

Friendship and Aggression in Elementary School

The friendships of aggressive children and the effects of having aggressive friends

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ISBN: 978-90-393-5054-6

Printed by Print Partners Ipskamp, Enschede, The Netherlands

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Friendship and Aggression in Elementary School

The friendships of aggressive children and the effects of having aggressive friends

Vriendschap en Agressie op de Basisschool

*De vriendschappen van agressieve kinderen, en de effecten van het hebben van
agressieve vrienden*

(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor aan de Universiteit Utrecht
op gezag van de rector magnificus, prof. dr. J. C. Stoof,
ingevolge het besluit van het college voor promoties
in het openbaar te verdedigen

op maandag 15 juni 2009 des middags te 2.30 uur

door

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geboren op 8 mei 1978, te Heerlen

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Dit proefschrift werd mede mogelijk gemaakt door financiële steun van de Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO).

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Chapter 1

General Introduction

1.1. Background and aims of the present thesis

Research on children's peer relations stresses the importance of friendships as a major developmental context. Friendships provide children with the opportunity to acquire important skills, attitudes and experiences that can be of influence for their psychological adjustment throughout life (Bukowski, 2001; Hartup & Stevens, 1997). Moreover, friends can be important sources of affection, nurturance, companionship, and enhancement of self-worth (Erdley, Nangle, Newman, & Carpenter, 2001; Newcombe & Bagwell, 1995).

Research, indeed, has demonstrated the importance of friendship for children's adjustment (e.g., Ladd, 1990). Unfortunately, not all children are capable of maintaining healthy relationships with their peers. Aggressive children, for instance, have been found to suffer from peer relation difficulties (e.g., Dodge, Coie, Pettit, & Price, 1990). Most research on aggression and peer relations, however, has focused on children's peer status, rather than friendship. Group interactions and dyadic interactions are unique aspects of social experience, though (Erdley et al., 2001). Peer acceptance, or sociometric popularity refers to the degree to which a child is accepted or liked by its peers as a group, whereas friendship takes place between two individuals who have reciprocated positive feelings for one another (Bukowski & Hoza, 1989). Since peer status and friendship are thus two distinct constructs, it is important to differentiate between them in research (Erdley et al., 2001). Consequently, this thesis' first aim was to chart the dyadic friendships of aggressive children.

The second aim of this thesis was to examine the adjustment of children who affiliate with aggressive children. Research in adolescence has shown that involvement with deviant peers can have a negative influence on children's own adjustment (e.g., Patterson, Reid, & Dishion, 1992; Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993). However, this area of research mainly focuses on adolescents who come from families with low socio-economical status, and adolescents who display severe forms of antisocial behavior or risk behaviors that specifically gain importance in adolescence (e.g., smoking). It is important to examine whether or not the same patterns of peer influence also hold for younger children in regular elementary schools. At this age, children show other forms of deviant behavior (e.g., physical aggression or relational aggression), that can be precursors for more severe antisocial behavior in adolescence.

In short, this thesis focuses on two main topics, namely the friendships of aggressive children, and the effects of having aggressive friends in elementary school.

In this introductory chapter, we first describe in more detail the associations between children's friendships and their adjustment. Subsequently, the literature on friendships of aggressive children will be briefly introduced, followed by an introduction on the research on the effects of having deviant friends. Relevant theoretical frameworks in peer relations research will be discussed to place the objectives of this thesis in the broader context of

friendship research in childhood. After that, the research questions of the studies included in this thesis are introduced, and the samples used in the thesis are described in detail. Lastly, an outline of the thesis is presented.

1.2. Friendship and adjustment

An influential theoretical framework in research on friendship and adjustment has been introduced by Hartup (Hartup, 1996; Hartup & Stevens, 1997). He argued that there are three important dimensions of friendship to consider when examining children's friendships and their adaptation throughout life.

The first dimension, which is by far addressed mostly by researchers, is whether or not children have friends. Hartup argues that it is important to consider whether children have friends or not, because when children have friends, this implies that they have good social skills, are both other-oriented as well as self-oriented, adopt egalitarian attitudes, and are able to cope with conflicts in constructive ways (Hartup & Stevens, 1997).

Indeed, researchers found that children who have friends are more socially competent, more sociable, cooperative, altruistic, self-confident, and less lonely when compared to children without friends (Newcombe & Bagwell, 1995). Having friends has also been found to be related to general feelings of self-worth, and is negatively predictive of depressive symptoms (Bagwell, Newcombe, & Bukowski, 1998). Furthermore, having friends is beneficial for other healthy relationships as well. Having same-gender friends in middle childhood is predictive of having romantic relationships in adolescence, and likewise, having same-gender friends in adolescence predicts having romantic relationships in adulthood. In addition, childhood friendship predicts good attitudes toward family members (Bagwell et al., 1998).

Friendships, however, vary from child to child, and from friend to friend. For instance, a great variation exists in who one's friends are. The significance of examining more precisely who one's friends are has been often overlooked by researchers, according to Hartup (1996). He describes the identity of children's friends, as the second friendship dimension that is important when examining the significance of friendships for children's adaptation.

Research on the identity of children's friends has given a lot of attention to the topic of similarity. Friends have been found to be more similar than nonfriends (Deptula & Cohen, 2004; Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998), although the degree to which similarity occurs varies from age to age, and attribute to attribute (Hartup & Stevens, 1997). Hartup and Stevens (1997) argue that friendship similarity stems from three sources. First, there are socio-demographic conditions that make that friends resemble each other. Second, children select children who are similar to them as their friends, and third, mutual socializing ensures that children become more similar over time. Consequently, children who

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display maladapted behavior (e.g., aggression) are likely to select maladapted (in this example, aggressive) children as their friends, which then increases the likelihood of unfavorable socialization. Similarly, children who are well adapted, choose well adapted friends, and as a consequence are socialized in a positive way.

Finally, the third friendship dimension described by Hartup (1996) states that friendships differ from one another qualitatively. Most studies that investigated friendship quality examined specific qualitative features of children's friendships (e.g., intimacy, support, and conflict). Cross-sectional studies have found that supportiveness in friendships is positively related to school involvement and achievement (e.g., Berndt & Hawkins, 1991; Cauce, 1986), and negatively related to identity problems, delinquency and depression (Papini, Farmer, Clark, Micke, & Barnett, 1990; Windle, 1994). Closeness has been related to popularity and good social reputations (Cauce, 1986), self-esteem (McGuire & Weisz, 1982), and psychological adjustment (Buhrmester, 1990). Longitudinally, supportiveness has been related to increases in popularity, and increasingly positive attitudes toward classmates (Berndt, 1989).

In short, research on children's friendship so far suggests that the most favorable circumstances for children are to have friends, who are well socialized, with whom they have a friendship that is characterized as supportive and intimate.

In this thesis all three friendship dimensions described by Hartup are examined. In Chapter 2 all friendship dimensions are addressed, whereas Chapter 3 emphasizes the third friendship dimension, that is, the quality of aggressive children's friendships. Chapter 4 focuses mainly on the second friendship dimension (who are children's friends) and lastly, Chapter 5 compares children with aggressive friends and children without friends with children with nonaggressive friends, and as such, focuses on both the first and second friendship dimension.

1.3. The friendships of aggressive children

In the present thesis the first main goal was to examine the prevalence and features of aggressive children's friendships in the elementary school period. These were compared with the friendships of other children (e.g., withdrawn children, prosocial children, and average children). Researchers have stressed the importance of discriminating among group acceptance and friendship (Erdley et al., 2001; Rubin, Bukowski, & Parker, 2006). It is very well possible, for instance, that group members may like a particular child, but not consider that child a friend. Likewise, researchers have argued that having a reciprocated friendship with another person, is a different social experience than being accepted by a group (Erdley et al., 2001). For example, friendships may be more intimate, and therefore may have more impact on children's development. In general, research on peer relations has long focused

on children's *peer status* in the peer group (e.g., sociometric status; peer acceptance). Research has demonstrated that being aggressive in childhood is related to being rejected by peers (Kupersmidt & Dodge, 2004). Although most studies are correlational (and thus cannot determine whether aggression leads to rejection, or peer rejection leads to aggression), laboratory studies among unacquainted children seem to suggest that children's aggression predicts later rejection (Coie & Kupersmidt, 1983; Dodge, Coie, Pettit, & Price, 1990).

Much less attention has been given to children's *friendships* (e.g., Erdley et al., 2001). As a consequence, this also holds true for research on aggressive children's peer relations. Given the great importance of friendship for children's (long-term) adjustment, this thesis focuses on aggressive children's friendships, rather than these children's peer status.

Studies that addressed the friendships of aggressive children investigated, for example, the prevalence of friendships in aggressive children. Studies have found that aggressive children do have mutual best friends (Cairns, Cairns, Neckerman, Gest, & Garipey, 1988; Rose, Swenson, & Carlson, 2004). Moreover, the number of friends they have does not seem to differ from the number of friends nonaggressive children have (Deptula & Cohen (2004). In this thesis, we extend previous studies by not merely looking at children's reciprocated best friends, but by also focusing on children's good friends, and occasional friends (Chapter 2).

Thus, aggressive children seem to be capable of forming friendships with other children in spite of their risk for being rejected by their peers. However, there still remains a lot to be learned about the features of these children's friendships. Firstly, although the degree of similarity between aggressive children and their friends has often been a topic of research, the friendships of aggressive children with nonaggressive friends have hardly ever been studied. Most researchers conclude that "birds of a feather flock together" and that aggressive children thus befriend other aggressive children (e.g., Haselager et al., 1998). However, dissimilarities between friends also exist (Vitaro, Brendgen, & Tremblay, 2000). Research has focused too much on friendships between similar children, and therefore there is a lack of information on other friendships that aggressive children also experience. This thesis addresses both the friendships of two aggressive children (similar friendships), and friendship between an aggressive child and a nonaggressive child (dissimilar friendships).

Secondly, some previous studies have investigated the friendship quality of aggressive children's friendships. These studies led researchers to conclude that friendships of aggressive children are of somewhat less quality than the friendships of nonaggressive children (Rubin et al., 2006). Again, though, results vary according to the friendships studied. When studying friendships between aggressive children, friendships quality seems to be lower. However, when studying aggressive children's friendships with nonaggressive children, their friendships are of equal quality than that of other children (Bagwell & Coie,

2004). Thus, also in studying friendship quality, it is important to realize what friendships of aggressive children are taken into account.

Furthermore, research on friendship quality (in general) has focused merely on positive friendship features, such as intimacy and support. Much less attention has been given to other features of friendship, such as power, status, and competition. Especially when studying aggressive children's friendships, considering these friendship features might provide new insights on the motives, functions, and quality of aggressive children's friendship. Friendship quality in this thesis, thus, involves both positive and negative friendship features. In addition, not only children's friendship provisions (self-reported features of an *actual* friendship, that is, what do children get from friendship) are examined, but also children's friendship needs (self-reported features of an *ideal* friendship, that is, what do children wish for in friendship), since different children are likely to have different needs in friendships.

Lastly, studies on aggressive children's friendships do not account for differences in types of aggressive children. Not all aggressive children are the same. Research has shown, for instance, that some aggressive children are accepted by their peer group, and are even perceived as popular (Lafontana & Cillessen, 1999). When studying aggressive children's friendships, it seems to be wise to consider relevant differences among aggressive children, to obtain a clearer view of what these children's friendships look like, and what functions they serve. In this thesis, a distinction is made between aggressive children with prosocial capacities, and aggressive children without prosocial capacities (see Chapter 3).

1.4. Having aggressive friends

The second theme of this thesis focuses on the possible effects of having aggressive friends in elementary school. In this thesis, the effects of having aggressive friends is compared to the effects of having other types of friends (e.g., withdrawn friends, nonaggressive friends, or no friends). As we have seen, in general, friendships are beneficial to children's later adjustment. However, sometimes friends can influence children's development in a negative way. As Hartup (1996) already argued, it is therefore important to consider whom children befriend. Researchers have addressed this issue before. For example, previous studies showed that deviant peers can have a negative influence on children's adjustment. For instance, antisocial friends influence each other in an unfavorable way (e.g., Dishion, Spracklen, Andrews, & Patterson, 1996), drinking behavior of best friends is related to adolescents' drinking behavior (Bot, Engels, Knibbe, & Meeus, 2005), and peers influence each other negatively with respect to drug use (Thornberry, & Krohn, 1997).

Most studies on the influence of deviant friends focus on adolescents, and investigate at-risk populations (e.g. children from low social-economical status; children with serious

disruptive behavioral patterns). Little is known about the influence of having aggressive children in regular elementary schools. Although children in elementary schools spend a lot of time together, they are mostly under supervision of adults in formal settings. Adolescents, however, spend more time outside formal settings, and more time without adult supervision. It is possible that in such circumstances more, or different patterns of peer influence occur when compared to patterns of influence in younger children. Therefore, the present thesis aimed to examine whether deviant (in this case aggressive) friends also have a negative effect on children's long-term adjustment in regular elementary schools.

Moreover, as interactional models suggest, it is also important to examine whether having certain friends has the same effect for all children, or that having aggressive friends, for instance, has more impact on one child, than another child. Vitaro, Tremblay, Kerr, Pagani, and Bukowski (1997) for example found that having deviant friends was only related to higher levels of subsequent antisocial behavior in case this child already displayed moderately disruptive behavior. Thus, we should not only examine the characteristics of the friends, but the combination of child characteristics and friend characteristics. The study that is presented in Chapter 4 in particular focuses on these interactive patterns between children's own characteristics, and their friend's characteristics.

In this thesis we compare children who have aggressive friends with other children who are known to suffer from peer relation problems. That is, we compare the influence of having aggressive friends, with the influence of having friends who show withdrawn behavior, and children who are withdrawn from the peer group because they are actively isolated by their peers (Chapter 4). Further, in Chapter 5, we compare the influence of having aggressive friends with having no friends, and having nonaggressive friends.

1.5. Research Questions

The current thesis addresses two main topics. Firstly, the friendships of aggressive children in elementary school are examined (in Chapter 2 and Chapter 3; Figure 1.1A). Secondly, the direct and moderating effects of having aggressive friends on children's adjustment in elementary school are examined (in Chapter 4 and Chapter 5; Figure 1.1.B).

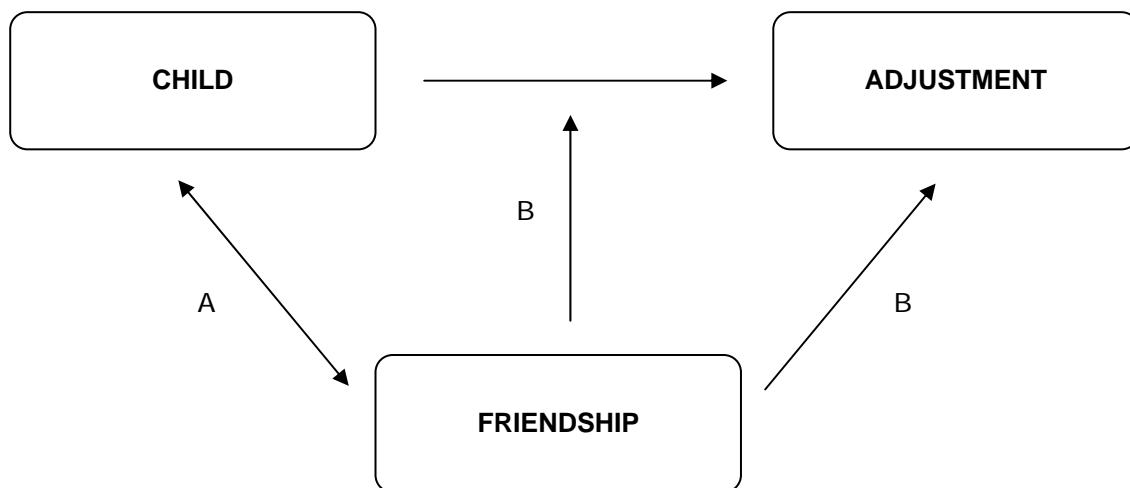


Figure 1.1. Conceptual model of the thesis

The study presented in Chapter 2 (see Figure 1.2) aimed to describe the friendships of aggressive and withdrawn children in fifth grade of elementary school. These friendships were compared to those of control children (i.e., nonaggressive, nonwithdrawn children). Addressing the three friendship dimensions suggested by Hartup (1996), we investigated whether or not aggressive and withdrawn children have friends, who their friends are (are they similar or dissimilar), and whether their friendships differ in quality when compared to other children’s friendships.

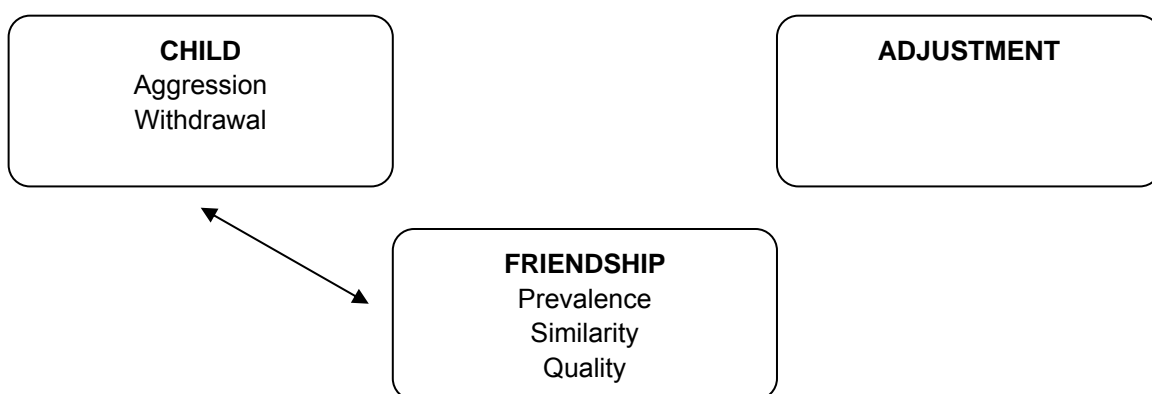


Figure 1.2. Research Questions Chapter 2

The study in Chapter 3 (see Figure 1.3) focused on the third friendship dimension described by Hartup (1996). This study distinguished between aggressive children who are purely aggressive and aggressive children who, at the same time, are prosocial. The friendships of these children were compared (e.g., friendship needs and provisions, friendship quality, friendship satisfaction), as well as their adjustment (social preference, academic achievement, loneliness and aggression) over a period of four years.

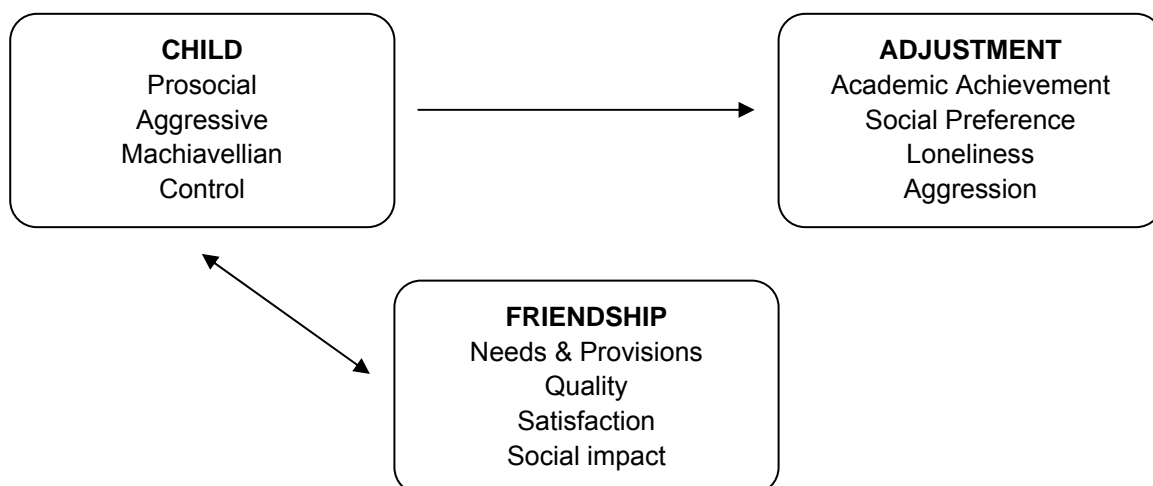


Figure 1.3. Research Questions Chapter 3

The second main question of this thesis (the effects of having aggressive friends) was the focus of the studies presented in Chapter 4 and Chapter 5. In Chapter 4 (see Figure 1.4) we examined whether *having* aggressive or withdrawn friends is associated with children's adjustment, and we thus focused on the second dimension proposed by Hartup (that is, it is important to consider whom children befriend). In addition, an interactional approach was employed to study the effects of having aggressive or withdrawn friends for different types of children. That is, having certain friends can be of a different meaning for different types of children. We examined whether child characteristics (aggression, passive withdrawal and active isolation), friend's characteristics (aggression, passive withdrawal, active isolation), or interactions between child and friend characteristics contributed to children's internalizing and externalizing problems. As in Chapter 2, this study focused on aggressive, as well as on withdrawn children and their friends.

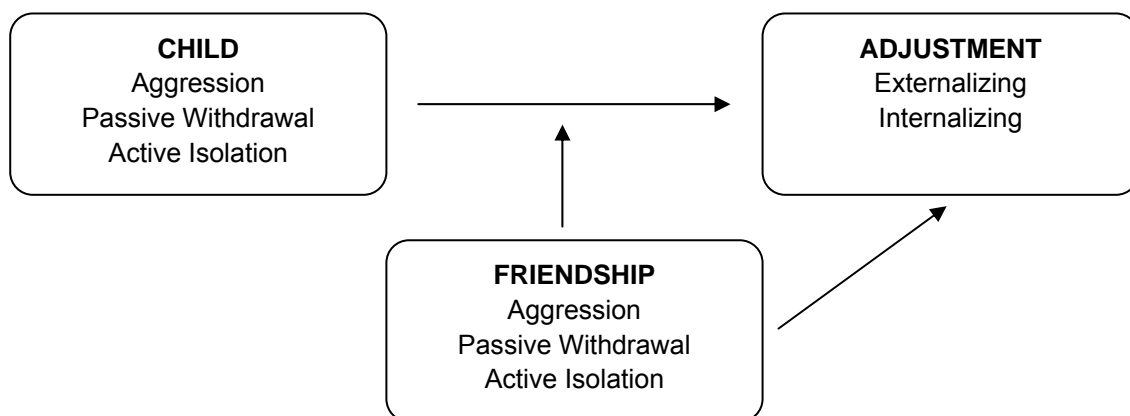


Figure 1.4. Research Questions Chapter 4.

Lastly, in Chapter 5, we longitudinally examined the associations between academic and social competence, and loneliness and aggression over time. Further, we tested whether these longitudinal relations differed for children with aggressive friends, children with nonaggressive friends, and children without friends, thereby again focusing on the second dimension suggested by Hartup (see Figure 1.5).

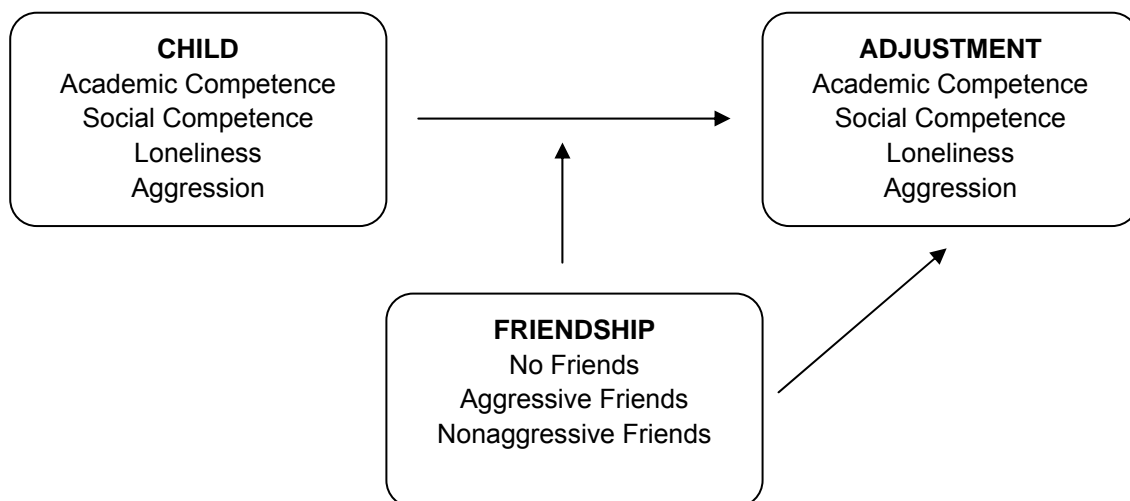


Figure 1.5. Research Questions Chapter 5.

1.6. Research Design

The studies presented in this thesis make use of two samples of elementary school children. In Chapter 2, 3, and 5, a Dutch sample is used, whereas in Chapter 4, an American sample is used. Both samples are briefly described below.

