-group model, in which boys were compared with girls. The results showed no significant differences between boys and girls in the association between clique isolation probability from age 11 to 13 years, and depressive symptoms at age 14 years: Wald (1) = .62,  $p = .43$ .

As described, cliques could not be detected in 5 classrooms, and clique isolation status of the children in these classrooms was therefore handled as missing. However, possibly none of the children in these classrooms were part of a clique. We retested the model assuming that each of these children were

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clique isolates, making 88 (29%) and 64 (20%) of the children isolated from cliques at age 12 and 13 years, respectively. Our results remained the same. The link between clique isolation and depressive symptoms at age 14 years:  $B = 4.46$ ,  $SE = 1.97$ ,  $\beta = .30$ ,  $p < .05$ .

We then tested whether the link between clique isolation probability and depressive symptoms remained significant after controlling for peer rejection and friendlessness. We first examined the associations between clique isolation, peer rejection, and friendlessness at age 11 years with Kendall's  $\tau$  correlations. We found that clique isolation was weakly correlated with peer rejection ( $r = .20$ ,  $p < .05$ ) and moderately correlated with friendlessness ( $r = .41$ ,  $p < .05$ ). Then, the intercept of clique isolation probability was regressed on peer rejection and friendlessness at age 11 years. We found that the link between clique isolation probability from age 11 to 13 years and depressive symptoms at age 14 years remained significant ( $B = 3.52$ ,  $SE = 1.33$ ,  $\beta = .33$ ,  $p < .01$ ) after including peer rejection and friendlessness into the model.

### ***Loneliness and Social Self-esteem as Mediators of the Link between Clique Isolation and Depressive Symptoms***

Latent factor scores for loneliness and social self-esteem were computed, in which the age 12 and 13 year observed scores were used as indicators of the latent factor scores. After ascertaining that loneliness and social self-esteem from age 12 to 13 years separately predicted depressive symptoms at age 14 years (loneliness:  $B = .37$ ,  $SE = .12$ ,  $\beta = .27$ ,  $p < .01$ ; social self-esteem:  $B = -2.18$ ,  $SE = 1.08$ ,  $\beta = -.16$ ,  $p < .05$ ), we specified two separate mediation models, which are depicted in Figure 5.2 (loneliness) and Figure 5.3 (social self-esteem). In the mediation models, the effect of clique isolation on loneliness and social self-esteem was estimated by regressing the latent factors loneliness and social self-esteem measured at age 12-13 years on the intercept of clique isolation probability. To test whether the link between clique isolation and depressive symptoms was mediated by loneliness and/or social self-esteem, we regressed depressive symptoms at age 14 years on these potential mediators and on the intercept of clique isolation probability. Depressive symptoms at age 14 years were controlled for depressive symptoms at age 11 years. Loneliness and social self-esteem at age 12-13 years were also controlled for their values at age 11 years. Moreover, the intercept of clique isolation probability was controlled for peer rejection and friendlessness at age 11 years. The significance of the indirect effect of clique isolation on depressive symptoms via loneliness and social self-esteem was tested using Sobel's test (Sobel, 1982).

In the model testing loneliness as the mediator (see Figure 5.2), we found a significant path from the intercept of clique isolation probability to loneliness ( $B = 5.46$ ,  $SE = 1.76$ ,  $\beta = .51$ ,  $p < .01$ ), and a significant path from loneliness to depressive symptoms ( $B = .37$ ,  $SE = .14$ ,  $\beta = .25$ ,  $p < .01$ ). A Sobel test showed that the indirect path of clique isolation probability on depressive symptoms via loneliness was indeed significant ( $B = 2.00$ ,  $SE = .97$ ,  $\beta = .13$ ,  $p <$

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.05). Moreover, the direct path from clique isolation probability to depressive symptoms was no longer significant after loneliness was included in the model ( $B = .66$ ,  $SE = 2.08$ ,  $\beta = .04$ ,  $p = .74$ ), suggesting that the association between clique isolation probability and depressive symptoms was mediated by loneliness (Baron & Kenny, 1986; Mackinnon, Fairchild, & Fritz, 2007).

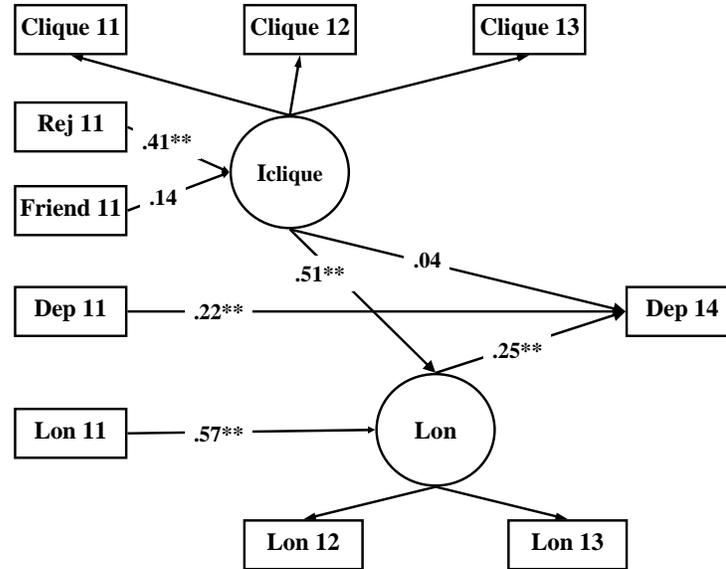


Figure 5.2. Mediation model testing the associations between clique isolation, depressive symptoms, and loneliness. All estimates were controlled for sex and parental occupational prestige.  $I_{\text{clique}}$  = intercept of clique isolation probability, Dep = depressive symptoms, Lon = loneliness, Rej = peer rejection, Friend = friendlessness. \*\*  $p < .01$ .

In the model testing social self-esteem as the mediator (see Figure 5.3), we found a significant path from clique isolation probability to social self-esteem ( $B = -.35$ ,  $SE = .11$ ,  $\beta = -.43$ ,  $p < .01$ ). However, the path from social self-esteem to depressive symptoms was not significant ( $B = .88$ ,  $SE = 1.71$ ,  $\beta = .06$ ,  $p > .05$ ). Moreover, the path from clique isolation probability to depressive symptoms remained significant after including social self-esteem ( $B = 4.65$ ,  $SE = 1.97$ ,  $\beta = .41$ ,  $p < .01$ ), suggesting that the link between clique isolation and depressive symptoms was not mediated by social self-esteem.

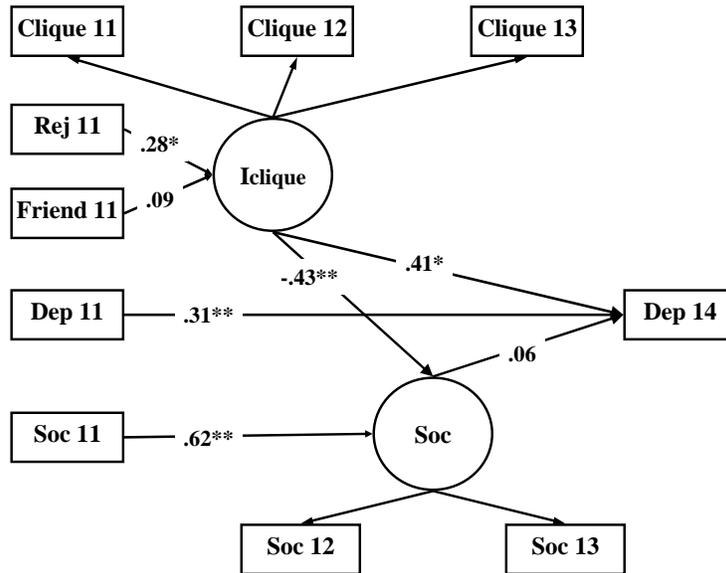
To test for possible sex differences in the observed associations, we re-specified the above models as two-group models, in which boys were compared with girls. We found that the association between clique isolation probability and loneliness was not different for boys and girls (Wald (1) = 2.63,  $p > .05$ ), nor was the association between loneliness and depressive symptoms (Wald (1) = .95,  $p > .05$ ). Moreover, we found no gender differences in the association

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between clique isolation and social self-esteem (Wald (1) = 3.64,  $p > .05$ ), and also not in the association between social self-esteem and depressive symptoms (Wald (1) = 2.56,  $p > .05$ ).

### Discussion

The objectives of the present study were (a) to investigate whether clique isolation from age 11 to 13 years is a social risk factor for subsequent depressive symptoms in early adolescence; (b) to test the potential role of loneliness and social self-esteem as cognitive and emotional processes underlying the link between clique isolation and depressive symptoms; and (c) to explore possible sex differences in the association between clique isolation and depressive symptoms. Accounting for children's initial level of depressive symptoms at age 11 years and for other problematic peer experiences (i.e., peer rejection and friendlessness), the results showed that the probability of being isolated from cliques from age 11 to 13 years predicted an increase in depressive symptoms from age 11 to age 14 years. Moreover, we found that loneliness, but not social self-esteem mediated the association between being isolated from cliques and depressive symptoms in early adolescence. Finally, we did not find sex differences in these associations.



*Figure 5.3.* Mediation model testing the associations between clique isolation, depressive symptoms, and social self-esteem. All estimates were controlled for sex and parental occupational prestige.  $I_{\text{clique}}$  = intercept of clique isolation probability, Dep = depressive symptoms, Soc = social self-esteem, Rej = peer rejection, Friend = friendlessness.

\*  $p < .05$ , \*\*  $p < .01$ .

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The results found in the present study are consistent with previous research on problematic peer experiences as risk factors for the development of depression in childhood and adolescence (Birmaher et al., 1996; Boivin et al., 1994; 1995; Brendgen et al., 2005; Ge, Lorenz, Conger, Elder, & Simons, 1994; Ladd & Troop-Gordon, 2003; La Greca & Moore Harrison, 2005; Nangle et al., 2003; Pedersen et al., 2007). Moreover, our findings provide support for the notion that multiple levels of peer relations should be investigated as predictors of depressive symptoms in adolescence (La Greca & Moore Harrison, 2005). That is, the findings from the present study showed that being isolated from cliques uniquely predicted subsequent depressive symptoms even when other aspects of problematic peer relations (i.e., peer rejection and friendlessness) were taken into account. Therefore, future studies on the role of peer relations in the development of depression could benefit from taking clique isolation into account, besides other important risk factors from the peer relations domain such as peer rejection and friendlessness.

Our findings suggest that loneliness explains the link between clique isolation and depressive symptoms in early adolescence. These results are in line with previous studies indicating that loneliness mediates the association between peer difficulties and depressed mood (Boivin et al., 1995; Nangle et al., 2003). As for experiences of peer rejection and being friendless, being isolated from cliques seems to be associated with subsequent depressive symptoms because children internalize these negative social experiences into feelings of loneliness. Thus, the results of the present study support the notion that negative group level experiences (i.e., in the present paper conceptualized as being isolated from cliques) contribute to children's feelings of loneliness and, ultimately, to depressive symptoms (Brown & Lohr, 1987; Hoza et al., 2000).

Whereas loneliness mediated the link between clique isolation and depressive symptoms, no such mediation effect was found for social self-esteem. Our finding that the probability of being isolated from cliques from age 11 to 13 years predicted low social self-esteem seems to support the theory that children's self-esteem regarding their social competencies is based on their actual experiences in the peer group (Mead, 1934; Harter et al., 1996). However, social self-esteem did not predict depressive symptoms at age 14 years above and beyond the association between clique isolation and depressive symptoms. The combined findings of mediation by loneliness but not by low social self-esteem seem to suggest that the acute awareness of being isolated from cliques – rather than the more indirect process of developing negative self-schemata concerning one's own role in this specific negative experience – underlies the association between clique isolation and subsequent depressive feelings.