1.6.1. Dutch Sample

Participants

The data from the Dutch sample are derived from the Utrecht Social Development Project, a longitudinal study on the social development of children in elementary school (USDP; Van den Oord & Rispens, 1999; Van den Oord, Rispens, Goudena & Vermande, 2000; Van Rossem & Vermande, 2004; Vermande, van den Oord, Goudena, & Rispens, 2000). The data collection of the USDP took place from 1997 to 2003, with a 2 year interval between measurement waves, starting in kindergarten (children were 4-5 years old). The USDP consists of four measurement waves, three of which are used in this thesis (wave 2-4). Wave 1 was excluded because of the absence of measures that play a central role in this thesis (e.g., friendship). In grade 1 (wave 2), 49 schools (71 classes) in the province of Utrecht and the city of Hilversum in The Netherlands participated in our study. After school board approval, parents were asked passive consent for their children to participate in our study. Parents refused participation for 110 children (6,7%). Interviews were held with 1241 children in grade 1, and 60% of these children (741 children; 52% boys) participated at all three time points used in this thesis (Grade 1: M age = 6.8, SD = 5 months; Grade 3: M age = 8.9, SD = 4.5 months; Grade 5: M age = 10.9, SD = 4.5 months). In all waves, over 1100 children participated. The vast majority of the participants (>85%) had Dutch parents, while the other children had at least one parent from Morocco, Turkey, Surinam, or a European country other than The Netherlands.

Procedure

The data collection consisted of school interviews with the children in the first three waves. In grade 1 and 3, children were individually interviewed by trained research assistants in a quiet environment, outside the classroom. The research assistants stressed the confidentiality of the study several times. Child interviews involved administering questionnaires and peer nomination measures. The peer nomination procedure in grade 1 and grade 3 involved taking pictures of all children in the study. Subsequently it was confirmed that all participants recognized all their classmates in the pictures. When the

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interviewer posed a question, children could then point at the pictures of those children they wanted to nominate.

In grade 5, children filled in questionnaires during class hours, in two sessions, on separate days. Two research assistants were present in the classroom, to give instructions, to stress the confidentiality of the study, and to answer questions. The peer nomination procedure in grade 5 involved handing children a list with names of all their classmates. Children could write down the names of the classmates they wanted to nominate for a specific question. Children could nominate an unlimited number of same-sex and opposite-sex classmates on all nomination questions. They were not obliged to nominate someone, but were not allowed to nominate themselves.

In all waves, additional information about the children was obtained from the teachers and the children's classmates. In Table 1.1 an overview is presented of the USDP measures used in this thesis.

1.6.2. American Sample

The data from the American sample were derived from a study that took place in two schools from a single school district in a large town in New England (Bowker, Bukowski, Zargarpour, & Hoza, 1998; Bukowski, Sippola, & Hoza, 1999; Hoza, Bukowski, & Beery, 2000; Hoza, Molina, Bukowski, & Sippola, 1995; Mrug, Hoza, & Bukowski, 2004). Over 200 children participated in this study among fifth-, sixth-, and seventh-graders. The children represented all 15 classrooms in the school district. Parental permission, and children's consent were obtained from all potential participants. About 75% of the potential pool of subjects participated in the study. The primary goal of the study was to examine children's friendships in elementary schools. Subjects were primarily Caucasian, and from working class and lower middle class families.

Children filled in questionnaires about their friendships at school, during class hours. Two sessions that took place within a two-week time period were used to collect all data. Trained graduate students were present at the time of data collection. All instructions, as well as all items, were read aloud to the participants, who answered the questions privately at their desk.

Additional data were obtained from children's teachers and classmates. In Table 1.1, an overview is given of the concepts and measured variables used in the American sample. These measures are used in Chapter 4 of this thesis.

1.7. Outline of the present thesis

In the following chapters, four empirical studies examining the key issues of this thesis are presented. Chapter 2 concerns a study on the friendships of aggressive and withdrawn children in fifth grade of elementary school in The Netherlands. The prevalence, similarity and quality of these children's friendships were examined. Chapter 3 focuses on the question whether Machiavellianism in children is adaptive or maladaptive, when looked at these children's friendships and long-term adjustment. Chapter 4 presents a study among early adolescents in the United States. The study addresses to what degree child characteristics, friend characteristics, or the interactions between them are associated with children's internalizing and externalizing behavior. Chapter 5 is a longitudinal study of Dutch elementary school children. The study focuses on the development of academic and social competence, and loneliness and aggression. Furthermore, it addresses the effects of having no friends, aggressive friends, or nonaggressive friends on children's long-term development in these areas of adjustment. Lastly, in Chapter 6, a general discussion is presented, which aims to interpret the research findings in the broader context of research on peer relations.

Table 1.1. Overview of concepts and measured variables in the two samples

Concept	Measured variables	Instrument	Informant	Chapter	Sample	Wave
Child Characteristics	Aggression	Revised Class Play	P	2, 3, 4, 5	D, A	2 - 4
	Withdrawal	Revised Class Play	P	2, 4	D, A	4
	Prosocial Behavior	Revised Class Play	P	3	D	2 - 4
	Social Impact	Nomination Procedure Coie & Dodge 1983	P	3	D	4
Mutual Friendship	Best friends	Peer Nominations	C, P	2, 3, 4, 5	D, A	2 - 4
	Good friends	Peer Nominations	C, P	2	D	4
	Occasional friends	Peer Nominations	C, P	2	D	4
Friendship Characteristics	Communal & Agentive Needs	Close Friendship Questionnaire	C	2, 3	D	4
	Communal & Agentive Provisions	Close Friendship Questionnaire	C	2, 3	D	4
	Quality: Discrepancy scores friendship needs & provisions	Close Friendship Questionnaire	C	2	D	4
	Quality: Conflict Reconciliation	Friendship Quality Measure	C	3	D	4
Adjustment	Friendship Satisfaction	Parker & Asher, 1993	C	2, 3	D	4
	Academic Achievement	Grade Point Average	T	3, 5	D	2 - 4
	Social Preference	Nomination Procedure Coie & Dodge 1983	P	3, 5	D	2 - 4
	Loneliness	Loneliness & Social Dissatisfaction Questionnaire	C	3, 5	D	2 - 4
Externalizing Behavior	Aggression	Amsterdam Child Behavioral Checklist	T	3, 5	D	2 - 4
	Externalizing Behavior	Teacher Report Form	T	4	A	Cs
	Internalizing Behavior	Teacher Report Form	T	4	A	Cs

Note. C = Child; P = Peer; T = Teacher; D = Dutch sample; A = American sample; Cs = Cross-sectional data

Chapter 2

Friendships of aggressive and withdrawn children: Prevalence, similarity, and quality

This study examined (1) whether aggressive and withdrawn children have friends, (2) who their friends are, and (3) whether their friendship quality differs from that of nonaggressive, nonwithdrawn children. Also, friendship quality of aggressive and withdrawn children in similar dyads and dissimilar dyads was compared. Peer assessments of withdrawal and aggression, different types of friendships (best, good and occasional) and self-reports of friendship quality were obtained from Dutch boys (n = 387) and girls (n = 423) in fifth grade of elementary school (M age = 11.07). Results showed that aggressive and withdrawn children have friends, although withdrawn children had fewer friends than control children. Depending on the method used, similarity as well as dissimilarity in aggression and withdrawal between children and their friends was observed. No differences were found between aggressive and withdrawn children's friendship quality (from the target child's perspective, from the friends' perspective, and from the dyadic perspective) and the friendship quality of control children. Friendship quality of aggressive and withdrawn children in similar dyads did not differ from the friendship quality of children in dissimilar dyads.

Thus, although aggressive and withdrawn children may experience problems within the peer group, this study shows that they have friendships, that their friends are as often similar as dissimilar in behavior, and that their friendships are of good quality.

2.1. Introduction

Research on children's friendships stresses the significance of friendship as a developmental context, in which children can acquire important skills, attitudes and experiences that may influence their psychological adjustment throughout life (Bukowski, 2001; Hartup & Stevens, 1997; Rubin, Bukowski, & Parker, 1998). It has long been recognized that having friends is of significance for psychological adjustment (e.g., Hartup, 1996; Newcomb & Bagwell, 1995). Friends can be important sources of affection, intimacy, reliable alliance, feelings of inclusion, instrumental aid, nurturance, companionship, and enhancement of self-worth (Erdley, Nangle, Newman, & Carpenter, 2001; Hartup & Stevens, 1997; Newcomb & Bagwell, 1995). Therefore, it is not surprising that children who lack friends or are poorly accepted by the peer group are at risk for negative outcomes, whereas affectionate peer relationships are often associated with positive outcomes (Hartup, 1996; Nangle & Erdley, 2001).

The focus of the present study was on the friendships of withdrawn and aggressive children. Little research has been done on the friendships of these children, which is surprising since we know that these children are at risk to be rejected by their peers (Rubin, Bukowski, & Parker, 2006). Given that aggressive and shy/withdrawn children are not the most attractive social partners to their peers, one wonders whether these children manage to form close friendships, which seem so important. Previous studies on the prevalence of friendships of aggressive children have provided evidence that these children do form friendships, in spite of their risk of being rejected by their classmates (Cairns, Cairns, Neckerman, Gest, & Garipey, 1988; Rose, Swenson, & Carlson, 2004). The few studies that have been conducted with respect to the friendships of withdrawn children reveal the same findings, but these studies focus either on young children (e.g., Ladd & Burgess, 1999) or only considered *good* friends (e.g., Schneider, 1999). Only recently, Rubin and colleagues investigated the prevalence of very best friendships of fifth grade withdrawn children. They also found that these children were as likely as control children to have a mutual very best friend (Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006).

A related line of research focuses on the question of how many friends children have. In their review, Deptula and Cohen (2004) conclude that it seems that aggressive children have as many friends as their nonaggressive peers. For example, Feldham, Doyle, Schwartzman, Serbin, and Ledingham (1985) found that children who were both aggressive and at the same time withdrawn had fewer friends than control children, but children who were aggressive, but not withdrawn, had just as many friends as control children. Thus, being aggressive was not related to having fewer friends, unless children behaved both aggressively *and* withdrawn. Ladd and Burgess (1999) found that withdrawn children had as many mutual friends as control children. However, since withdrawal becomes more salient

and non-normative with age, the fact that children in their study were young (5-8 years old) may explain why no differences were found between withdrawn and control children.

In short, although aggressive and withdrawn children are at risk for peer relation problems, they seem to be capable of forming as many friendships as other children. However, research on withdrawn children in particular has been scarce, and can be characterized by a lack of focus on different intensities of friendships and a lack of consideration of gender differences. Furthermore, few studies have examined withdrawn children's friendship in early adolescence, in spite of the fact that especially withdrawn behavior is very salient and non-normative at this age. The present study thus extends prior research by studying boys' and girls' best, good and occasional friendships in early adolescence.

Although having friends has often been found to be a developmental advantage, not all friendships are alike (Hartup & Stevens, 1997). Hartup (1996) stated that when investigating the significance of children's peer relationships, it is not sufficient to merely study whether or not children have friends. The questions of whom children befriend and of what quality their friendships are should also be addressed. For instance, in both preschool and elementary school, aggressive children who have similar friends, become more aggressive over time (Deptula & Cohen, 2004). Haselager, Hartup, van Lieshout, and Riksen-Walraven (1998) suggested that friends might even be a risk factor for aggressive children. They found that friends of aggressive children tended to be aggressive too and that these children thus might socialize each other in maladaptive ways. These authors further argue that for withdrawn children (whose friends were withdrawn as well), the mutual socialization process might be a risk factor too, but could also serve a protective function, in that these friendships reduced loneliness. These studies illustrate the importance of whom the child makes friends with: Some friends are beneficial to later adjustment, whereas others are not. A lot of studies on the friendships of aggressive and withdrawn children have focused on two friends who are similar to each other. However, dissimilar friendships (for example friendships between aggressive and withdrawn children), might also be a cause of concern, given that children in these friendships are so different with respect to behavior and power. Therefore, the present study focuses both on friendships in which children are similar, and friendships in which children are dissimilar to each other.

A further relevant issue is the quality of friendships. Researchers have stressed the importance of good friendship quality (e.g., Hartup, 1996). For instance, positive associations have been found between friendship quality and indicators of psychosocial adjustment and functioning (Rubin, Bukowski et al., 2006). Previous studies have led researchers to conclude that friendships of aggressive children are of somewhat less quality than the friendships of nonaggressive children (Rubin, Bukowski et al., 2006). For instance, Dishion, Andrews, and Crosby (1995) showed that aggressive children who affiliate with other

aggressive children are marked by somewhat lower levels of friendship satisfaction and quality. However, these were friendships between aggressive children. Research that examined the quality of *all* friendships of aggressive children (i.e. not only with other aggressive children) has found that there were no differences in the quality of best friendships of aggressive and nonaggressive boys (Bagwell & Coie, 2004). These findings again suggest that it is important to differentiate between similar and dissimilar friends in studying relationship quality.

Studies on the friendship quality of withdrawn children have also revealed mixed results. Although Rubin and colleagues (Rubin, Wojslawowicz et al., 2006) found that withdrawn children and their friends both report their friendships to be of lower quality than control children, other studies showed that withdrawn children rated their friendships to be of equal quality compared to control children (Fordham & Stevenson-Hinde, 1999; Schneider, 1999). In sum, for both aggressive and withdrawn children, questions remain whether the relationships of these children are qualitatively different from those of other children.

To conclude, few studies have tried to answer the questions posed by Hartup (1996), for aggressive and, especially, withdrawn children. Moreover, when investigators did study these questions for aggressive and withdrawn children, results have not provided clear answers. Questions thus remain on whether or not aggressive and withdrawn children have friends, who their friends are, and of what quality their friendships are.

2.1.1. Research aims

The first research question was whether or not aggressive and withdrawn children have friends, and if they do, whether they have as many friends as other children. Probably due to methodological constraints, most studies focus merely on mutual best friendships and only few studies made a distinction between intensity of friendships. Several researchers have suggested to make this distinction (e.g. Erdley et al., 2001; Hartup, 1996) and have argued that there are two views on friendship: a categorical (a distinct type of relationship exists, that can be labeled as friendship) and a continuous view (varying levels of relationships exist, that all can be labeled friendships). In the present study we consider friendship as an underlying continuous construct and focus on mutual *best*, *good* and *occasional* friendships.

The second research question concerned the friends of aggressive and withdrawn children: Are they similar or dissimilar to the target person with respect to their levels of aggression and withdrawal? Studies about the friends of aggressive and withdrawn children focused mostly on whether aggressive children tended to be friends with aggressive children, and whether withdrawn children tended to affiliate with withdrawn children and the consequences thereof (e.g., Haselager et al., 1998; Rubin, Wojslawowicz, et al., 2006). From these studies, it appears that similarity is an important aspect in the formation of friendships.

However, it is important to not merely focus on these similarity-based friendships, because friends are not always similar to each other with respect to their levels of aggression and withdrawal. Vitaro, Brendgen, and Tremblay (2000) for instance, argue that in spite of the fact that correlation coefficients between aggressiveness of early-adolescent children and their friends were large (.40 - .50), this also means that affiliation with peers cannot be explained entirely by the similarity-attraction hypothesis. Indeed, some researchers have hypothesized that part of the nonsimilar friendships of aggressive children might be friendships between aggressive and withdrawn children (Rubin, Burgess, & Wojslawowicz, 2000). Rubin and colleagues (2000), for example, showed that 17% of the mutual friends of aggressive children were socially withdrawn, and not aggressive. Consequently, this study focused not only on friendships between similar, but also on friendships between dissimilar children.

The third question in this study was on the quality of the friendships of aggressive and withdrawn children. More specifically, do their friendship quality and friendship satisfaction differ from those of control children? When studying friendship quality, most studies have only examined what children report getting out of their friendships (i.e., friendship provisions), whereas no attention has been paid to the *needs* of these children. It is, however, reasonable to think that different children have different needs. Some children, for example, may have a great need for companionship in their friendships, whereas other children may think that this is less important. When these children both get what they want, most previous studies would have concluded that the friendship quality of the latter child would be lower than that of the first child, instead of rating the friendship quality of these children to be equal. In accordance with Zarbatany, Conley, and Pepper (2002) we argue that in studying friendship quality, friendship needs should be included as well as friendship provisions. In addition, in most previous research (e.g., Bukowski, Hoza, & Boivin, 1994; Cillessen, Lu Jiang, West, & Laszkowski, 2005) friendship quality merely related to what can be called *communal* friendship provisions (e.g., support, affection, and intimacy). Aside from measures of conflict, these studies usually did not include *agentic* friendship provisions (e.g., competition, status, power). We argue that, especially since we are studying aggressive children, agentic needs and provisions might be important in friendships, and should be included in measures of friendship quality, in addition to communal friendship needs and provisions.

Furthermore, many studies on friendship quality concentrated on the view of the target child (e.g., Bagwell & Coie, 2004; Parker & Ascher, 1993). However, since friendship concerns a dyadic relationship between two children, the present study examined friendship quality from three different perspectives, namely the target child's, the friends' and the dyadic perspective. Finally, we compared aggressive and withdrawn children in similar and dissimilar friendship dyads with respect to friendship needs and provisions, friendship quality and satisfaction.

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In summary, the present study aimed to answer three questions: (1) Do aggressive and withdrawn children have friends? (2) Who are their friends? and (3) Are their friendships of different quality compared to those of control children (i.e., non-aggressive and non-withdrawn), and does their friendship quality differ when they are involved in dissimilar friendships (aggressive-withdrawn) as opposed to similar friendships? As gender has been found to play an important role in aggression and withdrawal (e.g., see Deptula & Cohen, 2004; Rubin, Bukowski, et al., 2006), gender differences were also considered.

2.2. Method

2.2.1. Participants

This study used data of the Utrecht Social Development Project (USDP; van den Oord & Rispens, 1999; Van Rossem & Vermande, 2004; Vermande, van den Oord, Goudena, & Rispens, 2000), a study on the social development of elementary school children. The study comprised schools from the province of Utrecht and the city of Hilversum in The Netherlands. To recruit the schools, all school directors in the target area were sent a letter and a questionnaire, consisting of several questions that concerned the school plus a request to participate in the USDP. Questionnaires were returned by 270 of the 510 school directors (53%), and 77 of these 270 schools (29%) were willing to participate. We made a random selection of schools, which resulted in participation of 44 schools (57 classes). Three percent of the parents did not give their consent to participate in the study, and four percent of all children were absent (e.g., because of illness) during the data collection. In total, our sample consisted of 1347 children (51.1% boys; mean age = 11.07) in fifth grade of elementary school. The majority of the children had at least one Dutch parent (88.4%), whereas the remaining were mostly children with parents from Morocco (2.7%), Turkey (2.3%), Surinam (1.7%) or European countries (4.9%). Prior analyses confirmed the representativeness of the USDP sample (van den Oord, Rispens, Goudena & Vermande, 2000). Missing data (less than 5% of the dataset) were imputed in two steps: (1) missing Likert type scale items (of subscales with less than 40% missing values) were imputed using two-way-imputation (van Ginkel & van der Ark, 2004); (2) subsequently, missing subscale scores were imputed by single imputation using NORM (Schafer & Graham, 2002).

2.2.2. Procedure

Children filled in questionnaires during class hours, in two sessions, on separate days. Two research assistants were present in the classroom, to give instructions and to answer

questions. The research assistants stressed the confidentiality of the study several times. Children and teachers received a little present for their cooperation.

2.2.3. Measures

Self reports

Friendship Needs and Provisions. Friendship needs and provisions were measured by the Close Friendship Questionnaire (CFQ; e.g., Palmen, Roij, Vermande, Deković, & van Aken, 2006; Zabatany, Conley, & Pepper, 2004). The CFQ consists of 54 items measuring 12 friendship characteristics. Following Zabatany and colleagues (2004), these friendship characteristics were grouped into a Communal factor (Companionship, Love and affection, Emotional support, Loyalty, Intimacy, Shared history, Communal validation) and an Agentic factor (Power, Status, Competition, Agentic validation, Network access). Children were asked to rate every characteristic on a 5-point-Likert-scale (1 = not important at all; 5 = very important).

The CFQ was administered twice, on separate days. The first day, the children filled in the questionnaire for their “*ideal best friend*”. An ideal best friend was defined as follows: “An ideal friend is the perfect friend for you. You couldn’t wish for a better friend than that. An ideal friend does not exist for real, but only in your thoughts or fantasy”. The second day children filled in the CFQ three times, once for their “*actual very best friend*”, once for their “*actual second best friend*” and once for their *actual third best friend*”. Scores on the CFQ for the ideal best friend were considered to reflect the child’s friendship *needs*, scores on the CFQ for the actual best friend the child’s friendship *provisions*.

Confirmatory factor analyses on the CFQ supported the two (Communal and Agentic) factor model as separate but correlated dimensions of friendship needs, which, in multi-group analysis, held for both boys and girls ($\chi^2(110) = 351.85$, RMSEA = .058, NNFI = .98, CFI = .98). For further analyses we used the Communal and Agentic Needs and Provision scales, which all had good reliability (alpha’s ranging from .85 - .95).

Further, discrepancy scores of friendship needs and provisions (with scores on Communal and Agentic Needs subtracted from the scores of Communal and Agentic Provisions, respectively) were used as an indicator of friendship quality (see also Zabatany et al., 2004). Positive values imply fulfillment of needs, and thus good friendship quality. Because the children could fill in the CFQ up to three times about their actual best friends, we were able to calculate the friendship quality of up to three friendships of every child.

Friendship satisfaction. Friendship satisfaction was measured by two 5-point Likert scale items: “How is your best friendship going?” (1 = not at all well to 5 = very well) and “How

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satisfied are you with your best friendship?" (1 = not at all satisfied to 5 = very satisfied) (Parker & Asher, 1993; Zabatany et al., 2004). The two items were correlated moderately high ($r = .67$). Mean scores were calculated as an indication of the child's friendship satisfaction. Because the scores were highly skewed (skewness = -1.067; $SE = .086$), we applied a natural logarithm transformation and used transformed scores in further analyses.

Peer reports

Aggression and withdrawal. The Extended Class Play (ECP; Burgess, Rubin, Wojslawowicz, Rose-Krasnor, & Booth, 2006; Rubin, Wojslawowicz et al., 2006) was used to assess aggressive and withdrawn behavior. The ECP is a valid and reliable extension of Masten, Morison, and Pellegrini's (1985) Revised Class Play (Rubin, Wojslawowicz, et al., 2006), and uses peer nominations to measure various aspects of social functioning. Children received a list with the names of all their classmates, and they could nominate same-sex and opposite-sex classmates without limitations in the number of nominations. Children were not obliged to nominate someone, and were not allowed to nominate themselves. Individual scores on the ECP were obtained by counting the number of nominations a child received on an item and dividing that score by the number of nominators in a class minus 1 (the child itself). In other words, the proportions of classmates nominating the child were used as individual scores of aggression and withdrawal (Goossens, Olthof, & Dekker, 2006; Ray, Cohen, Secrist, & Duncan, 1997).

The subscale Aggression ($\alpha = .89$), which measures general aggression, consisted of nine items, such as "picks on other kids" and "gets into a lot of fights" or "is too bossy". The subscale Withdrawal was formed by combining the ECP subscale "Shyness/Withdrawal" (e.g., "very shy", "likes being alone") with five ECP rejection-items (e.g. "often left out", "trouble making friends"). By combining these scales we included both children who were actively isolated and children who passively withdraw (see also Wojslawowicz, Bowker, Rubin, Burgess, Booth-LaForce, & Rose-Krasnor, 2006). The combined Withdrawal scale consisted of 11 items ($\alpha = .86$). Mean scores of all aggression and withdrawal items were used as an indication of a child's level of aggressive or withdrawn behavior, respectively.

Categorization of aggressive, withdrawn, and control children

Like previous studies (e.g., Rubin, Wojslawowicz et al., 2006), we identified aggressive children by ECP aggression scores in the top 33% of aggression scores, and ECP withdrawal scores in the bottom 50% of withdrawal scores. Withdrawn children had ECP withdrawal scores in the top 33%, and ECP aggression scores that belonged to the bottom 50%. Control children had an aggression score and a withdrawal score in the bottom 50%. In

our sample of 1347 children, 253 aggressive, 266 withdrawn, and 291 control children were identified, and included in further analyses.

Friendships

For the identification of friendships we used two criteria: Peer nominations (“Who is your best friend?”) and a 3-point-rating scale of how often children played with every classmate (never, sometimes, often).

Friendship dyads were formed using UNAP (version 1.20.08), a program which allows for fast analysis of a large amount of social network data. Two children were considered *best friends* if they nominated each other as best friends (e.g., Bukowski et al., 1994). They were considered *good friends* if they both said to “play often” with each other (mutual “play-often” ratings; Jones, 1985) or if child A nominated child B as best friend, and child B said to play often with child A, or vice versa (e.g., Erdley et al., 2001; Howes, 1990). If a dyad reached the criteria for best *and* good friendship, it was considered a best friendship. Children with mutual “play sometimes” ratings were considered *occasional friends*. In total, 740 best friendship dyads, 627 good friendship dyads, and 4079 occasional friendship dyads existed in our sample.

2.3. Results

2.3.1. Friendship prevalence

Our first research question concerned the prevalence of the friendships of aggressive and withdrawn children: Do aggressive and withdrawn children have friends, and if so, do they differ from control children in the number of friends they have?