In line with earlier findings about the association between problematic peer relations and depression in childhood and adolescence (Ladd & Troop-Gordon, 2003; La Greca & Moore Harrison, 2005; Pedersen et al., 2007), we did not find sex differences in the association between clique isolation and

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subsequent depressive symptoms and also not in the mediating role of loneliness and social self-esteem. Thus, clique isolation seems to be a social risk factor for depressive symptoms in early adolescence for both boys and girls.

### *Limitations and Conclusions*

The present study is not without limitations. First, our results do not imply causal links between clique isolation and internalizing problems. Although we used a longitudinal design and controlled for initial levels of depression, loneliness, and social self-esteem at age 11 years, it cannot be ruled out that other processes not measured in the present study underlie the observed associations between clique isolation and internalizing problems.

The second limitation concerns the time frame of the present study. We focused on depressive symptoms in early adolescence (i.e., at age 14 years). Evidence has been found, however, for a sharp increase in depression and an increase in sex differences in depression between age 15 and 18 years (Hankin et al., 1998). This may suggest that, rather than early adolescence, middle-to-late adolescence is an essential period for studying depression and related risk- and protective factors. In contrast to these findings, however, Brendgen et al. (2005) and Costello, Swendsen, Rose, and Dierker (2008) recently showed that the increase in depressive symptoms may already begin during early adolescence. Moreover, young adolescents who display depressive symptoms are at great risk for developing major depressive episodes later on (Pine et al., 1999). Therefore, depressive symptoms in children and young adolescents warrant further attention by research.

Third, the sample size in the present study was not large enough to study trajectories of clique isolation and depression. Our total sample consisted of 356 children. The number of children who participated every year and who could be classified as clique isolates was, consequently, relatively small. Therefore, we were unable to study whether children who were chronically isolated from cliques showed different levels of depressive symptoms compared to children who fluctuated in their clique isolation probability.

Finally, this study used an ethnically homogeneous sample of young adolescents of French Canadian background. Studies using a more ethnically diverse sample are needed to increase the generalizability of the present findings.

Despite these limitations, the results from the present study offer new insights in the link between problematic peer relations and depressive symptoms that may have important implications for research and prevention. That is, the finding that clique isolation predicted an increase in depressive symptoms indicates that viewing peer relations from a group perspective contributes significantly to the existing knowledge about problematic peer experiences as social risk factors for depression in early adolescence. In addition, the finding that loneliness but not social self-esteem mediated the link between clique isolation and depressive symptoms provides insight into

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underlying cognitive-emotional processes, which may be helpful in preventing depressive symptoms in early adolescence. Specifically, prevention efforts could benefit from viewing internalizing problems in early adolescence as phenomena that occur within a group context. Moreover, a focus on the development of feelings of loneliness in children who are isolated from cliques may be a central component in preventing subsequent depressive symptoms in these children. Indeed, because early adolescents with depressive symptoms are at great risk for developing major depressive disorder, the identification of elements that can be used in preventing depressive symptoms is an important goal.



## Chapter 6

# Testing Links between Childhood Positive Peer Relations and Externalizing Outcomes through a Randomized Controlled Intervention Study

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### Abstract

In this study, the authors used a randomized controlled trial to explore the link between having positive peer relations and externalizing outcomes in 758 children followed from kindergarten to the end of second grade. Children were randomly assigned to the Good Behavior Game (GBG), a universal classroom-based preventive intervention, or a control condition. Children's acceptance by peers, their number of mutual friends, and their proximity to others were assessed annually through peer ratings. Externalizing behavior was annually rated by teachers. Reductions in children's externalizing behavior and improvements in positive peer relations were found among GBG children, as compared to control-group children. Reductions in externalizing behavior appeared to be partly mediated by the improvements in peer acceptance. This mediating role of peer acceptance was found for boys only. The results suggest that positive peer relations are not just markers, but environmental mediators of boys' externalizing behavior development. Implications for research and prevention are discussed.

### Introduction

Peer relations form an important context for children's behavioral development (for a review, see Rubin, Bukowski, & Parker, 2006). The association between problems in peer relations and antisocial behavior has been studied extensively (see overviews by Boivin, Vitaro, & Poulin, 2005; Deater-Deckard, 2001; Hay, Payne, & Chadwick, 2004; van Lier, Vitaro, & Eisner, 2007). Many of these studies on the link between peer relations and behavioral problems focus on two features of problematic peer relations, namely rejection by peers and affiliation with deviant friends (Boivin et al., 2005; Kupersmidt, Coie, & Dodge, 1990; van Lier et al., 2007; Vitaro, Tremblay, Kerr, Pagani, & Bukowski, 1997). However, besides functioning as risk factors, peer relations may also promote a more positive adjustment in childhood and may reduce externalizing behavior. In this study, we focus on this expected positive effect of peer relations in preventing externalizing behavior.

Positive peer relations are theorized to prevent externalizing problems because they provide children a social context where they can practice social skills, learn social norms and rules, experience social support, and validate a

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sense of self-worth (Hartup, 1992; Rubin et al., 2006). Indeed, empirical evidence shows that positive peer relations promote children's behavioral adjustment. For instance, children who are highly accepted by their peers show less externalizing behavior and more prosocial behavior than their less accepted counterparts (Cillessen & Mayeux, 2004a; Coie, Dodge, & Kupersmidt, 1990). Similarly, children who have friends have been found to be more cooperative and sociable than friendless children (Newcomb & Bagwell, 1998; Parker & Asher, 1993). In addition, aspects of children's involvement with their classmates have been found to protect children against externalizing problems. For instance, van den Oord and Rispens (1999) demonstrated that teacher rated aggression is low among children who are in classrooms where children have a high proximity (i.e., social closeness) to each other and a large amount of contact with each other.

### ***Positive Peer Relations as Environmental Mediators of Children's Development of Externalizing Behavior***

Although the above mentioned studies support the idea that positive relations with peers may protect against externalizing problems in childhood, several issues concerning this relationship remain unclear. First, there is still controversy on the actual influence that peer relations exert on children's behavior (Parker & Asher, 1987). In fact, according to some researchers, peer relations in general are only *markers* of later externalizing outcomes. That is, peer relations are not assumed to influence externalizing behavior, but rather serve as an index of behavioral problems (Bukowski & Adams, 2005). Support for this so-called incidental model (Gottfredson & Hirschi, 1990; Elliott, Huizinga, & Ageton, 1985) has been found in studies that showed that childhood peer rejection did not increase children's risk for (early) adolescent externalizing behavior beyond the predictive value of early externalizing behavior (Kupersmidt & Coie, 1990; Pedersen, Vitaro, Barker, & Borge, 2007). In contrast, others have regarded peer relations as necessary components for externalizing behavior, because they mediate the development of behavioral problems (Patterson, DeBaryshe, & Ramsey, 1989). Several longitudinal studies have indeed shown that problems in peer relations, such as peer rejection and victimization, mediate the association between early problem behavior and later antisocial behavior (Ladd & Troop-Gordon, 2003; Snyder, Prichard, Schrepferman, Patric, & Stoolmiller, 2004; Vitaro, Pedersen, & Brendgen, 2007). These studies indicate that there is some evidence for a true influence of peer relations on children's development of externalizing behavior. However, these studies focused on problematic peer relations. Studies on the role of positive peer relations in the pathway leading to externalizing behavior are very limited.

In addition to the above mentioned evidence from longitudinal studies on the role of peer relations in behavior development, randomized controlled trials (RCTs) provide a unique design to test the role of peer relations in

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children's behavior development (Howe, Reiss, & Yuh, 2002; Kellam & Rebok, 1992; Rutter, Pickles, Murray, & Eaves, 2001). That is, by trying to manipulate factors hypothesized to underlie externalizing problems, RCTs can test whether such changes – in this study positive peer interactions – mediate the effect of the intervention on the reductions in externalizing problems. Despite the suitability of this design to test developmental theory, there are few studies that used a RCT to test links between peer relations and externalizing behavior. What is more, those studies focused exclusively on problematic peer relations. For instance, Vitaro, Brendgen, Pagani, Tremblay, and McDuff (1999) found that the reduced levels of conduct problems among 13-year old children who received a preventive intervention was mediated by associations with less deviant friends at ages 10 to 12 years. Furthermore, van Lier, Vuijk, and Crijnen (2005) showed that reductions in antisocial behavior from age 7 years to age 10 years among children who received a preventive intervention coincided with affiliations with non-deviant friends and a reduced probability of experiencing peer rejection. Thus, there is some evidence from RCTs that peer relations may actually be environmental mediators of change in externalizing behavior. However, as these studies only focused on problematic peer relations, they provided no evidence of positive peer relations protecting against externalizing problems. Therefore, in the present study, the first objective is to use a RCT design to study whether positive peer relations are merely markers or environmental mediators of children's externalizing behavior development.

### *Different Aspects of Positive Peer Relations*

Several indicators of positive peer relations can be identified. For instance, acceptance by peers, number of mutual friends, and proximity to other children have been recognized as conceptually distinct aspects of children's positive peer relations; furthermore, all are associated with low levels of behavior problems (Cillessen & Mayeux, 2004a ; Coie et al., 1990; Newcomb & Bagwell, 1998; Parker & Asher, 1993; van den Oord & Rispens, 1999). Peer acceptance reflects the judgment from classmates about how well children are liked in the group (Coie & Dodge, 1988), whereas the identification of children's friends reflects children's actual affiliations with peers (Cairns, Cairns, Necherman, Gest, & Gariépy, 1988). A high proximity to others indicates that a child is socially close to other peers, and well capable of reaching others in a peer network. Each of these indicators of positive peer relations may have a unique link with externalizing behavior. For instance, Ennett et al. (2006) showed that popularity, dyadic friendships, and proximity each uniquely predicted adolescent's substance use. In the present study, we therefore focus on these three aspects of children's positive peer relations by studying whether each is uniquely associated with children's externalizing behavior.

### ***The Childs' Sex and the Link between Peer Relations and Externalizing Behavior***

It is well documented that boys show, on average, more externalizing behavior than girls (Moffitt, Caspi, Rutter, & Silva, 2001). Yet, it is still unclear if the link between peer relations and externalizing behavior is different for boys and girls. DeRosier, Kupersmidt, and Patterson (1994) did find that peer rejection was stronger associated with externalizing behavior for boys than for girls. However, others failed to find sex differences in the link between peer relations and externalizing behavior (van Lier et al., 2005; Vitaro et al., 2007). Therefore, in this study we examine possible sex differences in the link between positive peer relations and externalizing problems.