First, we examined whether aggressive and withdrawn children were as likely as control children to have best, good, or occasional mutual friends. Chi-square tests showed that there were differences between the groups in the prevalence of having at least one mutual *best friend* for girls, but not for boys: Both aggressive and withdrawn girls were less likely to have a mutual best friend than controls (67% of the aggressive, 64% of the withdrawn and 81% of the control girls, $\chi^2(2, N = 810) = 13.30, p = .001$), whereas no differences were found among boys (66% of the aggressive, 62% of the withdrawn, and 71% of the control boys). No differences were observed regarding the likelihood of having at least one mutual *good friend*, (boys: 65%, 59%, and 72%; and girls: 61%, 52%, and 59%) or of having at least one mutual *occasional friend*; 100% of the aggressive, 98% of the withdrawn, and 99% of the control boys had at least one occasional friend, and 97% of the aggressive, 97% of the withdrawn, and 99% of the control girls had at least one occasional friend. Thus, aggressive and

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withdrawn girls (but not boys) were less likely than control children to have a mutual best friend, whereas no differences between groups were found for either sex in the likelihood of having mutual good or occasional friends. Almost every child had a mutual occasional friend. Overall, 88% of the aggressive, 83% of the withdrawn and 92% of the control boys had at least one best or good mutual friendship, whereas 90% of the aggressive, 79% of the withdrawn, and 92% of the control girls had at least one best or good mutual friend.

In addition, we examined whether aggressive and withdrawn children differed in the number of friends they have compared to control children (see Table 2.1).

Table 2.1. Means and Standard Deviations of the Number of Best, Good, and Occasional Friends of Aggressive, Withdrawn, and Control Children

Friendship intensity	Group	Boys (<i>n</i> = 387)			Girls (<i>n</i> = 423)		
		<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Best Friends	Aggressive	186	1.03	.97	67	.96	.88
	Withdrawn	86	.78	.76	180	.84	.76
	Control	115	1.22	1.10	176	1.13	.83
Good Friends	Aggressive	186	1.24	1.29	67	1.15	1.20
	Withdrawn	86	.87	.93	180	.92	1.14
	Control	115	1.40	1.28	176	1.15	1.37
Occasional Friends	Aggressive	186	6.11	2.91	67	7.18	2.96
	Withdrawn	86	4.59	2.93	180	5.68	2.95
	Control	115	6.12	3.50	176	6.33	2.94

A 3 (Group: aggressive, withdrawn, and control) × 2 (Gender) multivariate analysis of variance was conducted on number of best, number of good, and number of occasional friends. Results indicated a significant main effect of Group, $F(6, 1616) = 12.01, p = .000, \eta_p^2 = .04$. Withdrawn children had a significantly smaller number of *best* friends than control children, but they did not differ from aggressive children in the number of *best* friends they reported. Furthermore, withdrawn children reported to have less *good* and *occasional* friends than aggressive and control children. Aggressive children did not differ from control children in the number of best, good, and occasional friends they had. A significant main effect of Gender was also found, $F(3, 808) = 4.21, p = .006, \eta_p^2 = .02$. Boys had less occasional

friends than girls, but they did not differ from girls in the number of best and good friends they reported. No significant interaction effect of Group \times Gender was found. In sum, withdrawn children (but not aggressive children) were found to have less best, good and occasional friends than control children. Boys and girls had an equal number of best and good friends, but boys had less occasional friends than girls.

2.3.2. Characteristics of friends: Aggressive and withdrawn behavior

The second research question concerned the characteristics of the friends of aggressive and withdrawn children. For aggressive children, results show that 43% of the *best* and *good* friends were similar (thus, also aggressive), 44% were dissimilar (7% of which withdrawn), and 13% of the aggressive children had no close (best or good) friends at all. For withdrawn children, 30% of their *best* and *good* friends were similar (also withdrawn), 47% were dissimilar (9% of which aggressive), and 23% of the withdrawn children were without close friends.

Furthermore, we examined the similarity between the target children and their friends by comparing their mean levels of aggression and withdrawal. Because of the large range in the number of mutual friends that children had (1 to 26), we included only the first three friends, as identified by the best-friend nomination and ratings. One child in the sample had no best, good or occasional mutual friend and was not included in these analyses. A mean aggression and withdrawal score was computed for these three friends. Two 3 (Group: aggressive, withdrawn, control) \times 2 (Gender) ANOVA's revealed significant main effects for the factor Group: Friends of aggressive children were more aggressive than friends of withdrawn and control children, $F(2,803) = 35.72$, $p < .001$, $\eta_p^2 = .08$, whereas friends of withdrawn children were more withdrawn than friends of aggressive and control children, $F(2,803) = 29.54$, $p < .001$, $\eta_p^2 = .07$. In addition, significant main effects for Gender were found: Friends of boys were more aggressive than the friends of girls, $F(1,803) = 81.10$, $p < .001$, $\eta_p^2 = .09$, and the friends of girls were more shy and withdrawn, $F(1,803) = 34.03$, $p < .001$, $\eta_p^2 = .04$. There were no significant Group \times Gender interactions (for means and standard deviations, see Table 2.2).

2.3.3. Indicators of friendship quality

Scores on communal and agentic friendship needs and provisions, discrepancy scores of needs and provisions, and satisfaction scores were used as indicators of friendship quality. Three perspectives were examined: Friendship quality as reported by the target child, friendship quality as reported by the friend of the target child, and friendship quality on a dyadic level. In the latter analyses, the friendship dyad, rather than an individual

Table 2.2. Means (Standard Deviations) of Levels of Aggression and Withdrawal of Target Children's Friends

	Friends of aggressive boys (n = 186)	Friends of aggressive girls (n = 67)	Friends of withdrawn boys (n = 86)	Friends of withdrawn girls (n = 179)	Friends of control boys (n = 115)	Friends of control girls (n = 176)
Aggression	.09 (.06)	.05 (.06)	.05 (.04)	.03 (.03)	.05 (.04)	.03 (.02)
Withdrawal	.02 (.02)	.03 (.02)	.03 (.03)	.05 (.04)	.02 (.02)	.03 (.03)

Table 2.3. Means (Standard Deviations) of Target Children on Indicators of Friendship Quality

	Aggressive		Withdrawn		Control	
	Boys (n = 186)	Girls (n = 67)	Boys (n = 86)	Girls (n = 180)	Boys (n = 115)	Girls (n = 176)
Communal needs	3.92 (.52)	4.08 (.52)	3.87 (.52)	4.02 (.51)	3.88 (.47)	4.13 (.49)
Agentic needs	2.91 (.53)	2.76 (.51)	2.86 (.60)	2.81 (.57)	2.80 (.60)	2.82 (.54)
Communal provisions	3.94 (.57)	4.20 (.56)	3.75 (.64)	4.01 (.58)	3.85 (.53)	4.14 (.54)
Agentic provisions	3.13 (.63)	2.88 (.60)	2.92 (.66)	2.85 (.60)	2.89 (.52)	2.91 (.63)
Discrepancy (P-N)	.23 (1.17)	.24 (.83)	-.06 (1.09)	.04 (1.14)	.07 (1.06)	.09 (.97)
Friendship satisfaction	.88 (.14)	.91 (.14)	.83 (.15)	.88 (.15)	.86 (.14)	.90 (.14)

Note. P = Provisions; N = Needs

child, was the unit of analysis.

First, from the perspective of the target child, a series of 3 (Group: aggressive, withdrawn, and control) \times 2 (Gender) ANOVA's were conducted with the six indicators of friendship quality as the dependent variables. Means and standard deviations on the indicators of friendship quality are shown in Table 2.3. Results showed a significant main effect of Group for communal provisions, $F(2, 804) = 6.07, p = .002, \eta_p^2 = .02$, with aggressive children reporting more communal provisions than withdrawn children. Aggressive children were also more satisfied with their friendships than withdrawn children, $F(2, 804) = 3.74, p = .024, \eta_p^2 = .01$. No differences between groups were found on communal and agentic needs, agentic provisions and discrepancy scores. Several main effects of Gender were significant. Girls reported to have more communal needs, $F(1, 804) = 24.26, p = .000, \eta_p^2 = .03$, more communal provisions, $F(1, 804) = 38.51, p = .000, \eta_p^2 = .05$, and were more satisfied with their friendships than boys, $F(1, 804) = 12.74, p = .000, \eta_p^2 = .02$, whereas boys had more agentic provisions than girls, $F(1, 804) = 4.38, p = .037, \eta_p^2 = .01$. No significant interaction effects of Group \times Gender were found.

Second, we examined the friends' perspective on friendship quality. Discrepancy scores and friendship satisfaction could only be calculated if the friends had filled in the Close Friendship Questionnaire and the Friendship Satisfaction measure (FSm) for the target child. Friends who had filled in the CFQ and the FSm for another child than the target child were excluded from the analyses. Furthermore, in 36 cases, two friends filled in the CFQ and the FSm for the same target child. To make sure the data were completely independent, one friend was randomly excluded from the analyses, so that each target child was only rated once on friendship quality. In total 508 friends were included in analyses, 89.9% of which were best, 7.4% were good, and 2.7% were occasional friends.

Table 2.4 shows the means and standard deviations of the indicators of friendship quality for the friends of the target children. Results revealed no significant univariate effects of Group on the six indicators of friendship quality. There were, however, significant univariate effects of Gender: friends of girls reported to have more communal needs, $F(1, 502) = 23.72, p = .000, \eta_p^2 = .05$, and provisions, $F(1, 502) = 33.33, p = .000, \eta_p^2 = .06$, and they were more satisfied with their friendships than the friends of boys, $F(1, 502) = 4.28, p = .039, \eta_p^2 = .01$. No significant interaction effects of Group \times Gender were found.

Finally, on a dyadic level, we compared aggressive friendship dyads (with both children being aggressive; $n = 328$), withdrawn friendship dyads (two withdrawn children; $n = 221$), mixed friendship dyads (one aggressive and one withdrawn child; $n = 269$), and control friendship dyads (two children who were neither aggressive nor withdrawn; $n = 2126$). Because children could be a member of several friendship dyads, we randomly excluded friendship dyads, which resulted in a total of 398 friendship dyads that were completely independent. Mixed sex dyads ($n = 36$) were excluded from analyses. In total, there were 59

Table 2.4. Means (Standard Deviations) of Friends of the Target Children on Indicators of Friendship Quality

	Friends of			Friends of		
	Aggressive Boys (n = 132)	Aggressive Girls (n = 49)	Withdrawn Boys (n = 33)	Withdrawn Girls (n = 104)	Control Boys (n = 81)	Control Girls (n = 109)
Communal needs	3.86 (.51)	4.17 (.49)	4.04 (.52)	4.17 (.44)	3.89 (.58)	4.17 (.46)
Agentic needs	2.84 (.57)	2.80 (.54)	2.84 (.55)	2.84 (.52)	2.73 (.59)	2.82 (.61)
Communal provisions	3.90 (.55)	4.16 (.55)	3.87 (.50)	4.19 (.54)	3.95 (.52)	4.27 (.46)
Agentic provisions	3.01 (.68)	2.94 (.58)	2.91 (.62)	2.89 (.66)	2.88 (.60)	2.93 (.61)
Discrepancy (P-N)	.21 (1.09)	.14 (.93)	-.09 (.98)	.07 (1.05)	.22 (1.04)	.21 (.96)
Friendship satisfaction	.89 (.13)	.88 (.14)	.88 (.15)	.92 (.11)	.88 (.13)	.93 (.12)

Table 2.5. Means (Standard Deviations) of the Friendship Dyads on Indicators of Friendship Quality

	Aggressive-Aggressive			Withdrawn-Withdrawn			Aggressive-Withdrawn			Control-Control		
	Boys (n = 50)	Girls (n = 9)	SD	Boys (n = 13)	Girls (n = 50)	SD	Boys (n = 32)	Girls (n = 30)	SD	Boys (n = 91)	Girls (n = 123)	SD
Communal needs	3.91 (.41)	4.12 (.49)	.41	3.84 (.40)	4.01 (.41)	.31	3.98 (.31)	4.04 (.38)	.38	3.85 (.41)	4.14 (.35)	.35
Agentic needs	2.88 (.40)	2.79 (.49)	.40	2.80 (.57)	2.84 (.41)	.44	2.96 (.44)	2.72 (.37)	.37	2.75 (.44)	2.80 (.43)	.43
Communal provisions	4.03 (.41)	4.28 (.51)	.41	3.69 (.53)	4.02 (.41)	.39	3.92 (.39)	4.10 (.36)	.36	3.86 (.42)	4.13 (.40)	.40
Agentic provisions	3.16 (.47)	2.89 (.52)	.47	2.87 (.54)	2.92 (.42)	.42	3.14 (.49)	2.77 (.42)	.42	2.87 (.40)	2.87 (.43)	.43
Discrepancy (P-N)	.40 (.74)	.25 (.52)	.74	-.08 (.74)	.09 (.76)	.76	.12 (.76)	.12 (.56)	.56	.14 (.82)	.06 (.71)	.71
Friendship satisfaction	.89 (.11)	.91 (.09)	.11	.81 (.11)	.86 (.12)	.12	.83 (.10)	.88 (.10)	.10	.85 (.10)	.88 (.11)	.11

aggressive dyads (42% occasional friendships), 63 withdrawn dyads (48% occasional friendships), 62 mixed dyads (52% occasional friendships) and 214 control dyads (46% occasional friendships).

On the dyadic level (see Table 2.5 for the means and standard deviations on indicators of friendship quality for the different dyads), the Groups differed on communal provisions ($F(3,390) = 3.12, p = .026, \eta_p^2 = .02$). Children in aggressive dyads reported more communal provisions than children in withdrawn dyads. Also, we found several main effects of Gender: Girls had more communal needs ($F(1, 390) = 12.04, p = .001, \eta_p^2 = .03$), communal provisions ($F(1, 390) = 19.93, p = .000, \eta_p^2 = .05$), and were more satisfied with their friendships ($F(1, 390) = 5.27, p = .022, \eta_p^2 = .01$), whereas boys reported to have more agentic provisions ($F(1, 390) = 5.80, p = .017, \eta_p^2 = .02$). Furthermore, we found a significant interaction effect of Group \times Gender on agentic provisions ($F(1, 390) = 3.58, p = .014, \eta_p^2 = .03$). Boys and girls in withdrawn and control dyads did not differ in their reports of agentic provisions, but in aggressive and mixed dyads boys had more agentic provisions than girls.

2.3.4. Aggressive and withdrawn children in similar and dissimilar friendships

The final aim of this study was to compare aggressive children in aggressive dyads with aggressive children in mixed dyads. Similarly, we compared withdrawn children in similar and mixed friendship dyads. Means and standard deviations on indicators of friendship quality for target children in similar and dissimilar dyads are presented in Table 2.6.

For aggressive children, ANOVA's revealed no significant effects of Dyad, but there were some significant Gender effects: boys had more agentic needs ($F(1, 196) = 4.03, p = .046, \eta_p^2 = .02$) and agentic provisions ($F(1, 193) = 7.82, p = .006, \eta_p^2 = .04$) than girls, whereas girls had more communal provisions ($F(1, 193) = 9.59, p = .002, \eta_p^2 = .05$) than boys. Results showed no significant interaction effects of Dyad \times Gender.

For withdrawn children, results indicated no significant main effects of Dyad. We found a significant main effect of Gender on communal provisions ($F(1, 193) = 3.91, p = .050, \eta_p^2 = .02$) with girls reporting more communal provisions than boys. No significant interaction effects of Gender \times Dyad were found.

2.4. Discussion

The objective of the present study was to answer three questions proposed by Hartup (1996) regarding aggressive and withdrawn children's friendships: Do these children have friends, who are their friends, and of what quality are their friendships? Furthermore, we compared the friendship quality of children in similar and dissimilar friendships.

Table 2.6. Means (Standard Deviations) on Indicators of Friendship Quality of Target Children in Similar and Dissimilar Friendship Dyads

	Aggressive Children						Withdrawn Children					
	Similar Dyads			Dissimilar Dyads			Similar Dyads			Dissimilar Dyads		
	Boys (n=108)	Girls (n=27)		Boys (n=35)	Girls (n=30)		Boys (n=30)	Girls (n=102)		Boys (n=32)	Girls (n=33)	
Communal needs	3.92 (.51)	4.04 (.52)	3.98 (.44)	4.09 (.49)	3.88 (.49)	4.03 (.52)	3.97 (.51)	3.97 (.47)				
Agentic needs	2.90 (.50)	2.80 (.55)	2.91 (.60)	2.67 (.43)	2.81 (.61)	2.85 (.55)	2.99 (.66)	2.72 (.62)				
Communal provisions	3.99 (.54)	4.23 (.64)	3.93 (.59)	4.26 (.47)	3.72 (.62)	4.04 (.55)	3.91 (.61)	3.95 (.54)				
Agentic provisions	3.12 (.63)	2.93 (.61)	3.16 (.66)	2.77 (.63)	2.83 (.63)	2.94 (.59)	3.10 (.75)	2.75 (.65)				
Discrepancy (P-N)	.28 (1.09)	.31 (.92)	.21 (1.30)	.27 (.75)	-.15 (1.14)	.10 (1.21)	.05 (1.26)	.00 (.94)				
Friendship satisfaction	.90 (.14)	.92 (.15)	.86 (.16)	.92 (.12)	.82 (.15)	.89 (.16)	.85 (.16)	.87 (.14)				

Note. P = Provisions; N = Needs

First, our data clearly show that aggressive children do not differ from controls in the number of friends they have. Withdrawn children, however, have fewer best, good, and occasional friends than control children. Our findings further reveal that aggressive and withdrawn girls (but not boys) were less likely to have a best friend. Aggressive and withdrawn boys and girls were as likely as control boys and girls to have good and occasional friends. In general, the majority of aggressive and withdrawn children (62-68%) had at least one best friend, which is comparable to other studies (e.g., Rubin, Wojslawowicz et al., 2006). However, when we look not only at best friends, but also at good friends, 79-90% of the aggressive and withdrawn children was involved in a friendship. This finding suggests that we might overlook possibly important close friendships, by solely studying *best* friendships. On the one hand, our data confirm results of prior research indicating that aggressive and withdrawn children have friendships. On the other hand, the present findings underscore the importance of considering different friendship intensities, because children who do not have best friends, may have other close friends (good friends) who may serve similar functions as best friends. Also, our results indicate that, when studying friendship prevalence, including gender refines conclusions about the likelihood of having friendships. Aggressive and withdrawn girls were found to be less likely to have best friends than boys, possibly indicating that behaving in a non-normative manner influences the formation of best friendships more for girls than for boys.

The second aim of the study was to examine who the friends of aggressive and withdrawn children are. Similar to other studies (e.g., Haselager et al., 1998; Kupersmidt, DeRosier, & Patterson, 1995), we found that friends of aggressive children displayed higher levels of aggression than friends of control children. Similarly, friends of withdrawn children displayed higher levels of withdrawal than control children. However, when adopting a categorical approach (thus looking at the total number of friends), it appears that also half of the friendships of aggressive and withdrawn children are friendships with children who are *not* behaviorally similar to them. Whereas studies adopting a continuous approach (thus comparing mean levels of aggression and withdrawal of friends of aggressive and withdrawn children, respectively) conclude that similarity is an important aspect in the formation of friendships (e.g., Haselager et al., 1998; Rubin, Wojslawowicz et al., 2006), we see that when a categorical approach is adopted, results reveal that dissimilarity is just as prevalent as similarity.

Lastly, the third aim of the study was to compare the friendship quality of aggressive and withdrawn children with that of control children. Our results showed that aggressive children reported their friendships to be of equal quality compared to control children on all indicators of friendship quality. Surprisingly, aggressive children did not report to have more agentic friendship needs (e.g. competition, status, power) than control children. These findings suggest that aggressive children look for exactly the same things in friendships as other

children do. Interestingly, when looking from the perspective of friend, the friends of aggressive children do not have more agentic (or communal) provisions than friends of control children, which implies that aggressive children are similar to control children in what they offer their friends in a relationship. Furthermore, the friends of aggressive children are also satisfied with their friendships, suggesting that aggressive children might be nice friends to have. One possible explanation for this is that the aggression of the aggressive children need not be directed to their friends (see also Deptula & Cohen, 2004), and this finding is also consistent to Hawley's (1999, 2003) notion, namely that some aggressive children are also prosocial and popular children, which makes them attractive peers to be friends with.

Similarly, withdrawn children did not differ from control children on all indicators of friendship quality, on all three perspectives. This finding is consistent to what prior studies (Schneider, 1999; Fordham & Stevenson-Hinde, 1999) found, namely that withdrawn children form good-quality friendships. It is, however, in contradiction to what Rubin and colleagues (Rubin, Wojslawowicz et al., 2006) recently found, namely that withdrawn children had mutual best friendships of lesser quality than that of control children. One important difference between their study and our present study is that in our study, children who were defined as being "withdrawn", were children who either passively withdraw from the peer group or those who were actively isolated from the peer group. In contrast, in Rubin's study, children who were labelled "withdrawn", were children who choose to passively withdraw from the peer group. Children who are actively isolated by the peer group, but do have a friendship, might appreciate that friendship more than peers that are not actively isolated, and as a consequence rate their friendship to be of higher quality. Thus, by taking together these two subtypes of withdrawal (passive withdrawal and active isolation), it might be that possible differences in ratings of friendship quality between children within the two subtypes of withdrawal are overlooked.

The present study has several strengths. The first strength is the use of three perspectives in examining friendship quality: the child's, the friends', and the dyadic perspective, and by doing so, our study makes it possible to verify self reports of the target children with reports of their friends, and even within the dyad itself. Furthermore, the present study extends prior research on friendship quality by including not only friendship provisions, but also friendship needs, and not only considering communal aspects but also agentic characteristics. Although aggressive, withdrawn and control children did not differ in their communal and agentic needs in our study, we did find some interesting gender differences. These show that friendship needs are not the same for everybody, and thus, in friendship quality research, we cannot assume that all children look for the same things in friendships. Clearly, additional research is needed to further explore the ways in which friendship needs influence the quality of children's friendships.

There are, however, also some limitations that should be noted. Our study does not make a distinction between different functions and types of aggression or withdrawal, as is sometimes suggested in the literature (Prinstein & Cillessen, 2003; Bowker et al., 1998). Poulin and Boivin (1999), for instance, found that proactive aggressive children were satisfied with their friendships, in contrast with reactive aggressive children, who were not satisfied with their friendships. So, in future research it might be interesting to see whether for example aggressive children in similar friendship dyads are aggressive in others ways than aggressive children who have dissimilar friends. A similar question can be asked for withdrawn children: Are withdrawn children in dissimilar friendship dyads for instance actively isolated, whereas withdrawn children in similar dyads are more passively withdrawn?

Another limitation in this study was the reduced power in our dyadic analyses because of multiple dyad membership of the children, a problem that has been acknowledged by other researchers in peer relations as well (e.g., Prinstein & Wang, 2005; Rose et al., 2004; Rubin, Wojslawowicz et al., 2006). A consequence of this multiple membership issue is that the number of dyads used in our dyadic analyses is sometimes small, and the results of these analyses should thus be interpreted carefully. It is interesting, however, to see that even with these small numbers of dyads, we were able to replicate the findings from the individual and friends' perspective.

Finally, our findings may lead one to conclude that aggressive and withdrawn children are not as much at risk when it comes to peer relations as we thought they were: they are capable of forming friendships, and the quality of their friendships is not worse than that of other children. However, there is still a lot to be known about the friendships of these children. Although children and their friends may rate their friendships to be of good quality, we know that not all things that children like are necessarily good for them. One might, for example, hypothesize that withdrawn children in similar friendships are better off in the long run than withdrawn children in dissimilar friendships, because the latter might be at risk for victimization by the aggressive child. In contrast, our results indicate that aggressive children have friends who are more aggressive than that of control children, so aggressive children in similar dyads might be worse off than those aggressive children who have friends who are dissimilar to them. To conclude, future research should study the psychological adjustment of children involved in these friendships.

Chapter 3

Machiavellianism in elementary school children: Risk and adaptation

An adapted version of this chapter will be published as:

Palmen, H., Vermande, M. M., Deković, M., & van Aken, M. A. G. (in press).
Machiavellianism in elementary school children: Risk and adaptation. In C. T. Barry, P. Kerig, K. Stellwagen, & T. D. Barry (Eds.), *Implications of narcissism and Machiavellianism for the development of prosocial and antisocial behavior in youth*. Washington, DC: American Psychological Association.

3.1. Introduction

Machiavellianism has been studied by different research traditions, the most important being the psychological (e.g., personality and social psychology) and evolutionary traditions. In psychological research, Machiavellianism has been described as being part of “the dark triad of personality”. Machiavellianism is defined as cold, manipulative behavior (Christie & Geis, 1970), and forms the triad with subclinical narcissism (central characteristics are grandiosity, entitlement, dominance, and superiority) and subclinical psychopathy (central characteristics are high impulsivity and thrill-seeking, and low empathy and anxiety; Paulhus & Williams, 2002). These three personality types, although distinct constructs, share a number of features, such as a socially mean character with behavior tendencies toward self promotion, dishonesty, emotional coldness, and aggressiveness. Psychological research has shown that, although Machiavellians are *perceived* by their peers to be more intelligent and attractive (Cherulnik, Way, Ames, & Hutto, 1981), Machiavellianism does not correlate with intelligence or measures of success in real life, such as income or status (Ames & Kidd, 1979; Hunt & Chonto, 1984). Machiavellianism has been shown to be positively related to aspects of primary psychopathy (such as lying, manipulation, grandiosity, superficial charm, lack of remorse, and shallow affect), and secondary psychopathy (anxiety, proneness to boredom, lack of realistic long-term goals; McHoskey, Worzel, & Szarto, 1998). In addition, Machiavellianism in children has been negatively related to empathy (Barnett & Thompson, 1985), and positively related to problem behavior, such as bullying (Sutton & Keogh, 2000). In sum, Machiavellianism in psychological research has been associated with problem behaviors, which serve as a risk factor for later maladaptation.

Although psychological research has given us great insight in the correlates of Machiavellianism, evolutionary researchers claim that the psychological tradition does not provide clear explanations for Machiavellians’ behavior. They argue that the evolutionary perspective provides a more thorough theoretical explanation for Machiavellians’ behavior, and also explains why Machiavellians’ behavior is not merely maladaptive, but can also be adaptive.

3.1.1. Evolutionary perspectives

Important insights on the adaptive aspects of Machiavellianism stem from the work of Patricia Hawley. In Hawley’s (1999, 2003a, 2003b) Resource Control Theory (RCT) the focus is on the function of behavior (i.e., gaining resource control or social dominance). This theoretical framework provides an evolutionary explanation for Machiavellianism being adaptive, as well as maladaptive. From an evolutionary perspective, individuals need to be accepted by a group (“getting along”), but at the same time need to be a good competitor

within that group (“getting ahead”). Being part of a group enables individuals to access resources that would be unavailable otherwise. At the same time, individuals in these groups need to compete for these limited resources that the group made accessible. This important challenge (getting along, and at the same time getting ahead) is thought to underlie much of human behavior, and implies that people should be able to balance between self-interest and group-interest (Hawley, Little, & Pasupathi, 2002).

This chapter focuses on the adaptive and maladaptive aspects of Machiavellianism in children and adolescents. One important group context in children’s lives is their peer group, especially their peers in school. During the school-age years, interactions with peers become much more frequent, and children are brought into contact with a wide variety of peers (Rubin, Bukowski, & Parker, 2006). Within this school context, children are known to be motivated to access (and compete for) different resources. These can be material sources (for example toys), but also good social relationships with their peers. Friends serve as an important context in which resources are exchanged (e.g., love, status, goods). However, social attention from peers is also limited, and for that reason, children have to compete for it. In balancing between being accepted by the peer group, and competing for resources, children can adopt several strategies of resource control.

3.1.2. Strategies of resource control

Hawley describes socially dominant individuals as those who are successful in controlling resources. She argues (Hawley et al., 2002) that children can control resources by using two kinds of strategies: 1) coercive strategies, and 2) prosocial strategies.

Traditionally, coercive (or aggressive) behaviors and prosocial (or cooperative) behaviors have been thought to be opposite ends of the same continuum of social behavior. Aggression has been related to incompetence (for instance, aggressive individuals have been shown to have social information processing impairments; e.g., Dodge, Coie, & Lynam, 2006), whereas prosocial behavior has been related to competence (for example, prosocial behavior in children is seen as a central feature of social competence; e.g., Waters & Stroufe, 1983). Researchers in the last few decades, however, have acknowledged that aggression can also be functional (for a recent review, see Heilbron & Prinstein, 2008). Indeed, since aggression occurs in all species, it must be functional, according to natural selection theory (Pellegrini, 2008). Researchers have argued that, instead of opposite ends of the same continuum, prosocial and coercive behaviors can be seen as two different ways to achieve the same goal, namely resource control (Hawley et al., 2002).

Coercive strategies are defined by Hawley as strategies that “disregard positive bonds to gain direct access to resources by, for example, taking, monopolizing, and thwarting others” (Hawley et al., 2002, p. 467). Using this strategy can be effective, because it leads to

immediate resource control, but may have a negative effect on more long-term social relations. Prosocial strategies, on the other hand, are defined as strategies that “capitalize on the social group’s mediation of material access by fostering cooperative relationships and treating others in ways that encourage goodwill, reciprocity, and loyalty, such as helping, sharing, and appearing altruistic” (Hawley et al., 2002; p. 466-467). Although prosocial strategies may not seem as competitive as coercive strategies, research has revealed that aiding or instructing others is an effective way to achieve goals (e.g., McClelland, 1975; Winter, 1992). In other words, prosocial strategies have been hypothesized to be adaptive because they lead to resource control, and at the same time maintain social relationships.

Based on these two ways to control resources, Hawley describes five types of resource controllers according to their strategies used: *prosocial controllers* are children who mostly use prosocial strategies to gain resource control, whereas *coercive controllers* predominantly use coercive strategies. *Machiavellians* (also called bistrategic controllers) are children who are able to flexibly use both coercive and prosocial strategies of resource control, dependent on the specific situation at hand (Wilson, Near, & Miller, 1996). These individuals, thus, have the social competencies to use prosocial strategies, but at the same time are not reluctant to use coercive strategies to gain resource control, when a situation demands it. Further, *typical children* are children who are average in their usage of both strategies of resource control. Lastly, *subordinate children* (also called noncontrollers) do not pursue resource control in levels other children do, and thus neither use prosocial nor coercive strategies often. These subordinate children are excluded in the studies presented in this chapter, since we want to compare Machiavellians (or bistrategic controllers) and the other children striving for resource control (prosocial and coercive controllers) with the typical children.

Hawley’s typology is based on self-reports of children’s and adolescents’ strategy use. She has argued, however, that behavioral approaches are needed to demonstrate the degree to which the self reports would predict actual behavior. Using a behavioral approach would, for instance, prevent response patterns to reflect consistency in self-presentation (Hawley et al., 2002). Therefore, the studies in this chapter present a behavioral approach to measuring resource control, in that we use peer nominations of coercive and prosocial behavior to construct the resource control groups (see also Bukowski & Abecassis, 2007).

3.1.3. Research aims and hypotheses

Two studies were conducted to explore whether Machiavellianism in children is related to adaptation or maladaptation. In the first study, we compared the four groups of resource controllers on an important aspect of social adaptation in childhood, namely their social relations with their peers. In the second study, we studied the longitudinal development of

two critical domains of adaptation, namely competence (academic and social), and the prevalence of problem behavior (loneliness and aggression) for these four groups of children.

Machiavellianism and social relations

Although much is known about the friendships of coercive (aggressive) and prosocial children, little is known about the friendships of Machiavellians. In the first study we compared coercive resource controllers, prosocial controllers, Machiavellians (bistrategic controllers), and control children with respect to their communal and agentic friendship needs and provisions. Friendship needs are the characteristics that an *ideal* friendship would hold, whereas friendship provisions are the self-reported characteristics of the children's *actual* friendships. Communal needs and provisions are social and interpersonal, and directed towards obtaining bonds, intimacy, and love, whereas agentic needs and provisions are individualistic, and directed towards obtaining power and status. In addition, we examined whether the four groups of resource controllers differed in friendship quality and friendship satisfaction. Lastly, we compared the degree of social impact within the classroom for the four groups.

In general, it was hypothesized that children who employ prosocial strategies (prosocial children and Machiavellians) enjoy social benefits from their behavior. Prosocial children are highly skilled and very socially attractive, and therefore are expected to have friendships of high quality (Hawley, Little, & Card, 2007). Indeed, prosocial children have been found to have friendships that are predominantly characterized by positive friendship features (for instance, supportiveness; Sebanc, 2003). Conversely, children who employ coercive strategies (coercive children and Machiavellians) suffer social costs. Coercive children are predicted to suffer the most social costs from their behavior. Their friendships have been shown to be associated with more negative friendship features (such as conflict, betrayal, and exclusivity) than those of noncoercive children (Dishion, Eddy, Haas, Li, & Spracklen, 1997). Nevertheless, it is often found that the friendships of coercive children do not necessarily show less positive features than those of noncoercive children (Sebanc, 2003). Machiavellian children may also suffer social costs because of their coercive behavior. However, their prosocial behavior might compensate, at least partly, the negative effects of aggressive behavior (see also Hawley et al., 2007; Sebanc, 2003). Although little research has investigated the friendships of Machiavellians, Hawley and colleagues (2002) found that the friendships of Machiavellian children were, on the one hand, highest on intimacy and fun, and on the other hand, highest on conflict. They therefore concluded that the friendships of Machiavellians had positive as well as negative features. With respect to social impact, researchers have argued that Machiavellians are perceived as popular by their peers (Hawley et al., 2007), and that they are socially central (Bagwell, Coie, Terry, & Lochman,

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2000; Farmer & Rodkin, 1996). Therefore, in line with RCT, we hypothesized that Machiavellians would score the highest on social impact.

In sum, we expected prosocial children to have the most positive friendships, followed by Machiavellians. Control children were hypothesized to have friendships of average quality, and coercive children were expected to have friendships that are characterized by more negative characteristics. Machiavellians were expected to score highest on social impact.

Machiavellianism and long-term adaptation

Children in elementary school display adaptive behavior when they meet the academic and social challenges that they encounter. In addition, adaptation can be assumed to be characterized by a lack of behavioral problems. Two kinds of problem behaviors are particularly problematic in elementary school aged children, but nevertheless occur regularly, namely being lonely and acting aggressively. Therefore, in this study, we use academic and social competence, and loneliness and aggression as indicators of long-term adaptation.

Although Machiavellianism has traditionally been linked to maladaptation, RCT claims that Machiavellianism can be adaptive. Machiavellians are the most successful in resource control and social dominance, while at the same time they get along well with their peers (Hawley et al., 2007). The present study aims to examine both views. More specifically, it examines to what degree Machiavellianism in children is adaptive or maladaptive in the long term. Machiavellian children are compared to prosocial children (hypothesized to be high on adaptation), coercive children (hypothesized to be low on adaptation), and control children (hypothesized to be average). It is hypothesized that Machiavellian children show better adaptation over time than coercive children, because their prosocial capacities may compensate the consequences of their coercive behavior. However, Machiavellians are expected to be less well adapted over time when compared to prosocial children, since they also suffer the costs of their coercive behavior. Prosocial children stand out as the most agreeable, socially skilled, and conscientious children (Hawley, 2003a) who enjoy high status within the peer group (e.g., Deković & Gerris, 1994) .

3.2. Study 1

3.2.1 Method

Participants

Participants were drawn from the third wave of the Utrecht Social Development Project (USDP; e.g., Van Rossem & Vermande, 2004; Vermande, van den Oord, Goudena, &

Rispens, 2000), a longitudinal study on the social development of elementary school children. The third wave of this study comprised 1347 children in the 5th grade (M age = 10.9 years; SD = 4.5 months; 52% boys) of elementary schools in the province of Utrecht and the city of Hilversum in The Netherlands. Ninety-three percent of the participants had Dutch parents, while the other children had at least one parent from Morocco, Turkey, Surinam, or a European country other than The Netherlands.

Procedure

As part of a larger battery of questionnaires, children filled out questionnaires about their friendships in school (e.g., about friendship needs and provisions, conflicts and friendship satisfaction). Further, peer nominations were used to assess children's social relations (e.g., friendship, liking, and disliking) and behavioral characteristics (e.g., aggression and prosocial behavior) according to their peers. The peer nomination procedure involved handing children a list with names of all their classmates. Children could write down the names of the classmates they wanted to nominate for a specific question. Children could nominate an unlimited number of same-sex and opposite-sex classmates on all nomination questions. They were not obliged to nominate someone, but were not allowed to nominate themselves.

Questionnaires were administered during class hours, in two sessions, on separate days. Two research assistants were present in the classroom, to give instructions, to stress the confidentiality of the study, and to answer questions.

Measures

Construction of groups. Children were assigned to one of four groups (coercive, prosocial, Machiavellian, and control) according to their peer nominated levels of aggressive behavior and prosocial behavior.

Aggression. Aggression towards peers was assessed by using four items of the Perception of Peer Support Scale (PPSS, Ladd, Kochenderfer, & Coleman, 1996). Items in the original PPSS (e.g., Kochenderfer & Ladd, 1996) were adapted to serve as a peer nomination measure of peer aggression. That is, children were asked to indicate which children in their class 1) pick on you at school; 2) hit you at school; 3) say mean things to you at school; 4) say bad things to other kids in school behind your back. To obtain an individual score of aggression, the mean number of nominations received on the four items was calculated, and standardized within class. Higher scores on aggression indicated that a child uses more aggression towards peers. Reliability coefficients were good (α on all waves > .85).

Prosocial Behavior. Prosocial behavior was also measured by peer nominations. Children nominated those children who “help them a lot” and “always know nice things to play” (see Hawley et al., 2007). The number of times a child was nominated on each item was summed, and these scores were then standardized within class. Scores on the two items were summed, and divided by two; higher scores indicated higher levels of prosocial behavior.

Groups were constructed by dividing the distributions of peer nominations of aggression and prosocial behavior into thirds on the full sample (see also Hawley et al., 2007). Four groups were defined: a) coercive children, who scored in the top 66th percentile on aggression, and average or low on prosocial behavior ($n = 306$); b) prosocial children, who scored in the top 66th percentile on prosocial behavior, but average or low on aggression ($n = 307$); c) Machiavellians, who scored in the top 66th percentile on both aggression and prosocial behavior ($n = 143$); d) control children, who either scored average on aggression, and average or low on prosocial behavior, or scored average on prosocial behavior, and average or low on aggression ($n = 435$).

Indicators of children’s social relations

Friendship Needs and Provisions. Friendship needs and provisions were measured by the Close Friendship Questionnaire (CFQ; Zabatany, Conley, & Pepper, 2004). The CFQ consists of 54 items measuring 12 friendship characteristics. Following Zabatany et al. (2004), these friendship characteristics were grouped into a Communal factor (Companionship, Love and affection, Emotional support, Loyalty, Intimacy, Shared history, Communal validation) and an Agentic factor (Power, Status, Competition, Agentic validation, Network access).

The CFQ was administered twice, on separate days. The first day, the children filled in the questionnaire for their “*ideal best friend*”. An ideal best friend was defined as follows: “An ideal friend is the perfect friend for you. You couldn’t wish for a better friend than that. An ideal friend does not exist for real, but only in your thoughts or fantasy”. Children were asked to rate their friendship characteristic on a 5-point-Likert-scale (e.g., My ideal friend thinks I’m OK; 1 = not important at all; 5 = very important). The second day children filled in the CFQ for their “*actual very best friend*”. Children were now asked to rate every friendship characteristic on a 5-point-Likert-scale using slightly different answer categories (e.g., My best friend thinks I’m OK; 1 = not true at all; 5 = always true). Scores on the CFQ for the ideal best friend were considered to reflect the child’s friendship *needs*, scores on the CFQ for the actual best friend the child’s friendship *provisions*.

Confirmatory factor analyses on the CFQ indeed supported the two (Communal and Agentic) factor model as separate but correlated dimensions of friendship needs, which, in

multi-group analysis, held for both boys and girls ($\chi^2(110) = 351.85$, RMSEA = .058, NNFI = .98, CFI = .98). For further analyses we used the Communal and Agentic Needs and Provision scales, which all had good reliability (alpha's ranging from .85-.95).

Friendship Quality. As an indicator of friendship quality we used three items of the Friendship Quality Measure of Grotjeter and Crick (1996). Children were asked to indicate on a 5-point Likert scale (1 = not true at all; 5 = always true) how well they are able to reconcile after conflicts with their best friends (e.g., "It is easy to make up quickly with my friend if we have a fight"). This scale had adequate reliability (Cronbach's alpha = .74).

Friendship satisfaction. Friendship satisfaction was measured by two 5-point Likert scale items: "How is your best friendship going?" (1 = not at all well to 5 = very well) and "How satisfied are you with your best friendship?" (1 = not at all satisfied to 5 = very satisfied) (Parker & Asher, 1993; Zabatany et al., 2004). The two items were moderately high correlated ($r = .67$). Mean scores were calculated as an indication of the child's friendship satisfaction.

Social Impact. Social impact was measured by the peer nomination procedure described by Coie and Dodge (1983). Rejection scores (number of times a child was negatively nominated – "don't like to play with" -, standardized within class) and acceptance scores (number of times a child was positively nominated – "like to play with", standardized within class) were summed. Resulting scores were again standardized within class to obtain social impact scores.

3.2.2. Results

To examine whether coercive children, prosocial children, Machiavellian children, and control children differ with respect to their friendships and level of social impact in the class, we compared their communal and agentic friendship needs and provisions, their friendship quality and friendship satisfaction, and their level of social impact. A MANOVA was performed with the indicators of children's social relations (agentic and communal friendship needs and provisions, friendship quality, friendship satisfaction, and social impact) as dependent variables and the four groups of children as independent variable.

Results revealed a multivariate effect of group ($F(21, 3208) = 7.460$, $p = .000$; $\eta_p^2 = .04$; for means and standard deviations, see Table 3.1). Tests of between-subjects effects showed that group differences appeared on communal ($F(3, 1126) = 12.426$, $p = .000$; $\eta_p^2 = .03$) and agentic provisions ($F(3, 1126) = 3.713$, $p = .011$; $\eta_p^2 = .01$), friendship quality ($F(3,$

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1126) = 4.720, $p = .003$; $\eta_p^2 = .01$), and friendship satisfaction ($F(3, 1126) = 5.943$, $p = .001$; $\eta_p^2 = .02$), and social impact ($F(3, 1126) = 34.399$, $p = .000$; $\eta_p^2 = .08$).

Table 3.1. Means and Standard Deviations on Indicators of Social Adaptation in Grade 5 for Coercive, Prosocial, Machiavellian, and Control Children

	Coercive ($n = 289$)	Prosocial ($n = 295$)	Machiavellian ($n = 137$)	Control ($n = 406$)
<i>Indicators of Social Adaptation</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Communal needs	3.94 (.60)	4.03 (.51)	4.04 (.61)	3.95 (.54)
Agentic Needs	2.80 (.57)	2.70 (.54)	2.79 (.62)	2.76 (.57)
Communal provisions	3.89 (.59) ^b	4.11 (.55) ^a	4.12 (.54) ^a	3.89 (.61) ^b
Agentic provisions	2.93 (.65) ^{ab}	2.92 (.61) ^{ab}	3.05 (.68) ^a	2.85 (.59) ^b
Friendship Quality	4.11 (.81) ^b	4.24 (.73) ^{ab}	4.36 (.59) ^a	4.13 (.77) ^b
Friendship Satisfaction	4.55 (.56) ^b	4.69 (.52) ^a	4.71 (.43) ^a	4.56 (.60) ^b
Social Impact	.19 (1.09) ^b	.13 (.86) ^b	.57 (.85) ^a	-.27 (.87) ^c

Note. Means with different superscripts for a friendship characteristic are significantly different at $p < .05$

Machiavellians reported higher levels of communal provisions than coercive and control children. Their friendships were thus characterized by more social and interpersonal features than those of coercive and control children. Machiavellian children, however, had similar levels of communal provisions in their friendships as prosocial children. Machiavellians also reported to have more agentic provisions than control children, whereas coercive children did not differ from control children in agentic provisions. Thus, friendships of Machiavellians are not only characterized by high levels of communal provisions, but also by high levels of agentic provisions (individualistic features, aimed at gaining power and status). Further, Machiavellians reported their friendships to be higher in quality than those of coercive and control children, and they were more satisfied with their friendships than coercive and control children. Moreover, their friendships were of equal quality as those of prosocial children, and both Machiavellians and prosocial children reported similar high levels of friendship satisfaction. Lastly, as expected, Machiavellians showed higher levels of social impact than all other children.

In sum, in line with the hypotheses, group differences appeared between Machiavellians and coercive and control children (Machiavellians having better social relations). Prosocial children, however, did not have better social relations than Machiavellian children. Machiavellian children scored higher on social impact than all other children.

3.3. Study 2

Whereas study 1 compared the four groups of children cross-sectionally with respect to several indicators of their friendships, study 2 examined whether or not these four groups differ in their patterns of adaptive behaviors over time. Most studies that addressed adaptation of Machiavellian children have focused on various aspects of peer status. Little research has focused on the four important domains of adaptation in elementary school: academic and social competence, loneliness, and aggression. Therefore, this study compared the four and groups of resource controllers in grade 1 on the development of these four measures of adaptation over a period of four years.

3.3.1. Method

Participants

For the longitudinal analyses in this study, a subsample of 741 children of the USDP (52% boys) were included that participated in grade 1 (T1; M age = 6.8; SD = 5 months), grade 3 (T2; M age = 8.9; SD = 4.5 months) and grade 5 (T3).

Procedure

In grade 1 and 3, children were individually interviewed by trained research assistants in a quiet environment, outside the classroom. The research assistants stressed the confidentiality of the study several times. Child interviews provided information on the social relations of the children with their classmates, on feelings of loneliness, as well as several peer nomination measures on for example aggression and prosocial behavior. This peer nomination procedure was as follows: Pictures were taken of all children in the study. Subsequently it was confirmed that all participants recognized all their classmates in the pictures. When the interviewer posed a question, children could then point at the pictures of those children they wanted to nominate. For the procedure of the peer nominations in grade 5, see Study 1.

Additionally, in all grades, teachers filled out a short questionnaire for every child in their class about problem behavior, social problems, and academic achievement.

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Measures

Construction of groups. In first grade, groups were constructed in the same manner as described in study one. The coercive group consisted of 161 children, the prosocial group of 213 children, the Machiavellian group of 59 children, and lastly the control group of 250 children.

Indicators of children's adaptation during elementary school

Academic Achievement. A child's academic achievement was rated by their teachers on a ten-point scale (1-10) for nine school domains: language, arithmetic, vocabulary, reading, drawing, physical education, arts and crafts, autonomy, and learning ability (α for each wave > .86). A child's academic achievement was operationalized as the mean performance score on these nine domains.

Social Preference. Social preference was measured by the peer nomination procedure described by Coie and Dodge (1983). Rejection scores (number of times a child was negatively nominated – “don't like to play with” -, standardized within class) were subtracted from acceptance scores (number of times a child was positively nominated – “like to play with”-, standardized within class). Resulting difference scores were again standardized within class to obtain social preference scores.

Loneliness. The Loneliness and Social Dissatisfaction Questionnaire (LSDQ; Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985) was used as an indicator of loneliness. The LSDQ is a self-report measure, which contains 16 target items ($\alpha_{G1} = .71$, $\alpha_{G3} = .81$, $\alpha_{G5} = .88$) on feelings of loneliness, (e.g., “I'm lonely”), feelings of social adequacy versus inadequacy (e.g., “I'm good at working with other children”), and subjective estimation of peer status (e.g., “I am well-liked by the kids in the class”), and 8 items on preferred activities or hobbies (e.g., “I like to paint and draw”). Scores were standardized within wave, and thereafter standardized across waves, to deal with differences in answer categories between waves (“1 = never true” to “3 or 5 = always true”). In this way, relative differences in variability across time and grouping structure were preserved (see also Stright, Gallagher, & Kelley, 2008). Higher scores indicated more feelings of loneliness.

Aggression. Teachers completed the subscale Aggression of the Amsterdam Child Behavior Checklist (ACBC; De Jong, 1995) for every child in their class. The ACBC is a short teacher rating scale, designed to differentiate between attention problems and related behavioral and emotional problems, frequently observed in primary school children. The

subscale Aggression consisted of six items (e.g., “often destroys things”), and teachers rated on a 4-point-scale how well the items described the children in their class (“1= not” to “4 = well”). Individual scores were obtained by calculating the mean subscale score, higher scores indicating more aggression (α for each wave $\geq .89$).

3.3.2. Results

The four groups of children (coercive, prosocial, Machiavellian, and control) were compared with respect to their developmental trajectories of academic achievement, social preference, loneliness, and aggression over a period of four years (grade 1 - grade 5). Intercorrelations, means, and standard deviations of all constructs in all grades are presented in Table 3.2.

Two-factor latent growth curve analyses were conducted using Mplus Version 5.0 (Muthén & Muthén, 1998-2007). The first factor, the intercept, describes the initial level of the assessed variable at grade 1 (intercept mean), and the individual differences in this initial level (intercept variance). Since the intercept is a constant for each individual across time, the factor loadings of the three observed variables (corresponding to three measurement waves) were set at 1 for each wave. The second factor, the slope, describes the rate of change over time (slope mean) and individual differences in change patterns (slope variance). The factor loadings for the slope factors are fixed at the specific values that correspond to a linear time scale (0, 1, and 2, since the intervals between measurements are equal, that is, two years).

For all analyses the following strategy was used: Firstly, the four growth parameters (intercept mean and variance, and slope mean and variance) were allowed to vary across all groups (Model 1). Secondly, each of the four growth parameters was fixed one at the time, in the following order: the intercept mean (model 2), the slope mean (model 3), the intercept variance (model 4), and the slope variance (model 5). When fixing a growth parameter did not lead to significant decreases in model fit (tested using Chi-square difference testing), that particular growth parameter was set equal for all groups. When fixing a growth parameter did lead to significant decreases in model fit, that particular growth parameter was allowed to vary across groups. In such cases, confidence intervals were examined to locate differences between the four groups. When slope variances were estimated to be slightly negative (and nonsignificant), slope variances were fixed at zero. A summary of the chi-square difference tests and model fit indices is shown in Table 3.3. Given our hypotheses, we were mainly interested in group differences in intercept and slope means. These parameter estimates in the final models, significance levels, and group differences in parameter estimates are presented in Table 3.4.