### ***The Present Study***

To summarize, in this study we aim to use an RCT design (1) to study whether positive peer relations are environmental mediators of children's externalizing behavior development; (2) to study whether peer acceptance, the number of mutual friends, and proximity to others each have a unique effect on externalizing behavior; and (3) to explore possible sex differences in the link between positive peer relations and externalizing behavior. These aims were studied in 758 children followed from late kindergarten to the end of second grade. Children were randomly assigned to the Good Behavior Game (GBG; Barrish, Saunders, & Wolfe, 1969; Dolan, Jaylan, Werthamer, & Kellam, 1989), a universal classroom-based preventive intervention, or a control condition. An important modus through which the GBG aims to reduce externalizing behavior and promote prosocial behavior, is by facilitating positive interactions between children through a team-based approach. In the GBG, children are assigned to teams. Team members are encouraged to actively support each other in behaving appropriately, and teams as a whole are systematically rewarded when complying with the explicitly formulated class rules. Because of the active facilitation and rewarding of positive interactions between team members, it is reasonable to assume that these changes in positive peer interactions underlie the effect of the program on externalizing problems. Previous research on the GBG found that the program was indeed effective in reducing externalizing behavior (Ialongo, Poduska, Werthamer, & Kellam, 2001; Kellam et al., 2008; Kellam, Rebok, Ialongo, & Mayer, 1994; Petras et al., 2008; van Lier, Muthén, van der Sar, & Crijnen, 2004). Given these findings, we hypothesize to find reductions in externalizing behavior after two years of intervention among GBG children in the present trial, as compared to control-group children. We also hypothesize to find improvements in children's levels of peer acceptance, numbers of mutual friends, and proximity to others among GBG children. Furthermore, we hypothesize to find that these improvements in positive peer relations mediate the reductions in externalizing behavior.

**Method*****Participants***

In the early summer of 2004, 825 Kindergarten children from 47 classes in 30 elementary schools from two urban areas in the western part of the Netherlands and one rural area in the eastern part of the Netherlands were included in the study. All children who moved on to first grade ( $n = 742$ ) and those who repeated first grade ( $n = 100$ ) over the summer of 2004 were eligible for inclusion. Signed parental informed consent for children's participation in the study was obtained for 90 percent of the children, making the total sample 758 children (50% boys). The average age of participants at the end of kindergarten was 6.0 years ( $SD = .46$ ). Fifty-six percent of the children were from Dutch/Caucasian background, 10 percent Moroccan, 10 percent Turkish, 6 percent Surinam, 5 percent from Netherlands Antilles, 13 percent from other ethnical backgrounds. Thirty-eight percent of children were from low SES families, which is in accordance with the general Dutch population (36% low SES; Statistics Netherlands, 2007).

Children who moved into the sample between kindergarten and first grade because of grade retention in first grade were similar to study cohort members from kindergarten with respect to sex distribution; probability of being assigned into an intervention class; and in their levels of externalizing behavior, peer acceptance scores, number of mutual friends, and proximity to peers in first grade. However, these children were more often of low SES ( $\chi^2(1, N = 600) = 4.53, p < .05, \Phi = .09$ ) and less often of Dutch/Caucasian background ( $\chi^2(1, N = 744) = 14.39, p < .05, \Phi = .14$ ).

A total of 113 children dropped out of the study cohort between first and second grade due to grade retention or because they moved to another school. Loss to follow-up was not related to sex, intervention status, number of mutual friends, or proximity to others. However, children who dropped out of the study were more often of low SES ( $\chi^2(1, N = 600) = 4.89, p < .05, \Phi = .09$ ); were less often of Dutch/Caucasian background ( $\chi^2(1, N = 744) = 16.87, p < .05, \Phi = .15$ ); had higher levels of first-grade externalizing behavior ( $F(1, 747) = 21.00, p < .05, d = .22$ ); and had lower peer acceptance ( $F(1, 747) = 10.37, p < .05, d = .41$ ).

***Design and Procedures***

The study coordinator randomly assigned participating classes to one of three conditions: (1) a control condition, (2) a GBG only condition, or (3) a GBG and parent intervention condition. Because the parenting intervention started after the two years of GBG intervention (timeframe of this study), effects of the parenting intervention are not analyzed in this study. The intervention condition therefore contains both conditions of children who received the GBG. Of the 47 classes included in the study, 16 classes ( $n = 257$ ) were assigned to the control condition and 31 ( $n = 501$ ) to the intervention condition. No differences were found between control and intervention

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children's sex, number of children who were lost to follow-up, and in the area of the country they lived in. However, despite random assignment, control children had lower SES scores ( $\chi^2(1, N = 600) = 10.77, p < .05, \Phi = .13$ ) and were less often of Dutch/Caucasian background ( $\chi^2(1, N = 758) = 11.65, p < .05, \Phi = .12$ ) than GBG children. Figure 6.1 presents a flowchart of participants in the RCT.

Teacher-rated data on children's behavior was collected in spring of kindergarten, in spring of first grade, and in fall and early summer of second grade through face-to-face interviews by trained graduate and undergraduate students. In the spring of first grade and in winter of second grade, face-to-face interviews were administered to all participating children by trained graduate and undergraduate students. The peer nominations were embedded in this larger interview on children's psychosocial functioning. All interviews were conducted in a quiet place in the school. Children were assured that their answers would be held confidential.

Before starting with the peer nominations, interviewers ascertained that children knew all the names on the peer nominations roster. Children were then directed to the first nomination, ascertained that they understood the description, and asked to nominate each child who was characterized by the description. Children received a small reward for completing the survey.

### ***Preventive Intervention***

The GBG (Dolan et al., 1989; van der Sar & Goudswaard, 2001) is a classroom-based and group-oriented preventive intervention aimed at reducing disruptive behavior and promoting prosocial behavior. Positive peer interactions are facilitated in the GBG by stimulating collaboration between children in teams and by systematically rewarding compliance to positively formulated class rules within teams. On the basis of behavioral observations, teachers assign children to teams with an equal number of disruptive and non-disruptive children. Teams contain of average 4 – 5 members, and team compositions may change throughout the year. Each team receives a number of cards and teachers take a card from a team if a team member violates one of the predefined rules. Children in teams are encouraged to actively support each other in behaving appropriately. Teams as a whole are rewarded by receiving tangible rewards when at least one card is left at the end of a 15- to 60-minute period. In addition, students and teams are always rewarded by compliments.

The GBG is implemented in three phases. In the introduction phase, children and teachers are familiarized with the GBG by playing it three times a week for 10 min. In the expansion phase, the duration of the GBG, the settings in which the GBG is played, and the behaviors targeted by the GBG are expanded. Rewards are delayed for a week, and then a month. In the generalization phase, prosocial behavior outside GBG moments is promoted by explaining to children that the rules used during the GBG are also applicable, even when the game is not played.

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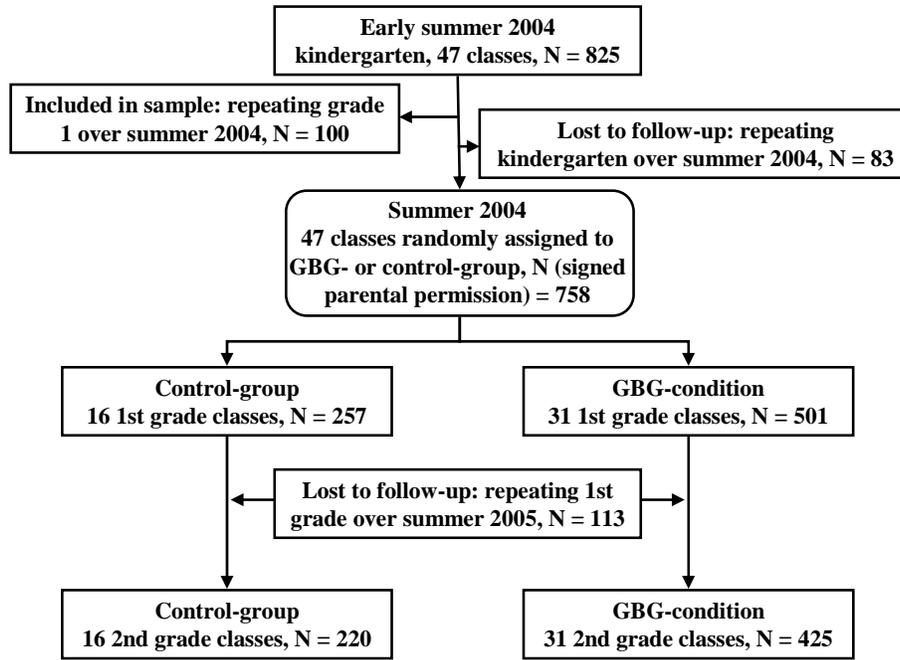


Figure 6.1. Flowchart of classes and participants in the randomized controlled trial. GBG = Good Behavior Game.

These three phases were implemented in both first and second grade. However, because children were already familiar with the GBG in second grade, classes swiftly moved on to the expansion and generalization phase. Teachers received three afternoons of training and 10 annual classroom supervisions by licensed GBG supervisors. After the classroom observations, the GBG supervisors gave feedback to the teachers. Plans for improvements were made if needed. The treatment integrity was checked through conducting these classroom observations of teachers by the licensed GBG supervisors.

### Measures

*Teacher ratings of externalizing behavior* were assessed with the Problem Behavior at School Interview (PBSI; Erasmus MC, 2000). Teachers rated pupils' behavior on a 5 point Likert scale ranging from 0 (*never applicable*) to 4 (*often applicable*). Oppositional Behavior was assessed by 7 items (e.g., "Disobeys teachers' instructions"; "Is stubborn";  $\alpha = .91$ ). Conduct problems were assessed by 12 items (e.g., "Attacks other children physically"; "Steals";  $\alpha = .90$ ). Externalizing Behavior was the sum of the Oppositional and Conduct problems scales.

*Peer nominations of acceptance* were obtained by asking children to nominate an unlimited number of children in their class that they liked most (Coie & Dodge, 1988). The sum of these peer nominations was divided by the

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number of children in the class minus one (self-nomination was not allowed) to construct the Peer Acceptance score.

*Number of mutual friends* was assessed by asking children to nominate their best friends in the class. Unlimited nominations were used. The number of reciprocated friendship nominations of a child were identified and corrected for class size by dividing the number of reciprocated nominations by the class size minus one (self-nomination was not allowed).

*Proximity to others* was computed by using the network analysis software program UCINET (Version 6) (Borgatti, Everett, & Freeman, 2002). We computed children's so-called reach centrality as a measure of their Proximity to Others. Children's reciprocated friendship nominations in the class were used as input. A graph of each classroom was made in which the points represent children, and the lines are defined as reciprocated friendships between children. The reach centrality of a child is then assessed by computing the distance to all other peers in the class. An infinite distance (i.e., a child is not connected to any other child) is defined to be 0. Reach centrality extends to the number of mutual friends in that it represents the peers that a particular child can reach directly, and via his/her reciprocal friends. The maximum score is achieved when a child has reciprocated friendships with all classmates. The reach centrality becomes less when others are reached via two friends, three friends, and so forth. The scores are divided by the largest observed reach centrality value to correct for the size of the classroom.

*Teacher ratings of prosocial behavior* in kindergarten were assessed with the Problem Behavior at School Interview. Prosocial Behavior ( $\alpha = .80$ ) was assessed by 4 items, including "Helps other children" and "Comforts a child who cries or is sad".

*Teacher ratings of social problems* in kindergarten were assessed by the 11 item Social Problems scale of the Teacher's Report Form (TRF; Achenbach, 1991; Verhulst, van der Ende, & Koot, 1997). Teachers rated pupils' behavior on a 3 point scale (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true). Items include Cannot get along with other pupils, and Other pupils don't like him/here. Cronbach's  $\alpha$  was .73.

*Male sex* and *intervention status* were dummy coded (0 = female, 1 = male; 0 = control group, 1 = GBG; respectively).