Table 3.2. Intercorrelations, Means, and Standard Deviations of All Constructs in Grade 1, Grade 3, and Grade 5

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	M	SD
1. Ac. Achievement G1	-	.60**	.41**	.17*	.12	.03	.02	.00	-.09	.01	-.04	-.08	7.00	.70
2. Ac. Achievement G3	.48**	-	.59**	.18*	.08	.08	.06	.09	-.10	.03	-.03	-.01	7.17	.66
3. Ac. Achievement G5	.52**	.62**	-	.13	-.03	.10	.18*	.11	.04	.00	-.05	-.14	7.15	.69
4. Social Preference G1	.11	.08	.08	-	.56**	.40**	-.08	-.26**	-.18*	-.30**	-.37**	-.25**	-.75	.92
5. Social Preference G3	.16*	.12	.13	.23**	-	.56**	.00	-.25**	-.26**	-.19*	-.34**	-.19*	-.43	1.06
6. Social Preference G5	.13	.06	.10	.10	.37**	-	-.03	-.19*	-.29**	-.22**	-.37**	-.18*	-.37	1.06
7. Loneliness G1	.01	.09	.03	-.12	.02	-.01	-	.27**	.18*	.10	.05	-.03	-.00	.40
8. Loneliness G3	-.20**	-.12	-.10	-.09	-.16*	-.17*	.23**	-	.28**	.20*	.20*	-.01	.03	.45
9. Loneliness G5	-.31**	-.11	-.17*	-.01	-.03	-.16*	.13	.28**	-	.06	.15	-.03	.12	.50
10. Aggression G1	-.09	.13	.04	-.08	-.12	-.09	.02	.08	.11	-	.47**	.44**	1.75	.68
11. Aggression G3	-.07	.07	.00	-.01	-.03	-.12	-.03	.03	.14	.28**	-	.46**	1.61	.64
12. Aggression G5	-.05	.13	-.01	-.07	-.10	-.19**	-.06	.06	-.00	.22**	.27**	-	1.61	.62
Mean	7.40	7.42	7.48	.81	.53	.52	-.26	-.08	-.07	1.19	1.23	1.17		
SD	.66	.62	.62	.68	.79	.74	2.95	.34	.33	.31	.36	.30		

Note. Coercive Group ($n = 161$) above the diagonal; Prosocial Group ($n = 213$) below the diagonal; * $p < .05$; ** $p < .01$; *** $p < .001$; Boldface correlations are the stability coefficients of each measure

Table 3.2 (continued)

	1	2	3	4	5	6	7	8	9	10	11	12	M	SD
1. Ac. Achievement G1	-	.65**	.51**	.22	.42**	.04	-.26	-.05	-.31*	-.37**	-.27	-.39**	7.17	.65
2. Ac. Achievement G3	.49**	-	.72**	.18	.40**	-.01	-.25	-.16	-.25	-.22	-.29*	-.17	7.28	.71
3. Ac. Achievement G5	.49**	.63**	-	.04	.50**	.14	-.27*	-.09	-.16	-.25	-.40**	-.57**	7.28	.78
4. Social Preference G1	.07	.11	.09	-	.35**	.26*	-.19	-.27*	-.40**	-.39**	-.38**	-.09	.39	.71
5. Social Preference G3	.16*	.28**	.28**	.39**	-	.49**	-.31*	-.12	-.19	-.40**	-.53**	-.43**	.40	.83
6. Social Preference G5	.12	.26**	.27**	.35**	.50**	-	-.21	-.15	-.33**	-.31*	-.45**	-.28*	.12	1.03
7. Loneliness G1	-.07	-.03	.04	-.11	-.13*	-.16*	-	.16	.21	.08	.15	.10	-.09	.37
8. Loneliness G3	-.18**	-.07	-.05	-.12	-.15*	-.15*	.17**	-	.40**	.20	.16	.01	.03	.43
9. Loneliness G5	-.18**	-.23**	-.22**	-.12	-.27**	-.31**	.23**	.25**	-	.20	.33*	.20	.00	.45
10. Aggression G1	-.10	-.11	-.19**	-.01	-.22**	-.18**	.02	.12	.10	-	.45**	.36**	1.59	.57
11. Aggression G3	.04	-.07	-.09	-.03	-.20**	-.17*	.04	.03	.12	.39**	-	.47**	1.60	.69
12. Aggression G5	-.01	-.08	-.15*	-.01	-.20**	-.21**	-.09	-.05	.02	.21**	.37**	-	1.45	.59
Mean	7.10	7.30	7.28	.04	.01	.04	.08	.06	.04	1.22	1.30	1.23		
SD	.67	.61	.72	.68	.89	.91	.44	.42	.43	.36	.41	.35		

Note. Machiavellian Group ($n = 59$) above the diagonal; Control Group ($n = 250$) below the diagonal; * $p < .05$; ** $p < .01$; *** $p < .001$; Boldface correlations are the stability coefficients of each measure

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Table 3.3. *Fit Statistics and Model Comparisons for Proposed Models*

	$\Delta\chi^2$	Δdf	CFI	RMSEA
<i>Academic Achievement</i>				
Model 1 (fully free)	24.457			
Model 2 (mean intercept fixed)	25.387***	3		
Model 3 (mean slope fixed)	1.724	3		
Model 4 (variance intercept fixed)	2.329	3		
Model 5 (variance slope fixed)	.279	3		
Final Model			.97	.075
<i>Social Preference</i>				
Model 1 (fully free)	13.104			
Model 2 (mean intercept fixed)	236.273***	3		
Model 3 (mean slope fixed)	34.714***	3		
Model 4 (variance intercept fixed)	13.910***	3		
Model 5 (variance slope fixed)	1.727	3		
Final Model			.97	.083
<i>Loneliness</i>				
Model 1 (fully free)	3.449			
Model 2 (mean intercept fixed)	19.367***	3		
Model 3 (mean slope fixed)	8.601***	3		
Model 4 (variance intercept fixed)	.758	3		
Model 5 (variance slope fixed)	1.338	3		
Final Model			1.00	.000
<i>Aggression</i>				
Model 1 (fully free)	15.223			
Model 2 (mean intercept fixed)	97.147***	3		
Model 3 (mean slope fixed)	6.432	3		
Model 4 (variance intercept fixed)	26.462***	3		
Model 5 (variance slope fixed)	4.385	2		
Final Model			.93	.089

Note. *** $p < .001$

Table 3.4. *Parameter Estimates in Final Latent Growth Models: Differences between Coercive, Prosocial, Machiavellian, and Control Children.*

Construct/parameter	Coercive	Prosocial	Machiavellian	Control
<i>Academic Achievement</i>				
Intercept mean	7.047*** ^b	7.359*** ^a	7.199*** ^{a b}	7.185*** ^b
Slope mean	.064***	.064***	.064***	.064***
<i>Social Preference</i>				
Intercept mean	-.717*** ^d	.779*** ^a	.413*** ^b	.026 ^c
Slope mean	.192*** ^a	-.139*** ^c	-.122 ^{b c}	-.002 ^b
<i>Loneliness</i>				
Intercept mean	-.008 ^{a b}	-.069** ^b	-.077 ^b	.084** ^a
Slope mean	.054* ^a	.001 ^a	.054 ^a	-.023 ^a
<i>Aggression</i>				
Intercept mean	1.663*** ^a	1.204*** ^b	1.556*** ^a	1.258** ^b
Slope mean	-.016	-.016	-.016	-.016

Note. * $p < .05$; ** $p < .01$; *** $p < .001$; Parameters fixed equal across groups in *italic*; Estimates with different subscripts are significantly different at $p < .05$;

Intercept and slope variances were included in the analyses, but not reported, since no group differences appeared on intercept and slope variances on all outcome measures (except for the intercept variance of social preference, which was significantly higher for the coercive group in comparison to the prosocial and control group).

Academic Achievement

Figure 3.1, panel A, shows the linear growth curve of academic achievement based on the sample means for the four groups. A model in which the means of the intercepts were free to vary across groups and all other parameter estimates were fixed to be equal in all four groups was accepted as the final model, $\chi^2(15, N = 649) = 28.786, p = .02, CFI = .97, RMSEA = .075$. Machiavellian children and coercive children showed similar initial levels of academic competence compared to control children. However, whereas coercive and control children showed lower initial levels of academic achievement than prosocial children, Machiavellian children in grade 1 had similar initial levels of academic achievement compared to prosocial children. No group differences appeared on changes in academic achievement over time: all groups showed an overall significant increase in academic achievement from grade 1 to grade 5. Thus, Machiavellians showed similar levels of

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adaptation and development over time (in terms of academic achievement) as coercive, control, and prosocial children.

Social Preference

Chi-square difference testing of the proposed nested models showed that for social preference, a model in which the intercept and slope means and the intercept variance were allowed to vary across groups, and the slope variance was fixed across groups, provided the best fit to the data, $\chi^2 (7, N = 649) = 14.831, p = .04, CFI = .97, RMSEA = .083$. Multiple-group comparison of trajectories in the four groups showed that all groups differed significantly from each other in initial levels of being liked by their peers at T1 (see Figure 3.1, panel B). Machiavellians were significantly better liked than coercive and control children. However, Machiavellians were less liked by their peers than prosocial children. The rate of change in social preference was positive (and significant) for the coercive group, indicating that children who are coercive in grade 1 become better liked by their peers in time. Conversely, children who were prosocial in grade 1, overall, showed a significant decrease in being liked by their peers over time. Although Machiavellian and control children reached similar levels of social preference in Grade 5, overall they remained stable in their levels of being liked by their peers. In sum, with respect to adaptation in terms of social preference, Machiavellians showed more adaptation than coercive and control children, but less than prosocial children, and these differences seemed to persist over time (although they become smaller over four years).

Loneliness

With respect to loneliness, a model in which the means of the intercept and slope were free to vary across groups, and the variances of the intercept and slope were fixed for the four groups, was accepted as the final model, $\chi^2 (11, N = 649) = 4.787, p = .94, CFI = 1.00, RMSEA = .000$. Figure 3.1, Panel C shows that Machiavellians were less lonely than control children, whereas coercive children did not differ from control children in their levels of self-reported loneliness. Machiavellian children reported similar levels of loneliness as the prosocial children reported. The overall rate of change in loneliness was positive (and significant) only for the coercive group, indicating that children who are coercive in grade 1 become more lonely over time. Prosocial, Machiavellian and control children remained stable in their development of loneliness from grade 1 to grade 5. Machiavellians thus showed higher levels of initial adaptation than control children, but similar levels of initial adaptation compared to prosocial children. Unlike coercive children, the developmental pathway of loneliness was stable for Machiavellian, prosocial, and control children.

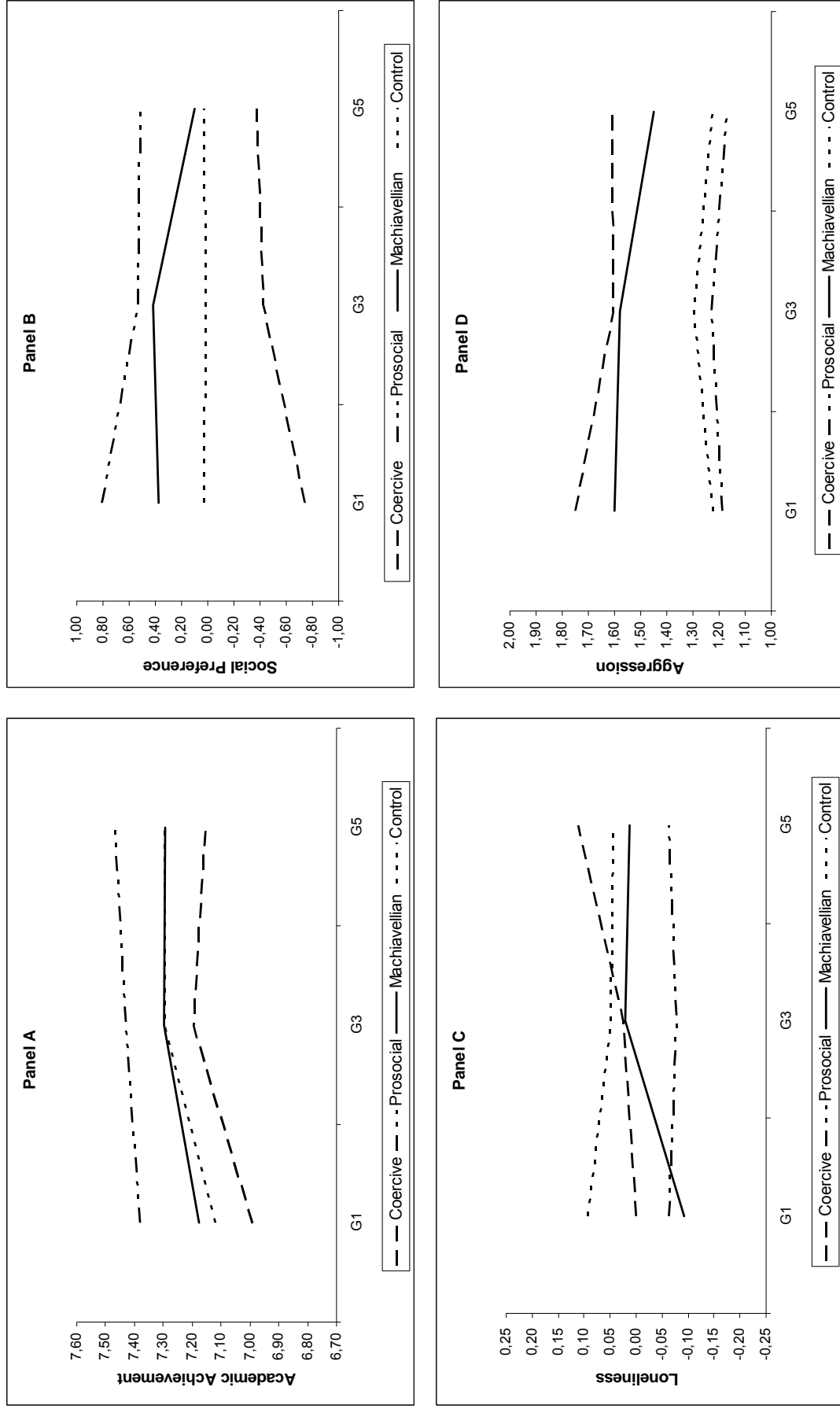


Figure 3.1. Linear growth curves, based on sample means of (A) Academic Achievement, (B) Social Preference, (C) Loneliness, and (D) Aggression for Coercive, Prosocial, Machiavellian, and Control children.

Aggression

In the final model for aggression the mean and the variance of the intercept were allowed to vary across groups, and the mean and the variance of the slope were constrained to be equal across the four groups, $\chi^2 (1, N = 649) = 26.040, p = .01, CFI = .93, RMSEA = .089$. As expected, coercive and Machiavellian children showed similar levels of aggression in grade 1, and these levels of teacher rated aggression were higher than those of prosocial and control children. The overall rate of change in aggression was similar in all four groups and non-significant in all cases. That is, all children showed stability over time in their development of aggressive behaviors (see Figure 3.1, Panel D).

3.4. Discussion

Firstly, this study aimed to shed light on the friendships of Machiavellian children in elementary school. In addition, we examined in what ways Machiavellianism can be adaptive or maladaptive in the long term. Therefore, we looked at the levels and development of academic and social competence, loneliness, and aggression over a period of four years. Machiavellian children were compared to prosocial, coercive, and control children. We were particularly interested to see whether Machiavellianism can be adaptive (i.e., whether Machiavellians showed higher levels of adaptation than coercive or even control children). Positive associations between Machiavellianism and adaptation would be in contradiction to what research on Machiavellianism in the psychological tradition would assume, but it would be in line with Resource Control Theory.

With respect to the friendship analyses, results revealed that Machiavellian children showed signs of better social relations than the coercive and even the control children. However, Machiavellians performed similar on the indicators of social relations compared to prosocial children. These findings indicate that Machiavellians, who behave both prosocially and coercively, seem to benefit from their prosocial capacities in their friendships, and not experience difficulties because of the coercive tendencies that are also characteristic of their behavior. Indeed, researchers have concluded earlier that Machiavellian children enjoy friendships that are high on intimacy, companionship, and fun (Hawley et al., 2007), which seems to be analogous to our findings. Hawley and colleagues (2007), however, also found that Machiavellian friendships were high on conflict. They argue that perhaps Machiavellians have a lot of conflicts in their friendships, but are able to resolve their conflicts in a way that preserves the relationship with their friends. In the present study we used a conflict reconciliation measure as an indicator of friendship quality. Indeed, Machiavellians scored high on this measure, which strengthens the idea of Machiavellians being capable of handling conflicts in a way that does not threaten their friendships.

Thus, with respect to social relations, Machiavellians were highest on social dominance, in terms of high prominence in their classrooms. Further, we conclude that Machiavellians, at the same time, maintain good quality friendships and that their friendships even resemble those of prosocial children. In this respect, it is important to note that the results of study 2 suggest different outcomes for friendship and group status between Machiavellians and prosocial children. Whereas their friendships are similar, prosocial children are better liked by their peer group. In sum, these results are in line with the hypotheses formulated by Resource Control Theory.

In the second study, we addressed the long-term development of Machiavellian, prosocial, coercive, and control children with respect to academic and social competence, loneliness, and aggression. Here also, results were generally in support of the idea that Machiavellians are more adaptive than control and coercive children. That is, the findings do not fit the idea of Machiavellian behavior being merely maladaptive (as traditional approaches would predict), but correspond to the hypotheses stated by RCT, that Machiavellians form a subgroup of socially dominant, aggressive children who further show adjusted behavior.

For instance, Machiavellians in grade 1 showed equal levels of academic achievement as all other children. Prosocial children showed higher levels of initial academic achievement when compared to coercive and control children. However, given the levels of academic competence in grade 1 and the significant increase in academic competence for all groups over time, it is not accurate to assume maladjustment in one of the four groups. Prosocial children merely showed even higher levels of adaptation than coercive and control children.

Another example in our data of Machiavellians showing adaptive behavior is that, in grade 1, they were better liked by their peers than control children, whereas coercive children were less liked by their peers than control children. Prosocial children were best liked by their peers when compared to all other children. Over time, the four groups became more similar with respect to being liked by their peers. Furthermore, Machiavellian and prosocial children were less lonely in grade 1 than control children. In contrast, coercive children showed equal levels of loneliness as control children. So far, Machiavellian behavior is longitudinally associated with adaptation.

Our results did reveal, however, that Machiavellian children in grade 1 showed similar high levels of teacher-rated aggression as coercive children (compared to prosocial and control children). This is reasonable, since the four groups are constructed by using peer nominations of aggression (and prosocial behavior). However, it is important to note that Machiavellian children did not show lower initial levels of aggression than coercive children. Moreover, our results revealed that the development of aggression over time was similar and stable across the four groups. With respect to aggression, Machiavellians are thus equally maladaptive as purely coercive children, in that their initial level of aggression in grade 1 was

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not lower than that of coercive children, and their level of aggression did not decrease more than that of coercive children from grade 1 to grade 5.

In sum, although Machiavellians do show aggressive behavior, they do not show signs of pervasive maladaptation in other domains, as would be expected from a traditional viewpoint on Machiavellianism. Our results show that their levels of adaptation and their development over time were more favorable than that of coercive and even control children. Our results are in line with the hypothesis that Machiavellians show more adaptive behavior than control and coercive children, but that prosocial children show the highest levels of adaptation across domains. Findings thus seem to correspond to the Resource Control Theory, that states that Machiavellians show both adaptation (because of their prosocial capacities), and maladaptation (because of their display of coercive behavior). More specifically, it seems that Machiavellians, although they are socially the most dominant and aggressive, show adjusted behavior, because of their prosocial abilities. Certainly, our results are not in line with psychological traditions that maintain that Machiavellianism is merely related to maladaptation. Instead, our results clearly show that in elementary school, being coercive and prosocial at the same time has adaptive value. It remains to be demonstrated, however, whether Machiavellianism has advantages compared to being prosocial.

A limitation of the two studies presented, is that ideally, to study evolutionary adaptive behavior (as Machiavellian behavior is defined) researchers should examine that particular behavior in evolutionary relevant situations. Such a situation should meet the assumptions of the necessity of being part of a group (to acquire resources that are not available for individuals), and the scarcity of resources. The question is to what degree everyday life in regular elementary schools meets these assumptions. An important suggestion for future research on Machiavellianism in children would be to study the adaptive value of Machiavellian behavior in settings with a stronger atmosphere of competition, scarcity of resources and at the same time a need to get along within a group of individuals. Probably, in such settings, a better test could be performed on what pattern of behavior is most adaptive. Indeed, studies with the Movie-viewer paradigm (Charlesworth & Lafreniere, 1983; Charlesworth, 1996), in which such a situation is experimentally created, showed that in 4- to 8-year-olds combining cooperative behavior with more competitive behaviors was the most successful strategy for competing for resources across cultures (Charlesworth, 1996), rather than the use of purely prosocial strategies. Further studies should examine in more detail in what daily situations Machiavellian behavior is likely to be most adaptive, and in what situations being prosocial is most adaptive.

The two studies in this chapter extend previous research on Resource Control Theory. They show that the hypotheses from Resource Control Theory can also be affirmed by using measures of children's *behavior*, instead of using measures of children's *strategy use*. Another implication of the findings presented in this chapter, is the additive value of making a

distinction between purely aggressive children and aggressive children with prosocial capacities. In the literature on children's aggression, numerous distinctions have already been made between different kinds of aggression to understand the diversity and complexity of this behavior. For instance, researchers nowadays differentiate between forms of aggression (e.g., physical aggression, relational aggression), and functions of aggression (e.g., reactive and proactive aggression). What does it add to our understanding of aggression to make yet another distinction, namely between purely coercive (aggressive children), and coercive children who also have prosocial capacities (Machiavellians)? Foremost, our results show that this distinction can explain why some aggressive children seem to do well in some areas, whereas others predominantly follow maladaptive developmental pathways. This distinction thus is an interesting extension for future researchers who study aggressive behavior.

To conclude, this chapter shows that Machiavellianism is clearly related to adaptive behavior, although prosocial children appeared to be best adjusted. It is suggested as an interesting initiative for future research to more precisely specify in what situations Machiavellian behavior can be most adaptive and in what situations children can better apply a purely prosocial strategy.

Chapter 4

Child characteristics, best friend characteristics, and their interactions: Links with early adolescents' externalizing and internalizing problem behavior

This study examined the unique associations between child and friend characteristics (aggression, passive withdrawal, active isolation) and children's internalizing and externalizing problem behavior. Friendship nominations and peer assessments of withdrawal and aggression were obtained from 231 children (54% girls) from 5th, 6th, and 7th grade; Externalizing and internalizing problem behavior were assessed using teacher questionnaires. Results show that not only child characteristics, but also friend characteristics were uniquely associated with a child's externalizing behavior. Surprisingly, it was friend's active isolation, rather than friend's aggression that was positively related with children's externalizing behavior. In contrast, only child characteristics (passive withdrawal), and not friend characteristics, were associated with a child's internalizing behavior.

Palmen, H., Vermande, M. M., Bukowski, W. M., Deković, M., & van Aken, M. A. G. (2009). *Child Characteristics, Best Friend Characteristics, and Their Interactions: Links with Early Adolescents' Externalizing and Internalizing Problem Behavior*. Manuscript in preparation.

4.1. Introduction

A large body of research has focused on the factors that place children at risk for developing internalizing and externalizing problem behaviors. Lewis (2000) reviewed three developmental models of childhood psychopathology that are useful as a theoretical framework in charting the factors that place children at risk for developing problem behaviors: (a) the trait or status model, (b) the environmental model, and (c) the interactional model.

Firstly, the *trait* model or status model states that a specific trait (the status of a person at a certain point in time) is predictive of a trait or status in the future. This model thus focuses on factors within the child (e.g., a certain temperament is linked to the display of a disruptive behavioral pattern). Secondly, the *environmental* model posits that exogenous factors are of influence in development. In contrast with the trait model, the focus in this second model is on the environment (for example, having deviant peers is related to the display of disruptive behavior). Most researchers nowadays, however, maintain that the trait model and the environmental model can be useful in some cases, but are too simple in most instances. They argue that there is an interplay between factors within the child and the environment (e.g., a child with a certain temperament develops disruptive behavior, only when it also affiliates with aggressive friends). This view is captured by the third model: the *interactional* model, in which individual traits interact with environmental factors.

Although the family context has acquired a lot of attention from researchers as an important environment for development, researchers in the last few decades have more and more highlighted the peer context as another important context for development (Bukowski & Adams, 2005; Rubin, Bukowski, & Parker, 2006). The present study focuses on peers as an important context for development, and examined whether child characteristics (or individual traits), friend characteristics (i.e., environment) or interactions between these child and friend characteristics are associated with externalizing and internalizing problem behavior.

In past research various personal characteristics of children have been found to be good concurrent and longitudinal predictors of internalizing and externalizing problem behavior. Childhood fear (Colder, Mott, & Berman, 2002), early inhibition (Rothbart & Bates, 2006), childhood passive withdrawal (Rubin, Chen, McDougall, Bowker, & McKinnon, 1995), and early childhood social isolation and perceptions of social incompetence (Hymel, Rubin, Rowden, & LeMare, 1990) have, for example, been found to be predictive of internalizing problems. Externalizing problem behavior has, for instance, been associated with early unmanageability (Rothbart & Bates, 2006) or lack of control (Caspi, Henry, McGee, Moffitt, & Sylva, 1995), and childhood aggression (Hymel et al., 1990; Rubin et al., 1995).

Not only individual characteristics have been found to be significant predictors of later adjustment. The environment, in this study defined as encompassing the peer context, has been shown to be an important factor in the development of children's adjustment problems

as well, especially in early and middle adolescence. Researchers have, for example, shown that friendship can serve a protective function against later maladjustment (e.g., Bollmer, Milich, Harris, & Maras, 2005; Hodges, Boivin, Vitaro, & Bukowski, 1999; Laursen, Bukowski, Aunola, & Nurmi, 2007). However, investigators have also acknowledged that not all friendships are alike and that friendships can have a negative impact on development as well (Berndt & Keefe, 1995; Bukowski, Newcomb, & Hartup, 1996; Hartup & Stevens, 1997). Most studies investigating these negative effects of friendships on later adjustment have focused on features of the friendship such as aspects of friendship quality (e.g., conflict). Berndt (2004) argues that friendships high in conflict and rivalry stimulate an overall negative pattern of social interaction that expands to other relationships with peers and adults as well. Other studies have focused on the characteristics of the friend and its effect on adjustment. The vast majority of these studies examined the associations between affiliating with deviant peers and the development of a child's antisocial behavior. These studies mostly focus on the influence of having antisocial friends, or friends who smoke, use drugs or drink alcohol. For example, Reitz, Deković, Meijer, and Engels (2006) have shown that early adolescents (age 13-14) who had deviant friends displayed higher levels of externalizing problem behavior one year later. Similarly, Bot, Engels, Knibbe, and Meeus (2005) found that the drinking behavior of best friends is both cross-sectionally and longitudinally associated with adolescents' drinking behavior.

It is, however, very plausible that these environmental influences interact with individual traits, as is suggested in the interactional model of psychopathology. For example, Vitaro, Tremblay, Kerr, Pagani, and Bukowski (1997) found that boys with moderately disruptive behavioral patterns who had aggressive-disruptive friends showed higher levels of subsequent antisocial behavior, in comparison to other moderately disruptive boys who did not have aggressive-disruptive friends. In other words, child characteristics (moderate level of disruptive behavior) interacted with environmental factors (having an aggressive-disruptive friend or not) in predicting later antisocial behavior.

The present study examined the relation between friend's withdrawal or aggression (environment) and a child's internalizing and externalizing behavior, above and beyond the level of aggression and withdrawal of the child itself (individual traits). Further, it examined the associations between interactions of these child and friend characteristics on the one hand, and externalizing and internalizing behavior on the other hand.

This study extends previous research in a few important ways. Although individual traits as predictors of internalizing and externalizing behavior have been a topic of investigation quite often, the variety of characteristics of the friend that have been studied, is very limited. Researchers have tended to neglect the correlates of having a withdrawn friend in particular. Moreover, only recently, investigators have started to focus on the friendships of withdrawn children (Burgess, Wojslawowicz, Rubin, Rose-Krasnor, & Booth-LaForce, 2006; Palmen,

Vermande, Deković, van Aken, & Van Rossem, 2008; Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006). These studies showed that withdrawn children are capable of forming close friendships. Since social withdrawal in middle childhood can be seen as non-normative behavior (just like aggression), one might wonder whether or not friends, who display this kind of non-normative behavior, influence children in a negative way (Berndt, Hawkins, & Jiao, 1999). In addition, researchers have widely acknowledged that it is important to distinguish between two kinds of withdrawal (e.g., Bowker, Bukowski, Zargarpour, & Hoza, 1998; Rubin & Mills, 1988; Younger & Daniels, 1992). Passive withdrawal refers to voluntary withdrawal from the peer group, whereas active isolation refers to active rejection by the peer group. This important theoretical distinction between the two types of withdrawal is not always made in empirical studies, though (e.g., Prakash & Coplan, 2007; Valdivia, Schneider, Chavez, & Chen, 2005). The present study joins other studies that differentiate between the concepts of passive withdrawal and active isolation (see for example Burgess et al., 2006; Chang, Lei, Li, Liu, Guo, Wang, & Fung, 2005).

Another way in which our study adds to the existing literature is that it examined whether or not the correlates of having an aggressive, passive withdrawn or actively isolated friend on a child's internalizing and externalizing problem behavior is the same for all children. In other words, in line with the interactional model, we test if child and best friend characteristics interact in their relation with internalizing and externalizing problem behavior. Cohen, Cohen, West, and Aiken (2003) describe two possible interaction patterns that are of interest in this study: (a) A synergistic or enhancing interaction pattern, which means that combining predictors results in an increased effect beyond the additive effects. For example, having an aggressive friend enhances the positive relation between children's aggression and their externalizing behavioral pattern. (b) A buffering interaction, in which one predictor weakens the other predictor's effect. That is, certain child characteristics may serve as a buffer against influences of deviant a friend, whereas other child characteristics may reinforce those influences.

In sum, this study focuses on aggressive behaviors, as well as on withdrawn behaviors of early adolescents and their friends, and it also addresses the possible interactions between these child and friend behaviors in their relation to internalizing and externalizing problem behavior.

4.2. Method

4.2.1. Participants

The participants in this study were 231 boys and girls (M age = 12.2 years) from grades five (41 girls and 31 boys), six (38 girls and 37 boys) and seven (47 girls and 37 boys) whose

parental permission and child assent was obtained to participate in a study involving “children and their friends”. All participants attended one of the two schools (one elementary and one middle school) involved in the study, which were located in a single school district in a large town in New England. Subjects were primarily Caucasian and came mostly from working class and lower middle class families. Approximately 75% of the potential pool of subjects participated in the study.

4.2.2. Procedure

Children filled in questionnaires during class hours, in two group sessions, on separate days within one week. Each session lasted no longer than one class period. All instructions were read aloud by two researchers that were present at every assessment. Individual assistance was given to children who had difficulty following along or who had questions.

4.2.3. Measures

Identification of best friendships. Participants completed a peer nomination instrument to assess their relationship with peers. They were given a list of all their classmates and were asked to identify those same-sex classmates that they considered their best friend. After that, children were asked to number up to three of their friendship choices, reflecting their first, second, and third best friend. A number of exclusion criteria were used to obtain a dataset of unique friendship dyads: 1) Children were excluded from the study if they had no data on the best friend nominations ($n = 27$; e.g., absent at the day of data collection, made no friendship nominations, etc.) or if their first and second best friend nominations were both not reciprocated ($n = 5$); 2) When children had two reciprocated best friendships, their second best friend was excluded from the study; 3) When two children both had a reciprocated best friendship with the same classmate, the classmate’s second best friend choice was excluded from the study; 4) Children could not be a member of multiple dyads. In total, 57 unique same-sex best friendship dyads were included in the analyses.

Aggression and withdrawal. The Revised Class Play (RCP, Masten, Morison, & Pellegrini, 1985) was used to assess aggressive and withdrawn behavior. The RCP is a peer nomination instrument that assesses peer perceptions of behavioral characteristics of children. Participants were asked to name one of their classmates who could best play a certain role in a hypothetical class play. Individual scores on the RCP were obtained by counting the number of nominations a child received on an item, and then standardizing that score within class and gender. Subscale scores were computed for Aggressive-Disruptive behavior, Passive Withdrawal, and Active Isolation by summing these standardized items.

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The subscale Aggressive-Disruptive behavior ($\alpha = .91$) measures general aggression, and consists of eight items, such as “picks on other kids” and “gets into a lot of fights” or “is too bossy”. The original RCP Sensitive-Isolated subscale has been found to consist of two clusters of withdrawn behavior: passive withdrawal and active isolation (Rubin & Mills, 1988). Passive withdrawal ($\alpha = .71$) was measured by three items: “someone who would rather play alone than with others”, “someone whose feelings get hurt easily” and “someone who is very shy”. The item “is usually sad” was excluded from the passive withdrawal subscale because it reflects an internal psychological state, as opposed to behavior related to peers (see also Hoza, Molina, Bukowski, & Sippola, 1995). The subscale Active Isolation ($\alpha = .83$) consisted of the following three items: “a person who can’t get others to listen”, “someone who has trouble making friends” and “someone who is often left out”.

Externalizing and internalizing behavior. Teacher ratings on externalizing and internalizing behaviors for every child in their class were obtained by the Teacher’s Report Form (TRF) of the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1986). The TRF scale of Externalizing Behavior consists of two subscales: Delinquent Behavior and Aggressive Behavior. Internalizing Behavior is defined by three subscales: Anxious/Depressed, Withdrawn, and Somatic Complaints. The scoring profile of 6-11 year-olds was used to assess the child’s level of externalizing and internalizing behavior. A child’s personal score was calculated by summing the gender-specific component items (see Achenbach & Edelbrock, 1986). These scores were then standardized within gender.

Table 4.1. *Correlations among all variables (N = 57)*

	1	2	3	4	5	6	7
<i>Teacher reports</i>							
1 Child externalizing	-						
2 Child internalizing	.31*	-					
<i>Peer reports</i>							
3 Child aggression	.63***	.02	-				
4 Child passive withdrawal	-.05	.35**	-.25	-			
5 Child active isolation	.30*	.21	.25	.52***	-		
6 Friend aggression	.00	-.12	.04	-.09	-.03	-	
7 Friend passive withdrawal	.01	-.02	-.23	.10	.24	-.36**	-
8 Friend active isolation	.41**	.03	.14	-.07	.30*	.00	.62***

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

4.3. Results

Table 4.1 shows the correlations between all measured variables for the total sample. Internalizing behavior, child aggression, child active isolation, and friend active isolation were positively related to externalizing problem behavior, whereas child passive withdrawal was associated with internalizing problem behavior. Among the child characteristics, a significant positive relation was found between child passive withdrawal and child active isolation. Between friend characteristics, a positive association was found between friend passive withdrawal and friend active isolation, and friend passive withdrawal was negatively related to friend aggression. Further, child active isolation was positively related to friend active isolation. The significant correlations were moderate to high in size.

Two hierarchical regression analyses were applied to examine the effects of child (C) and friend (F) aggression (AG), passive withdrawal (PW), and active isolation (AI) on the child's level of externalizing and internalizing behavior. In the first and second step, child (step 1) and friend (step 2) aggression, passive withdrawal, and active isolation scores were entered. In the third step, all nine possible interaction effects of child and friend behavior were entered (CAG x FAG, CAG x FPW, CAG x FAI, CPW x FAG, CPW x FPW, CPW x FAI, CAI x FAG, CAI x FPW, CAI x FAI). This was done in separate analyses to reduce the number of predictors and to avoid multicollinearity.

The results of the regression analyses are reported in Table 4.2. For interpretation purposes, significant interactions were plotted and are shown in Figure 4.1.

4.3.1. Externalizing behavior

A significant main effect of child characteristics (step 1) was found for child aggression, indicating that children who have high scores on peer rated aggression show more externalizing problem behavior according to their teacher. Child passive withdrawal and active isolation were not associated with externalizing problem behavior.

Friend characteristics (step 2) were also predictive of child externalizing behavior. A significant positive main effect was found for having a friend who is actively isolated by peers. In contrast, the level of aggression or passive withdrawal of the friend was not predictive of child externalizing behavior in this step of the analysis.

Two significant interaction effects (step 3) were found in the prediction of child externalizing behavior. First, the friend's level of active isolation moderated the association between child aggression and child externalizing behavior (Figure 4.1A). The positive relation between child aggression and child externalizing behavior is stronger for children who have a friend who is actively isolated by the peer group. Second, having a best friend who passively withdraws significantly moderated the relation between child active isolation and

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externalizing behavior (Figure 4.1B). Higher levels of child active isolation were only positively associated with higher levels of externalizing behavior for children with a best friend who scored low on passive withdrawal.

Table 4.2. Summary of Hierarchical Regression Analysis for Variables Predicting Children's Internalizing and Externalizing Behavior (N=57)

Variable	Child Externalizing		Child Internalizing	
	β	ΔR^2	β	ΔR^2
Step 1 Child Characteristics				
Aggression (CAG)	.57***		.06	
Passive Withdrawal (CPW)	.15		.40*	
Active Isolation (CAI)	-.02		-.02	
		.42***		.14*
Step 2 Friend Characteristics				
Aggression (FAG)	-.08		-.17	
Passive Withdrawal (FPW)	-.19		-.22	
Active Isolation (FAI)	.47**		.20	
		.12*		.03
Step 3 Interactions ^a				
CAG x FAI	.22*	.04*		
CAI x FPW	-.25*	.04*		

Note. ^a Only significant interactions are shown; * $p < .05$. ** $p < .01$. *** $p < .001$.

4.3.2. Internalizing behavior

A significant main effect of child passive withdrawal was found in the prediction of internalizing behavior, indicating that children who score high on passive withdrawal show more internalizing problem behavior. No significant main effects of friend characteristics were found and none of the interactions appeared to be significant.

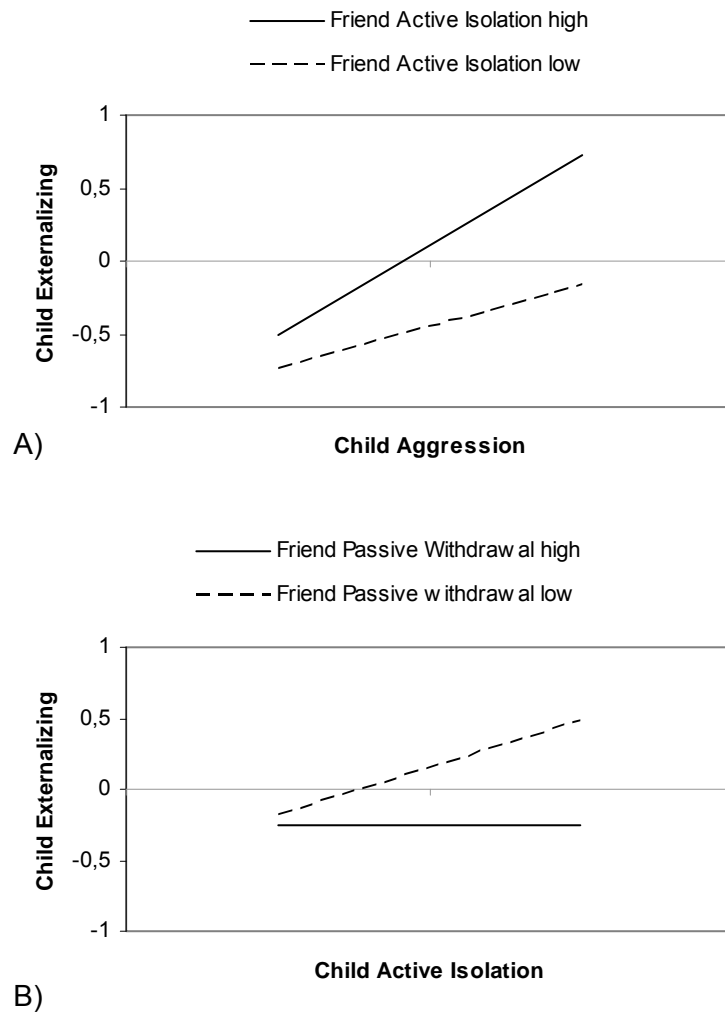


Figure 4.1. Interactions between child behavior and friend behavior with respect to the child's level of externalizing behavior

4.4. Discussion

There are several conclusions to be drawn from this study. Firstly, consistent with the trait model and previous studies (e.g., Caspi et al., 1995; Rubin et al., 1995), child characteristics (aggression and withdrawal) appeared to be associated with internalizing and externalizing problem behavior. Children who were seen by their classmates as passive withdrawn, scored high on teacher-rated internalizing problem behavior. Children who were rated by their peers to be aggressive, were rated by the teacher as displaying more externalizing problem behavior. It should be noted, however, that these findings could be interpreted as reflecting the validity of our measures, since multiple informants (classmates and teachers) were in

agreement with each other in selecting those children who display aggressive or externalizing behavior and withdrawn or internalizing behavior.

Secondly, after controlling for child characteristics, friend characteristics were predictive of child externalizing behavior but not of internalizing behavior. Previous studies have compellingly shown that environmental factors (peers in this case) play a role in the prediction of externalizing problem behavior (e.g., Brendgen, Vitaro, & Bukowski, 2000; Dishion, 2000; Dishion, French, & Patterson, 1995). In contrast, researchers have failed to reach consensus regarding the role of environmental factors in predicting internalizing behavior. Although some researchers maintain that environmental factors do influence children's internalizing behavior (e.g., Connell & Dishion, 2006), others have found that internalizing behavior is merely predicted by individual characteristics (e.g., Reitz et al., 2006). On basis of our results, it must be concluded that internalizing behavior is driven more by individual factors, whereas externalizing behavior is also influenced by external factors.

A third conclusion that can be drawn from our results is that not friend aggression, but friend active isolation was related to child externalizing behavior. In other words, *child* aggression contributes positively to the prediction of externalizing behavior, yet surprisingly, *friend* aggression does not add to this prediction. This finding, in all likelihood, can not be explained by analytic artifacts. For example, note that the correlational analyses point out that friend aggression and child externalizing behavior are not correlated ($r = .00$). Also, this finding is not due to the order of entering the child and friend characteristics in the regression analyses. A solid explanation may be found in the moderate level of aggression displayed by children in this sample. Adams, Bukowski, and Bagwell (2005) concluded that in children with low levels of aggression, the aggression seemed to depend more on stable characteristics (i.e., children's aggression), than on contextual factors (i.e., friend's aggression). In contrast, contextual factors, according to these authors, seem to be more influential than individual traits for children displaying higher levels of aggression. In our sample, the fact that externalizing behavior is explained by children's aggression, and not by their friend's aggression may be due to the fact that the sample was drawn from a non-clinical population of school children, displaying moderate levels of aggression.

As has been mentioned before, when controlled for child characteristics (i.e., aggression, active isolation, and passive withdrawal), friend's active isolation was uniquely associated with children's externalizing behavior. In other words, children who had a friend who scored high on active isolation scored higher on externalizing problem behavior. Firstly, this makes clear, in accordance with other studies (Bowker et al., 1998; Rubin & Mills, 1988; Younger & Daniels, 1992), that it is useful to distinguish two types of withdrawal, namely passive withdrawal and active isolation. Having an active isolated friend was predictive of children's externalizing behavior, whereas having a passive withdrawn friend was not. Secondly, this finding raises questions about the characteristics of socially isolated friends. What aspect of

these children's behavior makes them different friends than passively withdrawn and aggressive friends?

Rubin and Mills (1988) concluded that passive withdrawal could be determined by and reflective of fearfulness, anxiety, and insecurity. In contrast, especially in early and middle childhood, active isolation might reflect immaturity and a disposition toward aggression, according to these authors. Passive withdrawal, they found, was stable across three grades, whereas active isolation was not stable and occurred less often. Passive withdrawal was associated with peer rejection, internalizing problems (not externalizing problems), and negative self-perception. Moreover, passive withdrawal at age 7 was predictive of depression and loneliness at age 10, whereas active isolation was not predictive of later difficulties, but was more often related to aggression and externalizing problems (and not internalizing problems). Similarly, Bowker and colleagues (1998) found that socially isolated children scored higher on measures of peer rejection, aggression, and externalizing behavior than passive withdrawn children. Moreover, they found that social isolation was more strongly related to externalizing behavior than to internalizing behavior. In addition, Gest, Sesma, Masten, and Tellegen (2006), more recently, found that active isolation in eight- to ten-year old children was uniquely associated with lower academic and job competence ten years later, whereas passive withdrawal from peers was uniquely associated with lower social and romantic competence in young adulthood. These previous studies, as well as our study, lead us to conclude that actively isolated children (as opposed to passive withdrawn children) seem to be best described as having a disruptive behavioral pattern and experiencing peer difficulties, and therefore may not be very good friends to have.

But do these actively isolated children differ from aggressive children as friends? We know that aggressive children are also characterized as displaying disruptive behavior and having peer relation problems (e.g., being rejected by their classmates; Dodge, Coie, & Lynam, 2006). Our results make clear that, although these actively isolated and aggressive children seem to display similar behavior, they do differ from each other. For example, note that our data show that there is no significant correlation between aggression and active isolation ($r = .25$). In addition, aggression and active isolation are differently associated with externalizing behavior: Being actively isolated as a child is not associated with displaying externalizing behavior, whereas having a actively isolated friend is positively related to a child's externalizing behavior. In contrast, being aggressive yourself is positively related to displaying externalizing behavior, whereas having an aggressive friend is not related to a child's externalizing behavior. In short, it seems that actively isolated children are indeed different from passive withdrawn and aggressive children, and therefore might be different as a friend as well. Since the correlates of having an actively isolated friend seem to be pessimistic, this study indicates the importance of enlarging our knowledge of actively isolated children and what exactly it means to have an actively isolated friend.

The fourth conclusion that can be drawn from our findings, is that friend withdrawal moderated the relation between child characteristics and externalizing behavior: Friend active isolation moderated the association between child aggression and child externalizing behavior (the relation between children's aggression and externalizing behavior was stronger for children with an active isolated friend), and having a best friend who passively withdraws significantly moderated the relation between child active isolation and externalizing behavior (the relation between children's active isolation and externalizing was weaker for children with a passive withdrawn friend). Again, these results are in line with previous studies that show that actively isolated children are more disruptive and have more peer difficulties than passive withdrawn children (Bowker et al., 1998; Gest et al., 2006; Rubin & Mills, 1988), and therefore have a different impact on their friend's adjustment.

In sum, in line with the trait or status model, we conclude from our study that certain individual traits can make children more vulnerable for developing internalizing and externalizing problem behavior. In addition, with respect to displaying externalizing (but not internalizing) problem behavior, we also found support for the environmental model: Certain characteristics of children's best friends were related to having externalizing problem behavior, even when the child characteristics had been controlled for. Lastly, findings on externalizing behavior (in contrast to findings on internalizing behavior) partly supported the interaction model. Investigating the interactions between child and friend characteristics seems to only contribute to the prediction of externalizing problem behavior (and not internalizing behavior).

Several characteristics of this study call for prudence in interpreting the results. For instance, the statistical power of our analyses is limited due to a relatively small sample size. However, this also means that effects that have been found are strong enough to appear even with a small sample size.

Further, our focus was on children who have a mutual best friendship. As a consequence we might have selected those children who are socially well-adjusted. Although a small minority of the children in our sample turned out to have no mutual friend at all, it might be hypothesized that those children who are not capable of making friends are especially at risk for developing adjustment problems, since friendship has been shown to serve as a protective factor in maladjustment (Bollmer et al., 2005; Hodges et al., 1999; Laursen et al., 2007). Future studies would do well to investigate the correlates of these chronic friendless children.

Lastly, the cross-sectional nature of this study does not allow for drawing conclusions about causality. So, for example, we do not know whether aggressive children who score high on externalizing behavior, choose friends who are actively rejected by their peer group, or that having a rejected isolated friend causes aggressive children to display more

externalizing problem behavior. Longitudinal designs are needed to address these matters of causality.

To conclude, this study shows that characteristics of friends must not be overlooked in studies of children's adjustment. In addition, our results imply that in future research the focus should not only be on friends' *aggressive* behavior, but on other characteristics, such as friends' passive withdrawal and active isolation as well.

Chapter 5

Competence, problem behavior, and the effects of having no friends, aggressive friends, or nonaggressive friends: A four-year longitudinal study

The first aim of the present study was to examine the longitudinal relations between competence (academic and social) and problem behavior (loneliness and aggression) in 741 elementary school children (grade 1 to grade 5). Secondly, we examined the moderation effects of having no friends, aggressive friends, or nonaggressive friends on the associations between competence and problem behavior. A multiple informant approach was used to assess all constructs. Results revealed that competence was related to later problem behavior. Academic competence was related to lower levels of later loneliness, whereas social competence was related to both lower levels of loneliness and aggression over time. Problem behavior, however, was not related to subsequent competence, except for aggression, which was associated with later social incompetence. Although group differences appeared on mean levels of competence and problem behavior, we found no moderation effects of friendship for associations between competence and problem behavior.

Palmen, H., Vermande, M. M., Deković, M., & van Aken, M. A. G. (2008). *Competence, problem behavior, and the effects of having no friends, aggressive friends, or nonaggressive friends: A four-year longitudinal study*. Manuscript submitted for publication.

5.1. Introduction

Two domains of competence are specifically important during the elementary school years, namely academic and social competence. Children who experience academic achievement problems early in childhood are, for example, at risk for later school dropout (e.g., Fetler, 1989) and delinquent behaviors (e.g., Tremblay, Masse, Perron, LeBlanc, Schwartzman, & Ledingham, 1992). Similarly, children who are socially incompetent have been shown to be less liked by their peers, to do worse in school, and to display more behavioral problems (Campbell, 1994; Chen, Li, Li, Li, & Liu, 2000; Ladd, Kochenderfer, & Coleman, 1996; Parker & Asher, 1993). In addition, two kinds of problem behaviors are particularly problematic in elementary school aged children, but nevertheless occur regularly, namely being lonely and acting aggressively. Research has shown that chronically lonely children are at risk for various types of maladjustment in adolescence and adulthood, such as depression, dropping out of school, medical problems, and alcoholism (Asher & Paquette, 2003). Similarly, aggression at an early age is known to be related to later peer rejection (e.g., Coie, Dodge, & Kupersmidt, 1990), antisocial behavior (e.g., Loeber, 1990), low academic achievement (e.g., Kokko & Pulkkinen, 2000), and risk-taking behavior (e.g., Brook & Newcomb, 1995). The first aim of the present study was to examine how academic and social competence were concurrently and longitudinally related with loneliness and aggression in children from seven to eleven years old.