## Results

### *Descriptive Statistics*

The means and standard deviations of externalizing behavior and positive peer relations are in Tables 6.1 and 6.2. Children in the GBG- and control-condition showed no differences in externalizing behavior at baseline (i.e., before implementation of the GBG). Children in the GBG-condition had significantly lower levels of externalizing behavior than children in the control-group in first and second grade. GBG children had significantly higher scores on the indices of positive peer relations than control-group children in winter of

## 6. Childhood Positive Peer Relations

grade 2 (final assessment). The effect size of mean difference in externalizing behavior (Cohen's  $d$ ) after two years of intervention between control-group and GBG children was 0.45 (Cohen, 1988). The effect sizes of mean difference in peer acceptance, having mutual friends, and proximity to other children in winter of second grade were 0.34, 0.20, and 0.26 respectively. The correlations between externalizing behavior and peer relations are in Table 6.3.

### ***The Effect of the GBG on Externalizing Behavior***

We first tested for GBG effects on growth in externalizing behavior through latent growth modeling using Mplus 4.21 (Muthén & Muthén, 1998-2007). A growth model with an intercept and linear slope was specified. The intercept of externalizing behavior was parameterized at the last assessment of externalizing behavior (early summer of second grade). In this way, the intercept represents the outcome estimate of externalizing behavior. To test for differences in outcome level of externalizing behavior between control-group and GBG children, the intercept was regressed on the dummy coded intervention status variable. The slope parameter (i.e., growth in externalizing behavior from kindergarten to second grade) was correlated with the intercept (i.e., outcome level of externalizing behavior). Also, the slope was regressed on all covariates and hypothesized mediating variables. To test whether the models represented the associations in the observed data well, the Comparative Fit Index and Tucker Lewis Index (CFI & TLI, critical values  $> .95$ ) and the Root Mean Square Error of Approximation (RMSEA, critical value  $\leq .06$ ) were used (see Hu & Bentler, 1998). Because assignment to intervention was done at the classroom level, standard errors were adjusted for nesting of the conditions in classrooms by using a sandwich estimator (Williams, 2000).

The growth model of externalizing behavior fit the data well (CFI = .97, TLI = .96, RMSEA = .04). A significant positive estimate of the slope parameter for children in the control-group indicated that children who did not receive the GBG showed an increase in externalizing behavior from kindergarten to second grade ( $B_{\text{slope}} = .21$ , SE = .11). In accordance with the findings on mean differences in observed scores between GBG- and control-group children, a significant negative estimate of intervention status on the growth parameters of externalizing behavior was found ( $B_{\text{intcpt}} = -.65$ , SE = .25,  $\beta_{\text{intcpt}} = -.25$ ,  $p < .05$ ;  $B_{\text{slope}} = -.35$ , SE = .13,  $\beta_{\text{slope}} = -.35$ ,  $p < .01$ ). These estimates indicate that compared to the controls, GBG children had a reduced growth in externalizing behavior (GBG effect on slope), which resulted in a significant reduction of externalizing problems at the end of second grade (GBG effect on intercept).

Table 6.1 Means and SDs of Teacher Rated Externalizing Behavior

	Condition								GBG		Sex
	Control				GBG				<i>F</i>	ES	<i>F</i>
	Boys		Girls		Boys		Girls				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Externalizing Behavior											
Spring kinder ( <i>n</i> = 655)	1.72	1.40	1.09	1.01	1.92	1.47	1.26	1.08	3.29	.16	39.99**
Spring 1 <sup>st</sup> g ( <i>n</i> = 758)	2.01	1.46	1.28	1.17	1.76	1.46	1.09	1.07	4.84*	.17	45.89**
Fall 2 <sup>nd</sup> g ( <i>n</i> = 645)	2.01	1.42	1.24	1.07	1.51	1.30	1.07	1.02	11.28**	.28	35.00**
Early summer 2 <sup>nd</sup> g ( <i>n</i> = 645)	2.16	1.50	1.41	1.21	1.40	1.31	1.02	1.17	28.40**	.45	27.45**

Note. Effect size = Cohen's *d*. Kinder = kindergarten, g = grade. \*  $p < .05$ , \*\*  $p < .01$ .

Table 6.2 Means and SDs of Peer Nominated Peer Acceptance, Number of Friends, and Proximity to Others

	Condition								GBG		Sex
	Control				GBG				<i>F</i>	ES	<i>F</i>
	Boys		Girls		Boys		Girls				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Peer acceptance											
Spring 1 <sup>st</sup> g ( <i>n</i> = 758)	.21	.15	.25	.15	.23	.15	.27	.17	3.09	.13	8.29**
Winter 2 <sup>nd</sup> g ( <i>n</i> = 645)	.24	.15	.32	.18	.31	.18	.37	.17	19.24**	.34	20.22**
Number of friends											
Spring 1 <sup>st</sup> g ( <i>n</i> = 758)	.14	.10	.15	.10	.14	.10	.14	.10	.15	.00	.45
Winter 2 <sup>nd</sup> g ( <i>n</i> = 645)	.11	.08	.13	.10	.13	.10	.15	.13	6.64**	.20	6.37**
Proximity to others											
Spring 1 <sup>st</sup> g ( <i>n</i> = 758)	.32	.15	.33	.17	.33	.16	.34	.16	1.61	.12	1.61
Winter 2 <sup>nd</sup> g ( <i>n</i> = 645)	.27	.14	.28	.15	.29	.16	.33	.17	8.43**	.26	8.43**

Note. Effect size = Cohen's *d*. G = grade. \*  $p < .05$ , \*\*  $p < .01$ .

Table 6.3 Bivariate Correlations among Teacher Rated Externalizing Behavior and Peer Nominated Peer Acceptance, Number of Friends, and Proximity

	Teacher ratings				Peer nominations				
	1	2	3	4	5	6	7	8	9
Teacher ratings									
1. Spring kinder externalizing	-								
2. Spring 1 <sup>st</sup> g externalizing	.56**	-							
3. Fall 2 <sup>nd</sup> g externalizing	.56**	.56**	-						
4. Early summer 2 <sup>nd</sup> g externalizing	.52**	.56**	.78**	-					
Peer nominations									
5. Spring 1 <sup>st</sup> g peer acceptance	-.29**	-.27**	-.18**	-.22**	-				
6. Winter 2 <sup>nd</sup> g peer acceptance	-.32**	-.37**	-.28**	-.28**	.53**	-			
7. Spring 1 <sup>st</sup> g number friends	-.20**	-.16**	-.09*	-.08	.56**	.37**	-		
8. Winter 2 <sup>nd</sup> g number friends	-.19**	-.15**	-.11**	-.12**	.38**	.60**	.35**	-	
9. Spring 1 <sup>st</sup> g proximity to others	-.18**	-.16**	-.11**	-.11**	.57**	.44**	.72**	.35**	-
10. Winter 2 <sup>nd</sup> g proximity to others	-.19**	-.14**	-.10*	-.14**	.38**	.57**	.33**	.74**	.41**

Note. Kinder = kindergarten, g = grade. \*  $p < .05$ , \*\*  $p < .01$ .

***Positive Peer Relations as Mediators of the Effect of the GBG on Externalizing Behavior***

We then tested for positive peer relations as mediators of the GBG effects on externalizing behavior. We first specified three separate mediation models. In these models, the effect of GBG on peer relations in second grade was estimated by regressing the indices of peer relations on the dummy coded intervention status. The second-grade peer relations scores were also regressed on their first-grade values to control for stability in peer relations. To test whether reductions in externalizing behavior were mediated by increases in positive peer relations, we regressed the growth parameters of externalizing behavior on the second-grade positive peer relations score. The significance of the indirect effect of the GBG on externalizing behavior via peer relation indicators was tested using Sobel's test (Sobel, 1982). All paths were controlled for male sex and low SES.

Table 6.4 shows the estimates of the separate mediation models. The model on peer acceptance (CFI = .97, TLI = .95, RMSEA = .06) showed significant improvements in peer acceptance for GBG children ( $\beta = .13, p < .01$ ; see Table 6.4, GBG  $\rightarrow$  mediator) and a significant path from the (improved) peer acceptance to (reduced) rates of externalizing behavior in early summer of second grade ( $\beta = -.26, p < .01$ ; see Table 6.4, mediator  $\rightarrow I_{ext}$ ). There was still a significant path from the GBG to the intercept of externalizing behavior:  $\beta = -.14, p < .01$ ; Table 6.4, GBG  $\rightarrow I_{ext}$ , suggesting partial mediation (Baron & Kenny, 1986). We therefore tested for the significance of the indirect path (Sobel, 1982). Results showed a significant indirect effect of GBG via peer acceptance ( $\beta = -.03, p < .01$ ; see Table 6.4).

A higher number of mutual friends (CFI = .97, TLI = .95, RMSEA = .06) were found for GBG children, as compared to controls ( $\beta = .11, p < .01$ ). A direct path of number of mutual friends to externalizing behavior was also found ( $\beta = -.11, p < .01$ ). Still, the effect of the GBG on the intercept of externalizing was significant ( $\beta = -.17, p < .01$ ). We therefore estimated the significance of the indirect path, which was confirmed ( $\beta = -.02, p < .05$ ).

The third mediation model tested the potential mediating effect of proximity to others on externalizing behavior (CFI = .98, TLI = .96, RMSEA = .05). More proximity to others among GBG children was found ( $\beta = .11, p < .01$ ), as well as a direct effect of proximity to externalizing behavior ( $\beta = -.12, p < .01$ ). Again, the direct effect of the GBG on externalizing behavior remained significant ( $\beta = -.17, p < .01$ ). The indirect path of GBG via proximity to the intercept of externalizing problems was, though, significant ( $\beta = -.02, p < .05$ ).

***The Unique Effect of Indicators of Positive Peer Relations on Reductions in Externalizing Behavior***

After ascertaining that the indicators of positive peer relations were related to change in externalizing behavior when considered separately, we

## 6. Childhood Positive Peer Relations

moved on to the multiple mediation model (see Figure 6.2). Parameter estimates were controlled for male sex, low SES, prosocial behavior and social problems in kindergarten. Standard errors were adjusted for the nested data. The model had a good fit to the data (CFI = .98, TLI = .96, RMSEA = .03). The standardized regression coefficients of the model are in Figure 6.3. We found that when the three indicators of positive peer relations were entered simultaneously, only the indirect path from the GBG to externalizing behavior via peer acceptance remained significant (Sobel test:  $\beta = -.03$ ,  $p < .05$ ). The direct path from GBG to the intercept of externalizing behavior also remained significant, suggesting partial mediation (Baron & Kenny, 1986).