5.1.1. *Associations between competence and problem behavior*

Because of their relevance for healthy psychological adjustment, competence and problem behavior, and the associations between them, have been frequently studied. For instance, Masten and colleagues examined the associations between academic competence and problem behavior over a period of 20 years, starting at age seven (Masten, Roisman, Long, Burt, Obradović, Riley et al., 2005). Similarly, these investigators mapped the longitudinal associations between social competence and problem behavior over a period of 20 years (Burt, Obradović, Long, & Masten, 2008). In these studies they made use of longitudinal cascade models. These are models in which functioning in one area spills over to influence functioning in another area. In theory, there are two important ways in which competence (i.e., academic and social competence) and problem behavior (i.e., loneliness and aggression) may be associated across time. First, incompetence may contribute to problem behavior: Lack of social competence might for example lead to peer rejection, which might lead to affiliation with deviant peers, which in turn leads to increased externalizing problem behavior (Masten & Curtis, 2000; Masten et al., 2005). This link between incompetence and later problem behavior is known in the literature as an example of a

“failure model” (Cicchetti & Schneider-Rosen, 1986; Masten & Curtis, 2000). Second, problem behavior can challenge competence: Aggressive behavior might, for example, lead to socially incompetent behavior.

Masten and colleagues found support for the failure model. In their study on social competence and problem behavior they found that social competence at age 10 was linked to internalizing problems at age 17 (Burt et al., 2008). Other researchers have found that social competence longitudinally predicted externalizing problem behavior in early and middle adolescence (Sørli, Hagen, & Ogden, 2008). Academic competence has been linked with changes in problem behavior as well. Academic failure has been found to be related to increased externalizing behavior (e.g., Dishion, Patterson, Stoolmiller, & Skinner, 1991; Williams & Mcgee, 1994) and changes in internalizing symptoms (e.g., Chen, Rubin, & Li, 1995; Maughan, Rowe, Loeber, & Stouthamer-Loeber, 2003). In short, academic and social competence have been shown to be related to changes in later internalizing and externalizing problems.

As opposed to competence leading to later problem behavior, problem behavior may also be related to changes in competence. Research has provided mixed evidence for this relation between problem behavior and incompetence. For instance, in accordance with other researchers (e.g., Risi, Gerhardstein, & Kistner, 2003), Masten and colleagues found that externalizing behaviors in childhood undermine academic competence in adolescence. In addition, research also showed that externalizing problem behavior is negatively related to later social competence (e.g., Dodge, Coie, & Lynam, 2006). The relation between internalizing problems and later academic competence, however, is somewhat less clear. Masten and colleagues, for example, found no support for the hypothesis that internalizing problem behavior leads to later academic or social incompetence (Burt et al., 2008; Masten et al., 2005). However, other researchers found that children who meet criteria for psychiatric diagnoses of internalizing problems suffer severe academic consequences (e.g., Bardone, Moffit, Caspi, & Dickson, 1996). Whether or not this negative relation between internalizing and academic competence also holds true for non-clinical samples, is still unclear.

Thus, it seems that problem behavior may lead to changes in competence, depending on the kind of problem behavior studied. More specifically, externalizing problems may lead to changes in social and academic competence, whereas the relation between internalizing problems and competence is less clear.

5.1.2. Competence, problem behavior, and the role of friendship

In the above studies, competence and problem behavior are seen as child characteristics. Little attention has been given to the context in which a child functions. Consensus among researchers exists about the importance that friends play in children’s

development. However, researchers have also shown that friends can sometimes contribute negatively to children's development. Two friendship aspects in particular seem problematic, namely being without friends, and affiliating with deviant friends.

Children without friends have been shown to display more adjustment problems (e.g., are more lonely and have more internalizing problems) than do children who are able to form and maintain friendships (e.g., Parker & Asher, 1993; Renshaw & Brown, 1993). In addition, having friends has been associated with better academic achievement (Ladd, 1990; Ladd et al., 1996). Researchers have reasoned that children who are unable to form friendships lack social skills and do not benefit from the advantages that friendships offer. Friends can be important sources of affection, intimacy, reliable alliance, feelings of inclusion, instrumental aid, nurturance, companionship, and enhancement of self-worth (Erdley, Nangle, Newman, & Carpenter, 2001; Hartup & Stevens, 1997; Newcomb & Bagwell, 1995). Children who are friendless, therefore lack these advantages.

Children who form friendships with aggressive friends have also been shown to be at risk for later adjustment problems. Researchers have proposed that social learning is one of the possible mechanisms by which peers influence each other. From this viewpoint, children who become friends with deviant peers, can learn deviant behavior from them. Subsequently, this behavior is positively reinforced by these peers (deviancy training), leading to increased maladjusted behavior by the child (Dishion, Spracklen, Andrews, & Patterson, 1996; Dodge et al., 2006). Moreover, although aggression can be seen as disruptive and undesirable behavior, it is at the same time associated with high levels of peer perceived popularity (e.g., Lafontana & Cillessen, 1999; Parkhurst & Hopmeyer, 1998; Rodkin, Farmer, Pearl, & Van Acker, 2000). For this reason, copying aggressive behavior seems appealing, since it may offer a higher status within the peer group. The modeling and positive reinforcement of peer influence has especially been observed in adolescents who display severely disruptive behavior, for example antisocial behavior or substance use (Dishion, Andrews, & Crosby, 1995; Dishion et al., 1996; Patterson, Dishion, & Yoerger, 2000; Thornberry & Krohn, 1997).

In sum, children who are unable to form and maintain friendships or who affiliate with aggressive peers may be at risk for developing adjustment problems of various kinds. The present study aimed to examine whether the associations between competence and problem behaviors are different for children without friends, children with aggressive friends, and children with nonaggressive friends. In other words, we wanted to examine the moderating role of friendships on the relation between children's competence and problem behavior.

Studies on peer influence have mostly focused on adolescents, high-risk samples (e.g., low SES-background), and more severe forms of disruptive behavior (e.g., antisocial behavior, substance use, etc.). Little is known about the influence of having aggressive friends in regular elementary school. In addition, as researchers who study peer influence recently claimed, most studies on peer influences did not focus on moderating models of

friendship, but focused on either direct effects of friends on adjustment or on mediation models (Hodges, Boivin, Vitaro, & Bukowski, 1999; Laursen, Bukowski, Aunola, & Nurmi, 2007; Rubin, Bukowski, & Parker, 2006). Theoretically, if moderation of friendship exists, it could go two ways. First, friendship might *protect* certain children from later maladjustment, thus weaken the negative associations between predictors and adjustment. This hypothesis is known in the literature as the buffering hypothesis of friendship (e.g., Boulton, Trueman, Chau, Whitehand, & Amatya, 1999); For example, the negative association between feelings of loneliness and later academic achievement may be weaker for children who have a best friend, than for children who do not have a best friend. Second, friendship might *augment* later maladjustment for some children, that is, amplify positive associations between predictors and maladjustment. For instance, the stability of externalizing behavior may be higher for children with aggressive friends, than for children with nonaggressive friends.

Although research on the moderating role of friendship has been sparse, some researchers did address this issue. Results, however, are inconclusive. Some researchers concluded that friendship *buffered* against the adverse effects of being victimized (Hodges et al., 1999) or being socially isolated (Laursen et al., 2007), whereas others have found that friendship *augmented* maladjustment (Hoza, Molina, Bukowski, & Sippola, 1995; Kupersmidt, Burchinal, & Patterson, 1995). In addition, some studies failed to find any moderating effects of friendship on effects of victimization (Greco & Morris, 2005) or on associations between anxiety and peer acceptance (La Greca & Harrison, 2005). In the present study, we contrast children with aggressive friends, with children who, as mentioned above, are also at risk for maladjustment, namely children who are not able to form or maintain friendships in school at all. Children who form friendships with nonaggressive peers were used as a normative control group in this study.

5.1.3. Research questions and hypotheses

The first aim of this study was to longitudinally map the associations between academic and social competence, and loneliness and aggression throughout elementary school. It is important to acknowledge that academic and social competence are not two separate domains of competence, but are mutually related (Ladd, 1990; Ollendick, Weist, Borden, & Greene, 1992; Rubin et al., 2006; Schwartz, Hopmeyer-Gorman, Nakamoto, & McKay, 2006). Nevertheless, previous studies have not always integrated these two competencies in their studies (e.g. Burt et al., 2008; Masten et al., 2005). In accordance with the literature described, we expected that especially aggressive behavior would be predictive of later academic and social incompetence, whereas both academic and social competence would be negatively associated with both later loneliness and aggression.

Secondly, we examined the moderating effects of having no friends, aggressive friends, and nonaggressive friends on the concurrent and longitudinal associations between academic and social competence, and loneliness and aggression. Based on the mixed findings in the existing literature on friendship moderation, these analyses were primarily exploratory. Nevertheless, it could be expected that, for example, a negative relation between social incompetence and loneliness would become increasingly strong over time for children without friends, when compared to children with aggressive or nonaggressive friends. Also, a negative relation between aggression and subsequent social competence may become increasingly strong over time for children without friends and for children with aggressive friends, when compared to children with nonaggressive friends.

5.2. Method

5.2.1. Participants

Participants were drawn from the Utrecht Social Development Project (USDP; e.g., Van Rossem & Vermande, 2004; Vermande, van den Oord, Goudena, & Rispen, 2000), a longitudinal study on the social development of elementary school children. In grade 1, 49 schools (71 classes) in the province of Utrecht and the city of Hilversum in The Netherlands participated in our study. After school board approval, parents were asked passive consent for their children to participate in our study. Parents refused participation for 110 children (6,7%). Interviews were held with 1241 children in grade 1, and 60% of these children (741 children; 52% boys) participated at all three time points used in this study (Grade 1: M age = 6.8, SD = 5 months; Grade 3: M age = 8.9, SD = 4.5 months; Grade 5: M age = 10.9, SD = 4.5 months). Ninety-three percent of these 741 children had Dutch parents, while the other children had at least one parent from Morocco, Turkey, Surinam, or a European country other than The Netherlands.

To examine whether the children who had data on all three waves ($N = 741$) differed from the children with incomplete data ($N_{G1} = 423$; $N_{G3} = 273$; $N_{G5} = 606$) on our study variables, a MANOVA was performed. As is often seen in longitudinal studies (e.g., Aseltine, 1995; Scaramella, Conger, Spoth, & Simons, 2002), the incomplete data group differed on several study variables from the children who had data on all waves. More specific, in grade 1, the children with incomplete data scored lower on social competence ($F(1, 1106) = 24.105$, $p = .000$, $\eta_p^2 = .02$) and academic competence ($F(1, 1106) = 84.594$, $p = .000$, $\eta_p^2 = .07$), and were rated by their teachers to be more aggressive ($F(1, 1106) = 22.437$, $p = .000$, $\eta_p^2 = .02$) than the children with data on all waves. No differences between groups were found on loneliness.

5.2.2. Procedure

In grade 1 and 3, children were individually interviewed by trained research assistants in a quiet environment, outside the classroom. The research assistants stressed the confidentiality of the study several times. Child interviews included questions on the social relations of the children with their classmates, on feelings of loneliness, as well as several peer nomination measures on for example aggression and prosocial behavior. This peer nomination procedure was as follows: Pictures were taken of all children in the study, and when the interviewer posed a question, children could point at the pictures of those children they wanted to nominate. Children could nominate an unlimited number of same-sex and opposite-sex classmates on all nomination questions. They were not obliged to nominate someone, but were not allowed to nominate themselves.

In grade 5, children filled out questionnaires consisting of peer nominations on social relations and problem behavior, and self-reports on feelings of loneliness, self-worth, and several behavioral difficulties. The peer nomination procedure involved handing children a list with names of all their classmates. Children could write down the names of the classmates they wanted to nominated for a specific question. Rules for nominating were similar in all grades. Children filled in questionnaires during class hours, in two sessions, on separate days. Two research assistants were present in the classroom, to give instructions, stress the confidentiality of the study, and to answer questions.

Additionally, teachers completed a short questionnaire for every child in their class about, for instance, problem behavior and children's grade point average (GPA) at all three time points.

5.2.3. Measures

The present study used multiple informants to prevent informant bias. Academic competence was measured by children's GPA, social competence was measured by peer nominations, loneliness was measured by self-reports, and aggression was measured by teacher reports.

Competence

Academic Competence. A child's academic competence was measured by their GPA (1-10) of nine school domains: language, arithmetic, vocabulary, reading, drawing, physical education, arts and crafts, autonomy, and learning ability. A child's academic achievement was operationalized as the mean performance score on these nine domains (Cronbach's alpha's $\geq .86$).

Social Competence. Social competence was measured by a peer nomination measure of social preference, which was calculated using the procedure described by Coie and Dodge (1983). Rejection scores (number of times a child was negatively nominated – “don’t like to play with” -, standardized within class) were subtracted from acceptance scores (number of times a child was positively nominated – “like to play with” -, standardized within class). Resulting difference scores were again standardized within class to obtain social preference scores.

Problem behaviors

Loneliness. The Loneliness and Social Dissatisfaction Questionnaire (LSDQ; Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985) was used as an indicator of loneliness. The LSDQ is a self-report measure, which contains 16 target items ($\alpha_{G1} = .71$, $\alpha_{G3} = .81$, $\alpha_{G5} = .88$) on feelings of loneliness and social dissatisfaction (e.g., “I’m lonely”), and 8 items on preferred activities or hobbies (e.g., “I like to paint and draw”). Individual scores were obtained by calculating the mean scores of the 16 target items. Scores were standardized within wave, and thereafter standardized across waves, to deal with differences in answer categories between waves (“1 = never true” to “3 or 5 = always true”). In this way, relative differences in variability across time and grouping structure were preserved (see also, Stright, Gallagher, & Kelley, 2008). Higher scores indicated more feelings of loneliness.

Aggression. Teachers completed the subscale Aggression of the Amsterdam Child Behavior Checklist (ACBC; De Jong, 1995) for every child in their class. The ACBC is a short teacher rating scale, designed to differentiate between attention problems and related behavioral and emotional problems, frequently observed in primary school children. The subscale Aggression consisted of six items (e.g., “often destroys things”), and teachers rated on a 4-point-scale how well the items described the children in their class (“1= not” to “4 = well”). Individual scores were obtained by calculating the mean subscale score, higher scores indicating more aggression (Cronbach’s alpha for each wave $\geq .89$).

Identification of best friends in grade 1

For the identification of best friendships we used “best friend” peer nominations. Children were asked to identify their best friends, and two children were considered best friends if they both nominated each other as their best friend. Children could nominate an unlimited number of same- and opposite-sex classmates.

Aggression of children's friends was assessed by using four items of the Perception of Peer Support Scale (PPSS). Items in the original PPSS (e.g., Kochenderfer & Ladd, 1996) were adapted to serve as a peer nomination measure of peer aggression. That is, children were asked to indicate which children in their class 1) pick on you at school; 2) hit you at school; 3) say mean things to you at school; 4) say bad things to other kids in school behind your back. To obtain an individual score of aggression, the mean number of nominations received on the four items was calculated, and standardized within class. Higher scores indicated higher levels of aggression (Cronbach's alpha = .85).

Constructing friendship groups

Children were assigned to one of three groups: 1) children without reciprocated best friendships in grade 1 ($n = 199$); 2) children with mainly nonaggressive friends in grade 1 ($n = 363$); 3) children with mainly aggressive friends in grade 1 ($n = 179$). Friends who had a score on aggression (on the PPSS) that belonged to the top 33% were labeled as being aggressive. If more than 50% of the friends of a child were aggressive in grade 1, a child was assigned to the group with mainly aggressive friends. If 50%, or less than 50% of the friends were aggressive, a child was assigned to the group with mainly nonaggressive friends.

5.2.4. Plan of Analysis

Our first research question was to examine how the two measures of competence (academic and social competence) are concurrently and longitudinally related to the two measures of problem behavior (loneliness and aggression). A series of nested cascade models were tested using Mplus Version 5.0 (Muthén & Muthén, 1998-2007). The absolute fit of the models was assessed by several fit indices: The overall goodness of fit of the model was estimated with the Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index (CFI). Good-fitting models yield a value greater than .95 on the CFI, whereas values between .90 and .95 imply an acceptable fit. Further, values of the RMSEA less than .05 are considered to indicate a good fit, with values between .05 and .08 indicating a fair fit. In all models, concurrent correlations between constructs were included. Model 1 is the continuity model, in which only continuity paths from constructs from grade 1 to grade 3, and from grade 3 to grade 5 were estimated. In all other models, these continuity paths are also included, but these models are extended by diagonal-directed paths, specifying various cascade effects at both time intervals. Model 2 includes eight cross-lagged paths from problem behavior to competence, model 3 adds eight cross-lagged paths from competence to problem behavior, model 4 additionally includes four cross-lagged paths between the two measures of competence, and model 5 finally adds four cross-lagged paths between the two

measures of problem behavior, and thus includes all possible cross-domain paths (full cascade model). Each of the more parsimonious models was compared with the next, more complex model by examining the relative fit of the models using χ^2 difference tests. If model comparison yielded a significant improvement in χ^2 , the more complex model was chosen. In case of no significant χ^2 difference, the more parsimonious model was chosen.

Next, we conducted four separate repeated measures analyses with Bonferroni post hoc tests to examine whether children without friends, children with nonaggressive friends, and children with aggressive friends showed differences in their *mean levels* of academic competence, social competence, loneliness, and aggression over the three time points. In these analyses, friendship groups were a between subjects factor. In order to answer the second research question, multiple group analyses were performed to examine the moderator effects of having no friends, nonaggressive friends, or aggressive friends in grade 1 on the concurrent and longitudinal associations between competence and problem behavior. Restricted and nonrestricted 3-group moderation models were tested in the best-fitting longitudinal model (see below). In the restricted model, all paths coefficients (concurrent correlations, longitudinal stability paths and cross-paths) were specified to be equal across groups. In the nonrestricted model, paths coefficients were free to vary across groups. In case of moderation, constraining path coefficients should result in a significant decrease in model fit, when compared to the unconstrained model.

5.3. Results

5.3.1. Descriptive Statistics

Table 5.1 shows the intercorrelations, stability, means, and standard deviations of all measures in grade 1, grade 3, and grade 5 for the whole sample. Stability coefficients for academic and social competence and aggression were moderate to high (ranging from .49 to .54 for grade 1 to grade 3 and .48 to .61 for grade 3 to grade 5). Stability coefficients for loneliness were moderate (correlation grade 1 to grade 3 loneliness = .23; correlation grade 3 to grade 5 loneliness is .29).

Academic and social competence were moderately and significantly correlated at each time point ($r = .23, .22, \text{ and } .22$ respectively), whereas the correlations between the two measures of problem behavior (loneliness and aggression) were low ($r = .03, .11, \text{ and } .06$ respectively). Social competence was negatively related to both loneliness and aggression at all time points (correlations ranging from $-.14$ to $-.33$), whereas the correlations between academic competence and problem behavior were weaker (correlations ranging from $-.05$ to $-.20$).

Table 5.1. Intercorrelations, Stability, Means, and Standard Deviations of All Constructs in Grade 1, Grade 3, and Grade 5

Variable	Grade 1				Grade 3				Grade 5			
	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.
Grade 1												
1. Loneliness	-											
2. Academic competence	-.05											
3. Social competence	-.14 ^{***}	.23 ^{***}										
4. Aggression	.03	-.13 ^{**}	-.33 ^{***}									
Grade 3												
1. Loneliness	.23^{***}	-.16 ^{***}	-.21 ^{***}	.13 ^{**}								
2. Academic competence	-.01	.54^{***}	.19 ^{**}	-.07								
3. Social competence	-.11 ^{**}	.24 ^{***}	.53^{***}	-.26 ^{***}	-.22 ^{***}	.22 ^{**}						
4. Aggression	.02	-.08 [*]	-.29 ^{***}	.49^{***}	.11 ^{**}	-.09 [*]	-.28 ^{***}					
Grade 5												
1. Loneliness	.22 ^{***}	-.22 ^{***}	-.21 ^{***}	.12 ^{**}	.29^{***}	-.19 ^{***}	-.26 ^{***}	.17 ^{***}				
2. Academic competence	.03	.50 ^{***}	.17 ^{***}	-.12 ^{**}	-.04	.61^{***}	.22 ^{***}	-.13 ^{**}	-.15 ^{***}			
3. Social competence	-.11 ^{**}	.16 ^{***}	.42 ^{***}	-.27 ^{***}	-.18 ^{***}	.17 ^{***}	.54^{***}	.31 ^{***}	-.31 ^{***}	.22 ^{***}		
4. Aggression	-.04	-.13 ^{**}	-.27 ^{***}	.44 ^{***}	.01	-.07	-.25 ^{***}	.48^{***}	.06	-.20 ^{***}	-.26 ^{***}	
Mean	.02	7.16	.11	1.35	.01	7.30	.07	1.36	.03	7.31	.10	1.31
SD	.42	.69	.93	.51	.41	.64	.96	.50	.43	.70	.95	.46

Note. * $p < .05$; ** $p < .01$; *** $p < .001$; Boldface correlations are the stability coefficients of each measure

Table 5.2. Fit statistics and model comparisons for proposed nested models

Model	SEM analyses Description of paths added to the model	SEM analyses			Absolute fit statistics			Difference test of relative fit			
		df	χ^2		CFI	RMSEA		Comparison	$\Delta\chi^2$	Δdf	<i>p</i>
1	Stability model	40	335.160		.843	.100					
2	Problem behavior → Competence	32	290.243		.863	.104		2 versus 1	44.917	8	.000
3	Competence → Problem Behavior	24	184.948		.914	.095		3 versus 2	180.834	8	.000
4	Cross paths Competence	20	159.388		.926	.097		4 versus 3	25.56	4	.000
5	Cross paths Problem Behavior	16	145.715		.930	.105		5 versus 4	13.673	4	.008

Note. SEM = structural equation modeling; CFI = comparative fit index; RMSEA = root mean square error of approximation.

5.3.2. Associations between competence and problem behavior

Table 5.2 presents the results for the relative and absolute model fit for the longitudinal analysis of the association between academic and social competence and loneliness and aggression. Chi-square difference tests show that Model 5 fitted the data significantly better than the four more parsimonious models (model 1 to model 4), and is therefore adopted as the final model ($\chi^2 = 145,715$, $df = 16$, $CFI = .93$, $RMSEA = .105$).

Concurrent associations revealed that social competence is negatively correlated with loneliness and aggression, and positively correlated with academic competence in all grades (see Figure 5.1). In grade 1 and grade 5, academic competence is also negatively related to aggression.

Results further showed that all stability paths were positive and significant, and strong for academic and social competence, and aggression (ranging from .43 to .60), whereas they were less strong for loneliness (ranging from .20 to .24).

Examining the longitudinal associations between competence and later problem behavior showed that academic competence was negative predictive of subsequent loneliness (but not of aggression). Children who achieve better in school are less lonely two years later. In addition, results revealed significant negative relations between social competence and aggression and loneliness, for both time intervals. Being more socially competent was consistently related to lower levels of loneliness and aggression two years later.

Vice versa, the longitudinal associations from problem behavior to competence showed that loneliness was not predictive of subsequent academic or social competence. However, significant negative relations between aggression and subsequent social competence were found at both time intervals. Children who initially displayed high levels of aggression, later displayed lower levels of social competence. Aggression was not significantly related to later academic competence.

Examination of longitudinal relations between two domains of competence, showed that academic competence was predictive of later social competence in younger children (from grade 1 to grade 3). Thus, for these children doing better in school is predictive of them being liked by their peers. Social competence was predictive of academic competence two years later, for both time intervals. That is, children who are better liked by their peers perform better in school two years later.

Finally, the examination of longitudinal relations between two domains of problem behavior showed that loneliness was predictive of later aggression, and aggression was predictive of later loneliness, from grade 3 to grade 5. Thus, children who are lonely in grade 3 are subsequently less aggressive in grade 5, and children who display high levels of aggression in grade 3 subsequently report to be more lonely in grade 5. Associations between the two problem behaviors were not found from grade 1 to grade 3.