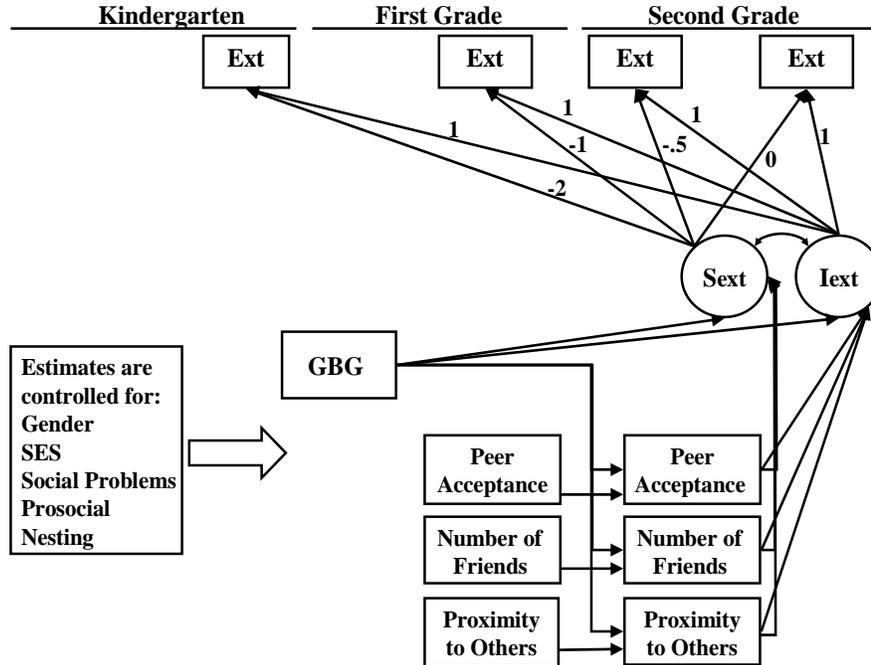


Figure 6. 2. Graphical representation of the multiple mediation model testing the possible associations between the Good Behavior Game (GBG), externalizing behavior (Ext), and positive peer relations.  $I_{ext}$  = intercept of externalizing behavior,  $S_{ext}$  = slope of externalizing behavior, SES = socioeconomic status.

As loss to follow-up was related to externalizing behavior and peer acceptance, we tested whether this non-random missing influenced the results. We fitted the mediation model including only children who remained in the study until second grade ( $N = 645$ ). The results of this model were similar to the model on the full sample ( $N = 758$ ). For instance, the indirect path from the GBG via improvements in peer acceptance was significant ( $\beta = -.03$ ,  $p < .05$ ).

Table 6.4 Estimates from Separate Mediation Models for Externalizing Behavior

Mediator	Direct effects									Indirect effect		
	GBG → I <sub>ext</sub>			GBG → Mediator			Mediator → I <sub>ext</sub>			GBG → Mediator → I <sub>ext</sub>		
	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$
1. Peer acceptance	-.39	.10	-.14**	.05	.01	.13**	-1.79	.27	-.26**	-.09	.03	-.03**
2. Number of friends	-.46	.10	-.17**	.03	.01	.11**	-1.19	.47	-.11**	-.04	.02	-.02*
3. Proximity to others	-.46	.10	-.17**	.03	.01	.11**	-.87	.32	-.12**	-.04	.02	-.02*

Note. GBG = Good Behavior Game; I<sub>ext</sub> = intercept of externalizing behavior. \*  $p < .05$ , \*\*  $p < .01$ .

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A concern of mediation analyses is the interchangeability of mediator and outcome. That is, reductions in externalizing behavior may cause improved peer relations. We tested for this possibility by specifying a model in which externalizing problems in the fall of second grade served as the mediator of improved second grade peer acceptance. The indirect path from the GBG to peer acceptance via externalizing behavior was indeed significant (Sobel test:  $\beta = .04, p < .05$ ). Thus, the alternative pathway of reductions in externalizing problems causing improvements in peer acceptance cannot be ruled out on the basis of the data.

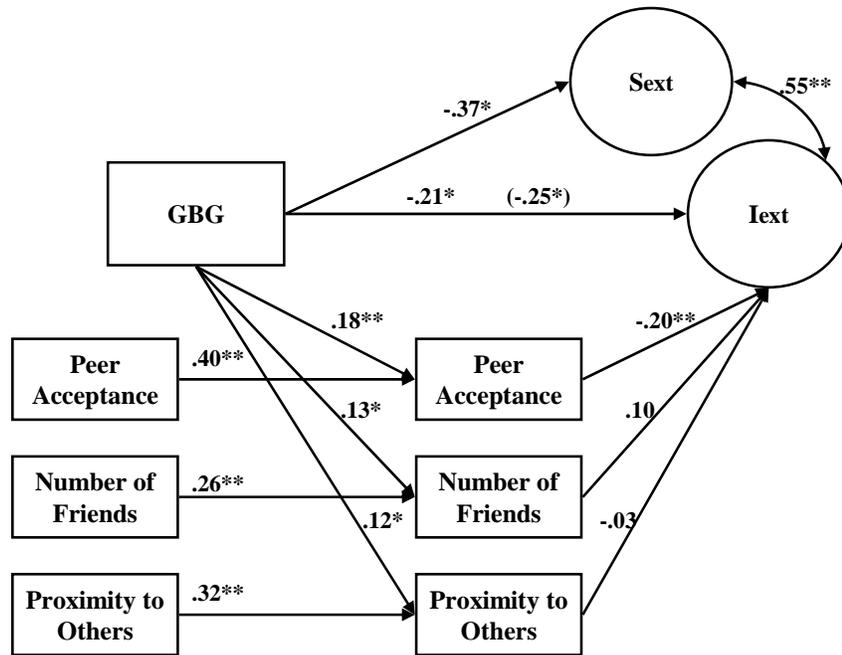


Figure 3. Outcome of the multiple mediation model. All estimates were controlled for male sex, SES, social problems in kindergarten, and prosocial behavior in kindergarten. The indicators of positive peer relations in second grade were controlled for their values in first grade. Standard errors were adjusted for nested data within classrooms. The value enclosed in parentheses represents the standardized regression coefficient indicating the effect of the Good Behavior Game (GBG) on the intercept of externalizing behavior in the non-mediation model.  $I_{ext}$  = intercept of externalizing behavior,  $S_{ext}$  = slope of externalizing behavior.

\*  $p < .05$ , \*\*  $p < .01$ .

### Sex Differences

To test for possible sex differences in the links found in the multiple mediation model, we specified a multiple-group model in which boys were compared with girls. A significant effect of the GBG on the intercept of

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externalizing behavior was found for boys ( $B_{\text{intercept}} = -.83$ ,  $SE = .26$ ,  $\beta_{\text{intercept}} = -.30$ ,  $p < .01$ ), but not for girls ( $B_{\text{intercept}} = -.32$ ,  $SE = .24$ ,  $\beta_{\text{intercept}} = -.13$ ,  $p > .05$ ). To ascertain that this non-significant path was not due to limited power provided by the smaller samples, we tested for the significance of the difference in the parameter estimates using a Wald test. This confirmed the sex difference (Wald (1) = 9.33,  $p < .01$ ). No sex differences were found in the effect of the GBG on peer acceptance (Wald (1) = .84,  $p > .05$ ) and also not in the effect of positive peer relations on externalizing behavior (Wald (1) = .27,  $p > .05$ ). However, because of lack of GBG effects on externalizing problems among girls, the indirect path of GBG via peer acceptance was only significant for boys ( $\beta = -.06$ ,  $p < .05$ ).

### Discussion

In this study, we examined (1) the role of positive peer relations in children's development of externalizing behavior; (2) whether peer acceptance, the number of mutual friends, and proximity to others each has a unique effect on externalizing behavior; and (3) whether these results are similar for boys and girls. The results show reduced rates of externalizing behavior among GBG children, as compared to children in the control-group. The medium size of effect of the reductions in externalizing behavior after two years of intervention ( $d = 0.45$ ) can be regarded as substantial considering that the GBG is a universal preventive intervention. This significant reduction in externalizing behavior adds to previous findings on the effectiveness of the GBG in reducing externalizing behavior (Embry, 2002; Ialongo et al., 2001; Kellam et al., 2008; Kellam et al., 1994; Petras et al., 2008; van Lier et al., 2004). We found that reductions in externalizing behavior were specific for boys. This finding is in line with previous GBG studies which showed that reductions in externalizing behavior were primarily observed among boys (Kellam et al., 1994; Muthén et al., 2002; van Lier et al., 2005). However, this study also found that boys as well as girls in the GBG condition were more accepted by peers ( $d = 0.34$ ), had more mutual friends ( $d = 0.20$ ), and showed more proximity to others ( $d = 0.26$ ) than controls. These results have not been reported previously for the GBG. This study, therefore, confirms and extends results from former GBG studies.

This study also showed that, when considered separately, peer acceptance, number of mutual friends, and proximity to others partially mediated the reductions in externalizing behavior induced by the GBG. However, if all the indicators of peer relations were considered simultaneously, only increases in peer acceptance significantly mediated the impact of the GBG on externalizing behavior. As this role of positive peer relations in the reduction of externalizing problems was studied in a RCT intervention study that aimed to facilitate positive peer interactions (Hinshaw, 2002; Kraemer, Wilson, Fairburn, & Agras, 2002), these findings have several implications.

First, our findings are supportive of positive peer relations as environmental mediators of children's externalizing behavior development. This

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study is thereby consistent with previous research on adverse peer relations as environmental mediators of children's externalizing behavior (Bierman et al., 2002; van Lier et al., 2005; Vitaro et al., 1999). Together with the earlier studies, our findings suggest that indicators of both positive and adverse peer relations should be considered not just as markers, but as environmental mediators of the development of externalizing behavior. However, it must be noted that we found only proof for partial mediation (Baron & Kenny, 1986). Thus, nonincluded variables, potentially influenced by the GBG should therefore also be considered to fully understand the influence of the program on the development of externalizing problems. For instance, improved classroom structure due to the program may result in reductions in impulsive, attention-deficit/hyperactivity disorder like symptoms, which may also reduce externalizing problems (van Lier et al., 2004). In addition, as the indirect path from the GBG to peer acceptance via externalizing behavior was also significant in the model, the alternative pathway of reductions in externalizing problems causing improvements in peer acceptance cannot be ruled out on the basis of the data. Rather, this could suggest a transactional relation between the development of positive peer relations and externalizing problems, which are both influenced by the intervention.

A second implication regards the notion that number of friends and proximity to other children may not impact externalizing behavior as much as being accepted by peers. It may be that friendships and proximity to others are improved following from peer acceptance. That is, being accepted by peers can shape conditions under which dyadic friendships and proximity to other children become important for children's behavioral development (Bukowski, Pizzamiglio, Newcomb, & Hoza, 1996). We have to consider, though, that this study focused on the period from kindergarten to second grade. The finding that only peer acceptance mediated the intervention effects when all mediators were considered simultaneously may, as a result, be explained by age differences in the importance of these aspects of peer relations. That is, being accepted by peers may be important especially during the first years of elementary school. In contrast, although close and intimate friendships already emerge in early childhood, they may become more significant for children's development during late childhood and adolescence. (Sullivan, 1953; Vitaro et al., 2007).

Finally, we found only significant mediation by peer acceptance for boys. This may imply that especially for boys, having positive relations with peers is of importance when trying to prevent externalizing problems. It is, however, important to note that sex only moderated the effect of the GBG on externalizing behavior problems, not on peer relations. In line with previous research on sex differences in externalizing behavior (Moffit et al., 2001), girls in this study were found to have a low base rate of externalizing behavior, making reductions in these already low levels unlikely. As boys had higher levels of externalizing problems than girls, they had more opportunities to reduce their externalizing problems. Because we found the effect of the GBG on

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peer relations to be sex invariant, future research should further test whether peer relations are sex-invariant environmental mediators of problem behaviors.

This study is not without limitations. First, our results do not imply causal links between children's positive peer relations and externalizing behavior. As we described, although the GBG focuses on peer dynamics in targeting externalizing problems, it cannot be ruled out that other processes account for the found associations. Also, as described in the Results section, the possibility exists that change in children's positive peer relations did not *cause* change in externalizing behavior, but rather, that change in positive peer relations was the *result* of reduced externalizing problems. The interchangeability of mediator and outcome is a well-known problem of mediation analyses. This can be ruled out, for instance, by theory or by using an experimental design (Mackinnon, Fairchild, & Fritz, 2007; Spencer, Zanna, & Fong, 2005). As mentioned, the GBG does not directly target externalizing problems, but rather hypothesized underlying mechanisms, such as the facilitation of positive peer interactions. Children are assigned to teams and teams as a whole are systematically rewarded for their appropriate behavior. Consequently, it is likely that because peer interactions are manipulated, the change in positive peer relations mediated the reduction in externalizing behavior. Our results thus underscore the importance of peer relations in externalizing behavior development. However, because we did not directly manipulate positive peer relations and because we found support for the alternative mediation model, conclusions on peer relations as the cause of externalizing behavior cannot be made from the present findings.

A second limitation regards the relative short time frame from kindergarten to second grade. A longer follow-up would be needed to test whether the GBG and positive peer relations have long-term effects on children's externalizing behavior. A longer follow-up period is also needed to study whether the findings of this study also apply to later age periods, such as late childhood and adolescence.

A third limitation involves the fact that externalizing problems were rated by the same teachers who implemented the GBG. Consequently, we cannot rule out that teachers in the GBG condition rated the behavior of children different than control-group teachers. However, our results coincide with previous findings of the program on reductions in externalizing behavior and related problems using different informants (peers, self-reports, rater independent measures), up to 13 years of follow-up (Kellam et al., 2008; Petras et al., 2008; Poduska et al., 2008; van Lier et al., 2005).

Despite these and possible other limitations, the present results provide new and valuable insights on the link between childhood positive peer relations and externalizing outcomes and have implications for future research and preventive effort. As we already mentioned, longitudinal studies – spanning childhood and possibly even adolescence – are needed to test whether the results found in this study also apply to later age periods. Longitudinal studies

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are also needed to test whether initial acceptance by peers remains a unique predictor of externalizing behavior across development, and whether it offsets other processes (such as having more friends, and being close to other peers) as important mediators of future externalizing problems. Also, our results imply that future studies should, besides including indices of poor peer relations as risk factors, also include indicators of positive peer relations as promotive factors for children's adequate behavioral development. Finally, our results underscore the importance of enhancing positive relations between children in early elementary school. Positive effects of the GBG on reductions in externalizing behavior have been found in a number of rigorously executed RCTs on different samples (e.g., inner city population, general population sample) and in different countries (e.g., the United States, the Netherlands). Given the focus of the GBG, this implies that, indeed, creating a classroom environment that facilitates children's positive interactions with each other is an important component in preventing externalizing problems in early elementary schoolchildren.

## **Chapter 7**

### **General Discussion**

The general aim of the present thesis was to understand group-level peer relationships and their role in the development of children's psychopathology during childhood and early adolescence. In the introduction, we identified two issues concerning this topic that are in need of clarification. First, although clique membership has been theorized to be positive for children's development, the empirical evidence about the advantageousness of being a clique member is not conclusive. Second, there exists contradictory evidence about the extent to which group-level peer relations influence the development of psychopathology. Investigating these issues can improve our understanding of the development of psychopathology, and may yield insights that are useful in efforts employed to prevent psychopathology. Therefore, in this thesis, we addressed the role of group-level peer relations in the development of psychopathology in three ways. First, we studied child characteristics associated with clique membership to explore whether clique members are indeed characterized by positive behavior. Second, we investigated whether clique membership predicts the development of internalizing and externalizing problems. Finally, we examined the role of children's group-level peer relations in changing the course of externalizing problems. The studies in this thesis cover a broad age range, namely from early elementary school to early adolescence. In this chapter, the main findings and conclusions of the studies reported in Chapters 2 to 6 are outlined. In addition, implications for theory and prevention, and directions for future research are discussed.

#### **Child Characteristics Associated with Clique Membership**

It has been theorized that clique membership is beneficial for children's development. That is, clique members are assumed to have more opportunities than children outside cliques to learn and practice important social skills (Boivin, Vitaro, & Poulin, 2005; Rubin, Bukowski, & Parker, 2006). Moreover, clique membership may provide children with positive resources such as group support and a sense of belongingness (Rubin, 1980). As stated, we examined this potential beneficial role of being a clique member by examining child characteristics associated with clique membership, and found some mixed results.

In Chapter 2, we studied child characteristics associated with change and stability in early school-aged children's clique membership. Because studies about cliques rarely focus on the period of early elementary school, the findings from Chapter 2 provide unique information about children's clique membership in this age period. The results showed that already at these young ages, most children (71% - 74%) affiliate in cliques. Nonetheless, clique membership is not always stable. That is, there are a fair number of children

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who become estranged from cliques or who enter a clique at this age. Importantly, the results supported the supposed beneficial role of clique membership in children's development. We found that clique members in early elementary school have more 'positive' child characteristics (i.e., high levels of prosocial behavior and social preference, and low levels of internalizing and externalizing behavior) than non-clique members. Moreover, the results indicate that estrangement from cliques is associated with 'negative' child characteristics (i.e., low levels of prosocial behavior and high levels of internalizing behavior). We also studied what characterized children who successfully entered a clique, and found that this coincided with a decrease in externalizing behavior. This decrease in externalizing behavior co-occurred with an active facilitation to enter the clique by peers.

In sum, based on the investigation of a broad range of child characteristics measured at the first years of elementary school, the results of Chapter 2 support the notion that clique members are generally characterized by positive child characteristics, while negative child characteristics are maladaptive, and therefore linked with being and becoming isolated from cliques.

Nonetheless, as we mentioned, not all of our findings support the positive role of clique membership in children's development. In Chapter 3, we focused on the observation that several children who show negative behavioral characteristics, such as bullying and aggression, also affiliate in cliques (Cairns, Cairns, Neckerman, Gest, and Gariépy, 1988; Espelage, Holt, & Henkel, 2003; Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998; Salmivalli, Huttunen, & Lagerspetz, 1997). The finding that even children who show behaviors that are disliked by others are able to acquire and maintain clique membership can be explained by characteristics that mitigate the supposed negative effects of their undesirable behaviors. In other words, what makes aggressive/bullying children attractive despite their negative behaviors? To examine this, we studied the similarity between fourth- to sixth-grade clique members on bullying behavior, on likeability, and on perceived popularity. We found that the similarity in bullying behavior of children who were members of the same clique was matched by their similarity in perceived popularity. This suggests that individuals tend to use bullying as a strategy to attain or maintain a position in a powerful and social dominant clique (see also Adler & Adler, 1998; Estell, Farmer, & Cairns, 2007; Farmer, Estell, Bishop, O'Neal, & Cairns, 2003; Hawley, 1999).

Thus, in contrast to the findings from Chapter 2, the results reported in Chapter 3 suggest that negative behaviors are not always maladaptive for children in cliques. Indeed, using externalizing tactics such as bullying can be *functional* for some children who try to achieve or preserve their clique membership in late childhood. To further address the role of clique membership in children's behavioral development, we focused in Chapters 4 and 5 on clique

membership predicting the development of psychopathology from late childhood into early adolescence.

**Clique Membership and its Role in the Development of Psychopathology**

In investigating the role of clique membership in the development of psychopathology, we also found some mixed results regarding the advantageousness of being a clique member. The results of Chapters 4 and 5 showed that clique membership was uniquely associated with low levels of internalizing problems over the period from late childhood to early adolescence. Of importance is that the protective role of clique membership in the development of internalizing problems applied to both girls and boys, and remained even after controlling for other variables from the peer domain, such as social preference and having dyadic friends. In Chapter 5, we further explored possible explanations for higher levels of internalizing problems among clique isolates, as compared to clique members. Indeed, children who are isolated from cliques may be deprived of the assets of clique membership (e.g., social support and a sense of belongingness) and may therefore experience internalizing problems including depressive symptoms. We examined whether cognitive-emotional processes could explain the association between clique isolation and depressive symptoms, and found that this association was mediated by feelings of loneliness. These results suggest that being isolated from cliques is associated with subsequent depressive symptoms, because children internalize these negative social experiences into feelings of loneliness. Clique membership may thus prevent children from getting drawn into this process.

In contrast to the protective role of clique membership in internalizing behavior development, the results reported in Chapter 4 also indicate that being a clique member is not always beneficial with respect to the development of externalizing problems. In fact, in line with the findings from Chapter 3, the results indicate that clique membership can foster the development of externalizing problems in late childhood. That is, we found that boys who were members of cliques had a higher change of increasing in externalizing problems from age 9-12 years, in particular when the other clique members showed similar increases in these problems. These results support theoretical and empirical evidence about adolescent selection and socialization processes that stimulate antisocial development in the context of cliques (Adler & Adler, 1998; Burk, Steglich, & Snijders, 2007; Cohen, 1977; Espelage et al., 2003; Kindermann, 2003). According to this evidence, children tend to select others with similar behavior and similar status as their clique affiliates; at the same time, clique members are believed to influence each other's externalizing problems through internal clique dynamics including peer pressure, reinforcement, and modeling. Moreover, our results are in line with the notion that especially boys tend to use externalizing behavior as a strategy to enhance their status in cliques (Eder, Evans, & Parker, 1995).

Overall, the results described in Chapters 2 to 5 indicate that clique membership is beneficial, but can also be disadvantageous for children's development. That is, we found that clique membership is associated with positive child characteristics in early elementary school, and can protect children against developing internalizing problems in late childhood. Nonetheless, showing undesirable behavior can also be functional for some children in cliques. Moreover, boys' externalizing problems tend to increase in cliques in late childhood. We do have to take into account, though, that the described studies focused on clique membership in different age periods. According to the developmental model of antisocial behavior proposed by Patterson and colleagues (Patterson, DeBaryshe, & Ramsey, 1989), children who display disruptive behavior in early childhood are at risk for experiencing peer rejection in middle childhood. This peer rejection may lead, in turn, to involvement in a deviant peer group in late childhood, which puts children at high risk for engaging in chronic delinquent behavior. Consistent with the Patterson et al. model, our results indicate that clique membership in early elementary school is unlikely to be associated with undesirable behavior, but that in late childhood, being a clique members may be at risk for developing externalizing problems.

Taken together, our findings indicate that clique membership seems to have a bright side, but also a dark side. In the next section, we will further explore the potential bright side of group-level peer relations. Specifically, we will address the usability of group-level peer relations in changing the course of psychopathology.

### **The Role of Children's Group-level Peer Relations in Changing the Course of Psychopathology**

In the last study of this thesis (Chapter 6), the question was addressed whether group-level peer relations can play a role in reducing externalizing problems in early school-aged children. By using a randomized controlled intervention design, we tested whether different aspects of positive group-level peer relations (i.e., peer acceptance, number of mutual friends, and social proximity to others) can function as mediators of the impact of a universal classroom-based preventive intervention (the Good Behavior Game) on reducing externalizing problems. Indeed, a RCT provides a unique design to test the role of peer relations in the development of psychopathology (Howe, Reiss, & Yuh, 2002; Kellam & Rebok, 1992; Rutter, Pickles, Murray, & Eaves, 2001).

The results underscore the importance of positive group-level peer relations in the development of externalizing problems. Indeed, the results reported in Chapter 6 show reduced rates of externalizing problems among intervention children, as compared with children in the control group. The medium effect size of mean difference in externalizing problems at the end of the intervention ( $d = 0.45$ ) can be considered sizeable given that the intervention was implemented in a general population sample, in which many children never

engage in externalizing problems. Importantly, the reductions in externalizing problems among intervention children coincided with improved positive group-level peer relations. The results showed that the impact of the intervention on reductions in externalizing problems was partially explained by the improved group-level peer relations, in particular by increases in peer acceptance. This effect was limited to boys. Apparently, improvement of young boys' group-level peer relations can contribute to reducing disturbing behavior in the classroom.

This is an important finding, as it shows that the Good Behavior Game not only works through its direct positive effects on children's behavior, but also indirectly through its effects on positive group-level peer relations. Moreover, taking all results into account, our findings demonstrate the bidirectionality of group-level peer relations with regard to externalizing problems. That is, we showed in this thesis that children's group-level peer relations can put children at risk for developing externalizing problems. At the beginning of elementary school, children who are isolated from cliques show higher levels of externalizing problems than clique members. In contrast, in late childhood, being in a clique with peers who engage in externalizing problems likely increases children's externalizing problems. However, we also showed the protective side of group-level peer relations against developing externalizing problems. Specifically, in early elementary school, improvements in group-level peer relations can contribute to reducing externalizing problems.

### **Implications and Directions for Future Research**

#### ***Theoretical Implications***

The results of the present thesis provide several theoretical implications. First, our results indicate that clique membership is uniquely associated with the development of psychopathology. Although a wealth of studies have demonstrated that dyadic friendships and sociometric status predict the development of internalizing and externalizing problems (Bagwell, Newcomb, & Bukowski, 1998; Boivin, Poulin, & Vitaro, 1994; Brendgen, Wanner, Morin, & Vitaro, 2005; Ladd & Troop-Gordon, 2003; Pedersen, Vitaro, Barker, & Borge, 2007; Pelkonen, Marttunen, & Aro, 2003; Snyder, Prichard, Schrepferman, Patrick, & Stoolmiller, 2004; Vitaro, Pedersen, & Brendgen, 2007), the role of clique membership in the development of psychopathology is not an often addressed research topic in the field of developmental psychology. Therefore, the results of the present thesis highlight the notion that to gain more knowledge about the development of psychopathology, research should take multiple aspects of peer relations into account, including clique membership and peer relations aspects such as sociometric status and dyadic friendships.

Furthermore, the results from the present thesis underscore the necessity of investigating the association between children's group-level peer relations and psychopathology in several age periods. Specifically, the findings from Chapters 3 and 4 indicate that during late childhood, externalizing problems can

be fostered in cliques. In contrast, the results reported in Chapters 2 and 6 suggest that for early school-aged children, an increase in (quality of) group-level peer relations plays a role in reducing their externalizing problems. Therefore, our results indicate that findings about the role of children's group-level peer relations in the development of psychopathology can not simply be generalized to all age periods.

A third theoretical implication regards the role of gender. Although we did not find that the association between group-level peer relations and internalizing problems was different for boys and girls, group-level peer relations were related to externalizing problems especially in boys. Indeed, these results show that boys do not only show more externalizing problems than girls (Moffitt, Caspi, Rutter, & Silva, 2001), but also that, in contrast to girls, their group-level peer relations play a role in the development of these problems. These results highlight the importance of studying the role of gender in the association between group-level peer relations and the development of psychopathology.

### ***Clinical Implications***

The findings reported in the present thesis may also have implications for prevention efforts, as our results suggest that improvements in group-level peer relations may underlie reductions in externalizing problems in early school-aged children. Specifically, our results imply that prevention programs targeting externalizing problems can benefit from creating a classroom environment in which children's peer acceptance and their positive relations with each other are enhanced.

However, caution may be warranted here. That is, it is yet unclear whether enhancing children's group-level peer relations is a useful tool in preventing externalizing problems in later age periods. To illustrate, a possible risk of using group-level peer relations as instruments in preventing externalizing problems in late childhood and adolescence is that this may actually foster externalizing problems, especially in boys. Possibly, socialization processes such as reinforcement, modeling, and peer pressure within treatment groups in late childhood and adolescence may lead to an increase rather than a decrease in children's externalizing problems. Indeed, it has been reported that peer-group interventions where high-risk adolescents are put together in groups are at risk of having iatrogenic effects (Dishion, McCord, & Poulin, 1999; Mager, Milich, Harris, & Howard, 2005). This type of intervention increased rather than reduced these adolescents' antisocial behaviors. However, these iatrogenic effects may not occur if the intervention program controls peer dynamics, and if it includes specific skill-building elements (van Lier, Vitaro, & Eisner, 2007). Therefore, future intervention programs that would include children's positive group-level peer relations as tools in preventing externalizing problems in late childhood and adolescence

should be aware of unwanted socialization processes in peer groups and should also focus on enhancement of participants' social competency skills.

Our findings may also have implications for efforts employed to reduce children's internalizing problems. Social problems, including clique isolation, are not often targets of prevention programs (Greco & Morris, 2001). The results of the present thesis imply that by promoting children's group-level peer relations, for example by offering children social skills training programs or peer-mediated interventions, their feelings of loneliness may decrease, and ultimately, they may become less at risk for developing depressive symptoms. For instance, the Good Behavior Game, which facilitates positive interactions between children through a team-based approach, has been reported to reduce children's internalizing problems, in addition to externalizing problems (Kellam, Rebok, Mayer, Ialongo, & Kalodner, 1994; Vuijk, van Lier, Crijnen, & Huizink, 2007). An increase in children's positive group-level peer relations may be one of the mechanisms through which preventive interventions not only affect externalizing problems, but also have an effect on reducing internalizing problems. However, this hypothesis is in need of further investigation.

### **Directions for Future Research**

Our results showed that describing child characteristics related to clique membership and examining children's group-level peer relations as predictors of the development of psychopathology appears to be a useful approach for gaining insight into the role of children's groups in the development of psychopathology. However, a next important step would be to examine internal group dynamics. That is, future studies should focus on structural aspects of children's groups (i.e., status within groups, group norms, and group roles), and on the interactions between children in groups, to gain more insight into the processes underlying the association between children's group-level peer relations and psychopathology. For instance, future studies could include observations in the natural environment or in controlled setting in order to provide more knowledge about socialization patterns that occur within children's groups and that influence children's development of psychopathology (see e.g., Dishion, Spracklen, Andrews, & Patterson, 1996).

The studies reported in the present thesis, which covered a broad age range, suggest that group-level peer relations can differently impact children's development of internalizing and externalizing problems in different age periods. Yet, longitudinal studies tracking children from early childhood into adolescence are needed to further test the likely changing role of group-level peer relations in the development of psychopathology.

Regarding the issue of the influence of group-level peer relations, the present thesis indicates that group-level peer relations can be used to reduce externalizing problems in early school-aged boys. Moreover, this thesis underscores the value that randomized controlled intervention designs can have for studying developmental psychopathology. Indeed, by changing peer

relations aspects hypothesized to underlie psychopathology, RCTs can test whether these changes mediate the effect of the intervention on psychopathology. Studies focusing on later age periods and also on internalizing problems should next be conducted to draw further conclusions about the role of group-level peer relations in changing the course of psychopathology, and about the usability of group-level peer relations as tools in preventing internalizing problems and externalizing problems in late childhood and adolescence. These studies should preferably use a RCT design.

### **Conclusions**

Based on the findings from the present thesis, several conclusions can be drawn. First, we showed that already in early elementary school, most children affiliate in cliques. Moreover, clique membership appeared to be a unique predictor of the development of psychopathology. Therefore, the findings from this thesis highlight the importance of taking the role of childhood clique membership in the development of psychopathology into account, besides other important peer relations aspects such as sociometric status and dyadic friendships.

Furthermore, we showed that the role of group-level peer relations in the development of psychopathology is not straightforward, but depends on the type of psychopathology that is investigated, on the age period in which group-level peer relations are examined, and on the gender of the child. In general, group-level peer relations seem to be beneficial for children's behavioral development. However, being a clique member can also foster boys' development of externalizing problems in late childhood. These findings signify that it is necessary to focus on the role of group-level peer relations in the development of boys' and girls' internalizing and externalizing problems in different age periods.

Our results also provide knowledge that can be applied in prevention efforts employed to reduce children's psychopathology. That is, we showed that creating a classroom environment in which children's peer acceptance and their positive relations with each other are enhanced, can be used to reduce children's externalizing problems in early elementary school. As these findings can not simply be generalized to other forms of psychopathology (i.e., internalizing problems), and also not to later age periods, future research is needed focusing on group-level peer relations as potential instruments in preventing internalizing problems and externalizing problems in late childhood and adolescence.

Overall, the findings from the present thesis underscore the notion that a group-based approach of children's peer relations contributes significantly to our understanding of the development of psychopathology. Besides this theoretical significance, a group-based approach also appears to be useful in efforts undertaken to prevent psychopathology.

## **Samenvatting (Summary in Dutch)**

### **Relaties met Leeftijdsgenoten en de Ontwikkeling van Psychische Problemen: Een Groepsbenadering**

De relaties die kinderen met hun leeftijdsgenoten hebben, vormen een belangrijke context voor de ontwikkeling van gedrag. Ook in de ontwikkeling van psychische problemen kunnen relaties met leeftijdsgenoten van invloed zijn. Psychische problemen bij kinderen en jongeren worden veelal onderverdeeld in internaliserende en externaliserende problemen. Met internaliserende problemen worden angst- en depressieklachten bedoeld. Externaliserende problemen omvatten gedragsproblemen zoals agressie en opstandig gedrag. Door de rol van relaties met leeftijdsgenoten in de ontwikkeling van internaliserende en externaliserende problemen te onderzoeken, kunnen wij onze kennis over psychische klachten bij kinderen en jongeren vergroten. Tevens stelt dit ons in staat om meer inzichten te verkrijgen in mogelijkheden om psychische problemen te voorkomen.

Dit proefschrift benadert de rol van relaties met leeftijdsgenoten in de ontwikkeling van psychische problemen vanuit een groeps perspectief. Twee vormen van groepsrelaties bij kinderen en jongeren worden veelal genoemd in de literatuur, namelijk vriendengroepen en de mate van acceptatie van kinderen door leeftijdsgenoten. Een vriendengroep kan gedefinieerd worden als een groep klasgenoten die meer met elkaar omgaan dan met andere klasgenoten. De mate van acceptatie van een kind wordt bekeken door aan klasgenoten te vragen of zij dit kind leuk of niet leuk vinden. Een kind dat door veel klasgenoten leuk wordt gevonden en door weinig klasgenoten niet leuk wordt gevonden, wordt in hoge mate geaccepteerd door leeftijdsgenoten. Echter, een kind dat door veel klasgenoten niet leuk wordt gevonden en door weinig klasgenoten leuk wordt gevonden, wordt afgewezen door leeftijdsgenoten. Hoewel verschillende studies de associatie tussen vriendengroepen en acceptatie door leeftijdsgenoten met psychische problemen hebben bestudeerd, zijn er tenminste twee zaken rondom dit thema nog niet duidelijk. Deze zaken staan centraal in dit proefschrift.

Allereerst is het onduidelijk of het behoren tot een vriendengroep bevorderend werkt voor de ontwikkeling van kinderen. Er wordt veelal aangenomen dat het behoren tot een vriendengroep kinderen de kans geeft om belangrijke sociale vaardigheden aan te leren en om kinderen ervaringen mee te geven zoals groepssteun en een gevoel van collectiviteit. Daarentegen hebben kinderen die geïsoleerd zijn van vriendengroepen geen mogelijkheden om deze vaardigheden en ervaringen op te doen en is het aannemelijk dat zij minder aangepast zijn dan kinderen die bij een vriendengroep behoren. Echter, studies die hebben gekeken naar de kenmerken van kinderen in vriendengroepen, vonden dat ook kinderen die externaliserend gedrag vertonen veelal behoren tot vriendengroepen en bovendien vaak in groepen zitten met andere kinderen met externaliserende problemen. Deze bevindingen laten zien dat het nog

onduidelijk is in hoeverre het behoren tot een vriendengroep een positieve uitwerking heeft op de ontwikkeling van kinderen.

Ten tweede zijn bevindingen met betrekking tot de rol die groepsrelaties kunnen spelen in het veranderen van het beloop van psychische problemen niet consistent. Hoewel een groot aantal studies laat zien dat kinderen die afgewezen worden door leeftijdsgenoten meer psychische problemen vertonen dan geaccepteerde kinderen, zijn er tegenstrijdige resultaten gevonden over de mate waarin acceptatie door leeftijdsgenoten de ontwikkeling van psychische problemen van kinderen kan beïnvloeden. Aan de ene kant hebben studies gerapporteerd dat een toename in psychische problemen verklaard kan worden door de mate van acceptatie van kinderen in de klas. Aan de andere kant zijn er ook studies die laten zien dat het afgewezen worden door leeftijdsgenoten niet leidt tot een toename in psychische problemen.

In dit proefschrift gaan wij verder in op deze twee zaken. Specifiek beoogt dit proefschrift om:

- (1) De associatie tussen kindkenmerken, zoals gedrag en populariteit, en het behoren tot een vriendengroep te onderzoeken.
- (2) Te bekijken of het behoren tot een vriendengroep een unieke rol speelt in de ontwikkeling van internaliserende en externaliserende problemen bij kinderen en jongeren.
- (3) Te onderzoeken in hoeverre groepsrelaties van kinderen een rol spelen in het afnemen van externaliserende problemen.

In de studies beschreven in de Hoofdstukken 2 tot en met 5 staat de vraag centraal of het behoren tot een vriendengroep positief is voor de ontwikkeling van kinderen. Deze studies, die wij hieronder verder zullen bespreken, laten gemixte resultaten zien over de bevorderlijkheid van het behoren bij vriendengroepen. In de studie beschreven in Hoofdstuk 6 hebben wij bekeken in welke mate de groepsrelaties van kinderen een rol spelen in het veranderen van het beloop van externaliserende problemen. De resultaten suggereren dat positieve groepsrelaties een rol kunnen spelen in het afnemen van externaliserende problemen.

Allereerst hebben wij kindkenmerken onderzocht, waaronder verschillende vormen van gedrag, die geassocieerd zijn met stabiliteit en verandering in het wel of niet behoren tot een vriendengroep van kinderen aan het begin van de basisschool (Hoofdstuk 2). De resultaten van deze studie laten zien dat de meeste kinderen in de eerste jaren van de basisschoolperiode behoren bij een vriendengroep. Bovendien laten kinderen in vriendengroepen meer positief gedrag zien dan kinderen die niet bij een vriendengroep behoren. Verder vonden wij dat internaliserende problemen en een lage mate van prosociaal gedrag vooraf gingen aan het geïsoleerd raken van groepen. Kinderen die stabiel geïsoleerd waren, lieten een toename zien in externaliserende problemen, terwijl kinderen die in een vriendengroep kwamen een afname lieten zien van deze problemen. Deze bevindingen geven aan dat aan het begin van de basisschool, kinderen in vriendengroepen over het

algemeen gekenmerkt worden door positieve kindkenmerken. Aan de andere kant lijken negatieve kindkenmerken niet bevorderlijk te zijn en daarom geassocieerd te zijn met geïsoleerd zijn en geïsoleerd raken.

Hoofdstuk 3 laat echter een minder positief beeld zien over de bevorderlijkheid van bij een vriendengroep behoren. In deze studie staat de vraag centraal hoe verklaard kan worden dat kinderen die pesten toch in vriendengroepen zitten, ondanks dat hun gedrag afgewezen wordt door andere kinderen. De resultaten laten zien dat in de laatste jaren van de basisschool, de samenhang in pestgedrag binnen vriendengroepen voor een groot deel verklaard kan worden door de mate van populariteit van de groep. Met andere woorden, vriendengroepen waarin de groepsleden veel pestgedrag lieten zien, werden veelal door de klasgenoten beschouwd als populaire groepen. Deze resultaten bevestigen het idee dat pesten ook functioneel kan zijn voor kinderen die een positie in een populaire vriendengroep proberen te verwerven of proberen te behouden.

In Hoofdstuk 4 en 5 gaan wij verder in op de rol van vriendengroepen in de ontwikkeling van psychische problemen. In deze studies onderzochten wij of het behoren tot een vriendengroep samenhangt met de ontwikkeling van internaliserende en externaliserende problemen over de periode van het einde van de basisschool tot in de vroege adolescentie. Deze associatie tussen het behoren tot een vriendengroep met internaliserende en externaliserende problemen werd gecontroleerd voor de mogelijke samenhang die bestaat tussen het behoren tot vriendengroepen en andere vormen van relaties met leeftijdsgenoten, zoals de mate van acceptatie in de klas en het hebben van vriendschappen. In Hoofdstuk 4 vonden wij dat het behoren tot een vriendengroep voorspellend was voor een lage mate van internaliserende problemen, maar ook voor een toename in externaliserende problemen bij jongens. Deze bevindingen suggereren dat het behoren tot een vriendengroep een unieke beschermende werking kan hebben tegen het ontwikkelen van internaliserende problemen, maar tegelijkertijd ook kan leiden tot een toename in externaliserende problemen. Dit lijkt vooral te gelden wanneer de andere leden van de groep ook externaliserende problemen laten zien.

In hoofdstuk 5 hebben we onderzocht of het geïsoleerd zijn in de klas een directe invloed heeft op de ontwikkeling van depressieve symptomen, dan wel dat deze associatie wordt verklaard door cognitief-emotionele reacties op de negatieve ervaring van het niet behoren bij vriendengroepen. Wij vonden dat kinderen die geïsoleerd zijn van vriendengroepen een grotere kans hadden om een toename in depressieve symptomen te laten zien dan kinderen in vriendengroepen. Tevens vonden wij dat geïsoleerd zijn voorspellend was voor het ontwikkelen van gevoelens van eenzaamheid. Gevoelens van eenzaamheid verklaarden de associatie tussen geïsoleerd zijn en depressieve klachten. Deze resultaten suggereren dat geïsoleerd zijn van vriendengroepen leidt tot een toename in depressieve symptomen als gevolg van cognitief-emotionele reacties op het geïsoleerd zijn, zoals het ontwikkelen van gevoelens van eenzaamheid.

Het behoren tot een vriendengroep zou kinderen dus kunnen beschermen tegen dit proces.

Gezamenlijk laten de resultaten van de Hoofdstukken 2 tot en met 5 zien dat het niet zo gemakkelijk is om de vraag te beantwoorden of het behoren tot een vriendengroep bevorderlijk is voor de ontwikkeling van kinderen. De resultaten suggereren dat in de eerste jaren van de basisschoolperiode, het behoren tot een vriendengroep vooral positief is voor kinderen. De bevindingen laten tevens zien dat het behoren tot een vriendengroep beschermend lijkt te werken tegen de ontwikkeling van internaliserende problemen in jongens en meisjes. Daarentegen kan geconcludeerd worden dat vooral voor jongens aan het einde van de basisschool, de ontwikkeling van externaliserende problemen juist gestimuleerd lijkt te worden binnen vriendengroepen.

In de laatste studie (Hoofdstuk 6), gaan wij in op de vraag in hoeverre groepsrelaties een rol spelen in het veranderen van het beloop van psychische problemen. In deze gerandomiseerde gecontroleerde interventiestudie testte wij of het effect van een preventieve klasseninterventie (Taakspel) leidde tot een afname van externaliserende problemen bij jonge kinderen. Verder testte wij of deze afname van externaliserende problemen verklaard kon worden door verbeteringen in verschillende aspecten van positieve groepsrelaties (acceptatie in de klas, het aantal vrienden en sociale nabijheid tot leeftijdsgenoten). Wij vonden dat in vergelijking met kinderen in de controlegroep, kinderen die Taakspel aangeboden kregen in de klas, een afname vertoonden van externaliserende problemen. Het gemiddelde verschil in externaliserende problemen tussen kinderen in de Taakspel conditie en kinderen in de controlegroep was aan het einde van de interventie van medium effect grootte ( $d = 0.45$ ). Verder laten de resultaten zien dat een toename in positieve groepsrelaties, en dan vooral een toename in acceptatie door leeftijdsgenoten, deels het effect van Taakspel in het verminderen van externaliserende problemen verklaarde. Deze resultaten waren specifiek voor jongens. Op basis van deze bevindingen kan geconcludeerd worden dat positieve groepsrelaties een rol kunnen spelen in het verminderen van externaliserende problemen in de eerste jaren van de basisschool. Tevens suggereren deze resultaten dat het bevorderen van positieve groepsrelaties een belangrijk middel kan zijn in de preventie van externaliserende problemen bij jongens aan het begin van de basisschool.

Theoretische implicaties, implicaties voor de praktijk en suggesties voor verder onderzoek worden besproken in Hoofdstuk 7. Allereerst laten de resultaten van dit proefschrift zien dat het behoren bij een vriendengroep uniek geassocieerd is met de ontwikkeling van psychische problemen. Voor verder onderzoek is het daarom belangrijk om naast andere relevante vormen van relaties met leeftijdsgenoten, zoals de mate van acceptatie in de klas en vriendschappen, ook rekening te houden met het belang van het behoren tot een vriendengroep. Hoewel groepsrelaties een rol kunnen spelen in het afnemen van externaliserende problemen in de eerste jaren van de basisschool, suggereren de

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resultaten dat aan het einde van de basisschool, deze problemen juist gestimuleerd lijken te worden in vriendengroepen. Deze resultaten geven aan dat het belangrijk is om bevindingen over de associatie tussen groepsrelaties en psychische problemen niet zonder meer te generaliseren naar alle leeftijdsgroepen.

Vanuit het perspectief van preventie van psychische problemen kunnen wij ook enkele implicaties aangeven. Allereerst impliceren de resultaten dat preventieprogramma's kunnen profiteren van de positieve effecten van het creëren van een positief klassenklimaat, waarin acceptatie door leeftijdsgenoten en positieve relaties tussen leeftijdsgenoten worden bevorderd. Echter, het is nog onduidelijk of het bevorderen van groepsrelaties ook bruikbaar is voor het voorkomen van externaliserende problemen bij oudere kinderen. Inderdaad, dit proefschrift laat ook zien dat het behoren tot een vriendengroep juist een toename in externaliserende problemen kan stimuleren bij jongens in de laatste jaren van de basisschool, vooral als de andere groepsleden ook externaliserend gedrag laten zien. Preventieprogramma's ter voorkoming van externaliserende problemen bij kinderen in latere leeftijdsgroepen doen er dan ook goed aan om controle te houden over ongewilde socialisatieprocessen binnen vriendengroepen, zoals bekrachtiging van negatief gedrag en groepsdruk. Verder is het voor vervolgonderzoek van belang om in gerandomiseerde gecontroleerde interventiestudies te bekijken of een bevordering van positieve groepsrelaties ook een rol kan spelen in het voorkomen van internaliserende problemen. Tenslotte zouden verdere studies er bij gebaad zijn om interne groepsprocessen te bestuderen, en om de ontwikkeling van groepsrelaties en psychische problemen te onderzoeken door kinderen te volgen vanaf het begin van de basisschool tot en met de adolescentie.



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