Grade 5

Grade 3

Grade 1

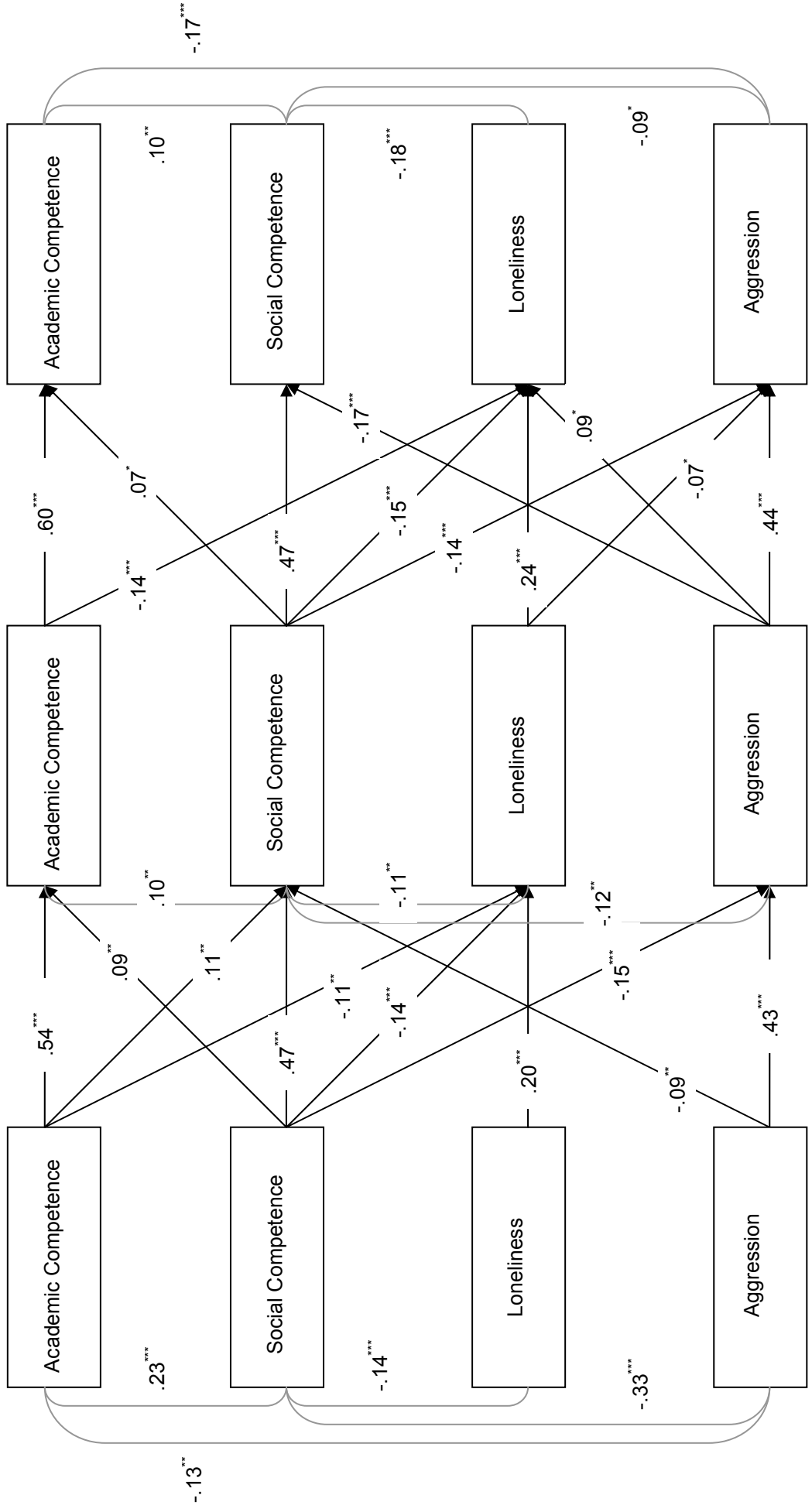


Figure 5.1. Standardized paths coefficients for significant paths; * $p < .05$, ** $p < .01$, *** $p < .001$.

5.3.3. Friendship analyses

Before examining possible group differences in *associations* between competence and problem behavior over time, we first charted the group differences in *mean* levels of competence and problem behavior from grade 1 to grade 5, using repeated measures ANOVA's. Means and standard deviations for all groups are presented in Table 5.3. Results showed a significant change in mean levels over time for academic competence ($F(2, 627) = 30.154, p = .000, \eta_p^2 = .05$) and aggression ($F(2, 620) = 5.014, p = .007, \eta_p^2 = .01$). Academic competence increased from Grade 1 to Grade 3, and remained stable from grade 3 to grade 5, whereas aggression was stable from grade 1 to grade 3, and decreased from grade 3 to grade 5. No change over time was found for mean levels of social competence and loneliness (see Figure 5.2).

Further, significant effects of friendship group were found for social competence ($F(2, 736) = 37.344, p = .000, \eta_p^2 = .09$), loneliness ($F(2, 737) = 9.215, p = .000, \eta_p^2 = .02$), and aggression ($F(2, 620) = 18.356, p = .000, \eta_p^2 = .06$). Post-hoc analyses showed that children without friends are less liked by their peers and more lonely than children with aggressive or nonaggressive friends, and that children without friends and children with aggressive friends scored higher on aggression than children with nonaggressive friends. No differences of friendship group were found for levels of academic competence.

Lastly, a significant interaction effect of time x friendship group was found for social competence ($F(2, 736) = 5.049, p = .007, \eta_p^2 = .01$). Children without friends became somewhat more socially competent, whereas the social competence of children with aggressive or nonaggressive friends somewhat declined from grade 1 to grade 5. In other words, the differences between the three groups became less pronounced over time. For academic competence, loneliness, and aggression, no significant time x friendship group interactions were found, which means that the change in these variables over time did not differ significantly between the friendship groups.

To examine whether associations between competence and problem behavior over time differed for the three groups, multiple group analyses were performed on Model 5. Constraining all parameter estimates (stability paths, cross-lagged paths, and concurrent correlations) to be equal across groups resulted in significant decreases in model fit ($\Delta\chi^2 = 149.76; \Delta df = 100; p < .001$), which indicates the existence of group differences. To examine which associations were different for the three groups, we first allowed continuity paths to differ for the three groups. Releasing these parameters, however, did not lead to significant increases of model fit ($\Delta\chi^2 = 15.489; \Delta df = 16; p < .001$). Consequently, these paths were again constrained to be equal for all three friendship groups. Secondly, releasing paths from competence to problem behavior ($\Delta\chi^2 = 16.621;$

Table 5.3. Means and standard deviations of all constructs for children in all three friendship groups

	without friends		nonaggressive friends		Aggressive friends	
	M	SD	M	SD	M	SD
Loneliness grade 1	.10	.45	-.01	.40	-.02	.40
Loneliness grade 3	.06	.46	.01	.40	-.04	.38
Loneliness grade 5	.12	.53	.00	.40	-.01	.37
Academic competence grade 1	7.09	.66	7.22	.72	7.11	.65
Academic competence grade 3	7.23	.65	7.36	.65	7.26	.61
Academic competence grade 5	7.23	.71	7.39	.70	7.25	.69
Social competence grade 1	-.39	.98	.35	.77	.18	.95
Social competence grade 3	-.25	1.03	.23	.90	.12	.93
Social competence grade 5	-.21	1.03	.24	.86	.14	.93
Aggression grade 1	1.43	.60	1.26	.40	1.43	.54
Aggression grade 3	1.51	.59	1.26	.39	1.41	.55
Aggression grade 5	1.38	.58	1.23	.37	1.38	.48

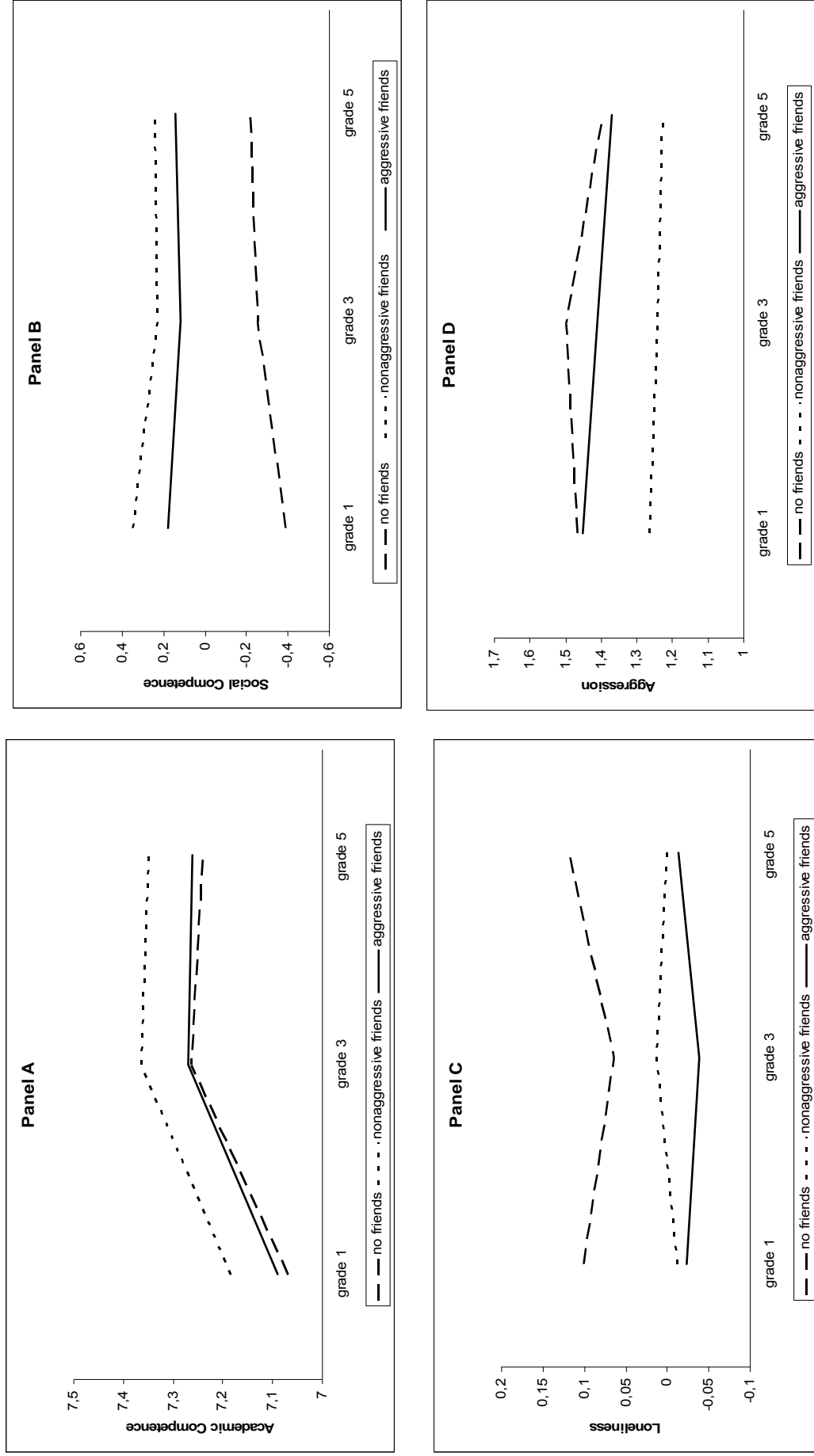


Figure 5.2. Repeated Measures Analysis for children without friends, children with nonaggressive friends, and children with aggressive friends on (A) academic competence, (B) social competence, (C) loneliness, and (D) aggression.

$\Delta df = 16$, $p = .411$), paths from problem behavior to competence ($\Delta\chi^2 = 23.227$, $\Delta df = 16$; $p = .108$), paths between the two measures of competence ($\Delta\chi^2 = 10.042$, $\Delta df = 8$, $p = .262$), and paths between the two measures of problem behavior ($\Delta\chi^2 = 7.991$, $\Delta df = 8$; $p = .434$) did not lead to significant increases of model fit. As a result, all these paths were constrained to be equal across groups. Lastly, the concurrent correlations were freed to be different for the three groups, which led to a significant increase in model fit ($\Delta\chi^2 = 81.828$; $\Delta df = 36$; $p < .001$). Examining confidence intervals revealed differences in correlations between social competence and aggression within grade 1 and grade 3. In grade 1, the negative association between social competence and aggression was stronger for children without friends and children with aggressive friends, than for children with nonaggressive friends, and in grade 3 this negative relation between social competence and aggression was stronger for children without friends than for children with nonaggressive friends. All other correlations did not differ between groups, and were thus constrained to be equal for all groups. The final model showed adequate fit to the data ($\chi^2 = 292.445$, $df = 144$, $CFI = .92$, $RMSEA = .065$).

5.4. Discussion

This study aimed to chart the concurrent and longitudinal relations between competence and problem behavior. In addition, the effects of having no friends, nonaggressive friends, and aggressive friends on these longitudinal associations were examined. Our results foremost showed that competence is related to subsequent problem behavior, more strongly than problem behavior is predictive of later academic or social incompetence. These findings are in line with the literature on failure models, which states that failure to learn, for example, social or academic skills leads to vulnerabilities for future failure and adjustment problems when children need to cope with new challenges in life (e.g., Cicchetti & Schneider-Rosen, 1986).

A distinctive example of the failure model can be found in our results. Children who were aggressive in grade 1, subsequently are less liked by their peers in grade 3, and in turn show higher levels of internalizing behaviors in grade 5. Researchers have referred to this finding as the coercion dual failure model (Masten et al., 2005). In this model, antisocial behavior leads to social problems, that in turn contribute to depression and other internalizing problems (e.g., Capaldi, 1992). Although various studies have shown that children's aggression can lead to peer relation problems (e.g., Coie et al., 1990), and also that peer relation problems can lead to loneliness (e.g., Parker & Asher, 1993), the present study adds to these findings in that it confirms that the use of cascade models is very important. These models can provide us with a more complete picture of how multiple domains of competence and problem behaviors are related over time.

The two measures of competence were differently related to problem behavior, in that academic competence was solely subsequently related to less feelings of loneliness, whereas social competence was related to both later loneliness and aggression. These findings implicate that the social context, in addition to the academic context, plays a critical role in children's adjustment in elementary school, as has been acknowledged by others (e.g., Rubin et al., 2006).

Whereas loneliness and aggression were not significantly related cross-sectionally and longitudinally from grade 1 to grade 3, they were related from grade 3 to grade 5. Loneliness seems to inhibit the display of aggressive behaviors two years later, a process which has been suggested by other researchers (e.g., Moffit, Caspi, Harrington, & Milne, 2002). Mesman, Bongers, and Koot (2001), for example, also found negative relations over time between internalizing and later externalizing behavior. They posit that the temperamental predisposition of children who show internalizing problems, may prevent them from exhibiting uninhibited externalizing behaviors, such as aggression.

Vice versa, aggression was positively predictive of later loneliness. The literature on this association between early aggression and subsequent loneliness provides mixed results. Recently, Mercer, and DeRosier (2008) found that aggression was not related to subsequent self-reported loneliness, as did Masten and colleagues (Burt et al., 2008; Masten et al., 2005). However, in accordance with our findings, Mesman and colleagues did find that externalizing behavior was related to subsequent internalizing behavior (see also Fischer, Rolf, Hasazi, & Cummings, 1984). They reason that early disruptive behavior may represent a non-specific precursor of a range of problems when children grow older. In other words, it may be reflecting a "difficult temperament", which can lead to various problems later in childhood.

In addition, the two measures of competence were related both cross-sectionally and longitudinally, which stresses the importance of assessing *multiple* domains of competence and problem behavior in one model.

5.4.1. Moderating effects of friends

The literature on peer influence in at-risk samples suggests that children with deviant friends are more at risk for later adjustment problems, than children with regular friendships (e.g., Dishion, 2000). Also, the literature on children without friends suggests that these children are more prone to later maladjustment than other children (e.g., Ladd, 1990; Renshaw & Brown, 1993). Although comparisons of means showed that children without friends displayed higher *levels* of loneliness, aggression, and academic incompetence, and children with aggressive friends showed higher *levels* of aggression than children with nonaggressive friends, friendship did not buffer or augment the longitudinal relation between

competence and problem behavior. In other words, no evidence was found for a moderating role of friendship on the relation between social and academic competence and loneliness and aggression. Research on friendship moderation has found mixed evidence for a moderating role of friendship, and our results are in concordance with the studies that also failed to find evidence for friendship moderation (Greco & Morris, 2005; La Greca & Harrisson, 2005).

There are several possible factors that could account for this lack of moderation in our study. Firstly, the subjects of the current study were drawn from a non-risk sample, implying that their levels of aggression (and thus also their friend's levels of aggression) would best be characterized as being moderately aggressive. Most studies that found influence effects of deviant peers on children's behavior, studied more severe forms of disruptive behavior (e.g., Dishion, 2000). It may be that children are influenced by their friends solely in cases of more extreme deviant behavior. Secondly, researchers that study peer relations in adolescence argue that particularly adolescents, more than younger children, are vulnerable to peer influences. The influence of parents decreases in adolescence, and at the same time the influence of peers increases (e.g., Brown, 2004; Collins & Laursen, 2004). It may thus be that the influence of peers in middle childhood is just not that strong yet as it is in adolescence, and that other factors have a larger effect on the adjustment of children (e.g., parents). Thirdly, our research design had two year intervals between measurements. It might be that the friendship does moderate the relation between child characteristics and adjustment on a short term, but that these moderating effects fade away when these associations are examined on the longer term. Assessing the durability of friendship influence more precisely seems an important point for future research. Fourthly, we studied longitudinal relations between measures of competence and problem behavior. Studies that did find moderating effects of friendship, focused on other associations, for example, they often included the effects of victimization (e.g., Hodges et al., 1999). That is, friendship might buffer against maladjustment only in particular cases. Researchers need to investigate further in what situations friendship can buffer against inadapative functioning and in what situations friendship does not function as a protective factor. Fifthly, we compared children with aggressive friends, with nonaggressive friends, and children without friends. However, it might be that other characteristics of friends have an influence on children's adjustment. For example, Palmen, Vermande, Bukowski, Deković, and van Aken (2008), on a sample of 11-year-old American children, found that having an actively isolated friend, rather than having an aggressive friend, was associated with children's own externalizing behavior.

It thus seems that friendship buffers against maladjustment in some cases, but not in others. Since only few studies have examined the moderating role of friendship, in very different domains, age groups, and samples, more research is needed to more precisely specify under which circumstances friendship does influence a child's adjustment.

Another interesting point that evolves from our findings is that children *without* friends seem to be more at risk for maladjustment than children with *aggressive* friends. Whereas children with aggressive friends showed elevated levels of aggression in comparison to children with nonaggressive friends, children without friends in addition showed higher levels of aggression, and academic and social incompetence. This finding has important implications for future research. Whereas lot of research and interventions focus on having deviant (antisocial friends), our study shows that it is needed that children who are unable to make and keep friends gain our attention, since they seem to be most at risk. It should be noted, though, that our findings generalize to children in regular elementary schools, and it is very likely that having deviant friends in high risk samples (so friends who display more severely antisocial behavior) have more impact on children's own adjustment (see, Dishion, et al, 1996).

This study has several limitations. Firstly, attrition in all waves was not random. Attrition analyses revealed that children who did not had data on all three waves showed higher levels of aggressive behavior and social and academic incompetence. With respect to our friendship analyses, this might have accounted for the lack of moderating effects of having aggressive friends, because the most aggressive children did not have complete data. However, in the repeated measures analyses, we did find effects of friendship groups, which indicates that there is enough variance to be explained in our measures to find group differences.

Furthermore, although friendship is commonly operationalized as a reciprocal relation (i.e., mutual nominations are required), recently, researchers have argued that it may not be reciprocated friendships that most strongly influence children's behavior, but that *unreciprocated* friendships have a higher impact on children's changes in behavior (Bukowski, Velasquez, & Brendgen, in press; Adams, Bukowski, & Bagwell, 2005). The reason is that friendless children might be more motivated to be like the peer whom they would like to be friends with. In the present study, only reciprocated friendships were included, and therefore we may not necessarily have focused on the most influential peers in children's environment. In line with this argument, it must be mentioned that solely focusing on the school environment results in exclusion of possibly influential peers outside the school context. In addition, friendship quality might also be of influence when studying moderating effects of friendship (see for example, Rubin, Dwyer, Kim, Burgess, Booth-LaForce, & Rose-Krasnor, 2004). We were not able to include friendship quality as a moderating variable in our study, but it seems commendable to account for friendship quality and reciprocity in future studies.

Despite these limitations, the present study is also characterized by several strengths, such as the use of multiple informants, the four-year longitudinal design, the large sample, and the inclusion of two measures of competence and problem behavior in one model.

Chapter 5

Results stress the importance of both academic and certainly also social competence for children in elementary schools. Our findings indicate that although children without friends and children with deviant friends differ in their levels of competence and problem behavior, friendship does not augment the relation between competence and problem behavior in this non-risk sample.

Chapter 6

General Conclusion

This thesis focused on two themes. First, the friendships of aggressive children were examined. Second, we examined the effects of having aggressive friends in elementary school. This chapter starts with summarizing the main findings of the four empirical studies presented. Next, a general discussion is presented in which the results are interpreted in the light of the two themes of this dissertation, and in the broader context of research on peer relations. Additionally, strengths and limitations are discussed, as well as suggestions for future research.

6.1. Summary of the main findings

6.1.1. The prevalence, similarity, and quality of aggressive and withdrawn children's friendships

In the first study, we aimed to describe the friendships of aggressive and withdrawn children in fifth grade of elementary school. Examining the three relationship dimensions suggested by Hartup (1996), we first investigated whether aggressive and withdrawn children have friends (Hartup, dimension 1). We extended previous research by defining friendship as a continuous construct, which means that we operationalized friendship not as a dichotomous variable (having friends or not), but that we allowed various intensities of friendship to exist. Accordingly, we examined not only mutual best friends, but also mutual good friends, and mutual occasional friends. In addition, we considered gender differences in the prevalence of friendships. Results showed that aggressive and withdrawn girls (but not boys) were less likely than control children to have a mutual best friend, whereas no differences appeared for either sex in the likelihood of having mutual good or occasional friends. Further, we demonstrated that withdrawn children had less mutual best, good, and occasional friends than control children. Aggressive children, in contrast, had an equal amount of mutual best, good, and occasional friends as control children. Thus, we concluded that aggressive children are able to form mutual friendships with their peers in school.

Secondly, we looked at who the friends of aggressive and withdrawn children are (Hartup, dimension 2). That is, we examined whether or not their friends were similar to them with respect to their aggressive and withdrawn behavior. Gender was also considered in these analyses. We demonstrated that results differed according to the way of measurement. When adopting a continuous approach (examining the mean levels of aggression), friends of aggressive and withdrawn children displayed higher levels of aggression and withdrawn behavior respectively. That is, similarity between children and their friends was found. However, when employing a categorical approach (examining the total number of reciprocated friends), dissimilarity between children and their friends occurred as often as

similarity. Specifically, about half of the friends of aggressive and withdrawn children were dissimilar to them with respect to aggression and withdrawal.

Thirdly, we examined whether the friendships of aggressive and withdrawn children differed in quality when compared to other children's friendships (Hartup, dimension 3). In addition, the relationship quality of aggressive and withdrawn children in similar and dissimilar friendship dyads was compared. An innovative aspect of our friendship quality analyses was that we not only asked children to report their friendship provisions (as is usually done), but also to report their friendship needs. In addition, friendship quality was measured from three perspectives: the child's perspective, the friend's perspective, and the dyadic perspective. We found that, whether measured from a child's perspective, friend's perspective, or dyadic perspective, aggressive and withdrawn children reported equal levels of communal and agentic friendship needs and provisions, and friendship quality as control children. In addition, both aggressive and withdrawn children were equally satisfied with their friendships as control children. Results also revealed that aggressive and withdrawn children in similar or dissimilar friendship dyads did not report differences on either indicator of friendship quality.

Thus, we demonstrated that aggressive children are able to form mutual friendships, that they not merely befriend other aggressive children, but also nonaggressive children, and that their friendships are of good quality.

6.1.2. Machiavellianism: Risk and adaptation

The second empirical study, presented in Chapter 3, again touched upon the third dimension addressed by Hartup, namely the quality of aggressive children's friends. More specific, based on Hawley's Resource Control Theory (e.g., Hawley, 1999), two subgroups of aggressive or coercive children were identified: children nominated by their peers as the most aggressive classmates, and children who were nominated as both aggressive and prosocial. These two subgroups of coercive children were compared to purely prosocial children and control children with respect to their friendships. That is, we compared these children's communal and agentic needs and provisions, their friendship quality and friendship satisfaction. In addition, we examined their social impact within the classroom. We hypothesized Machiavellian children (high on aggression and prosocial behavior) to have better friendships than coercive children. However, their friendships were not expected to exceed those of prosocial children, because of the social costs of the coercive behavior of Machiavellians.

In addition, this study also looked at the longitudinal adaptation of prosocial, coercive, Machiavellian, and control children. Again, it was expected that Machiavellians would form a better adapted subgroup of coercive children, in comparison to the purely coercive children.

In this respect, it was hypothesized that Machiavellians would show better adaptation over time than coercive children, but that they would not be as well adapted as prosocial children.

Results provided support for our hypotheses. In terms of social relations, Machiavellians were highest on social impact in their classrooms, when compared to all other children. They maintained better quality, and more satisfying friendships than purely coercive children and, even, control children. Their social relations resembled those of prosocial children (although prosocial children were better liked by their peers than Machiavellians). Regarding longitudinal levels of adaptation, Machiavellians showed equal levels of academic competence and loneliness as control children, whereas purely coercive children were lonelier than control children. Furthermore, Machiavellians were better liked by their peers than control children and coercive children. Coercive children and Machiavellians did, however, display equally high levels of aggressive behavior. So, only in that respect, Machiavellians did not show better adaptation than coercive children. With respect to their changes in development over time Machiavellians showed the same pattern of development as coercive and prosocial children with respect to academic achievement, loneliness, and aggression. Coercive children became better liked over time, whereas Machiavellians stayed stable in their levels of social preference. Prosocial children showed a decline in being liked by their peers over time.

From this study, we concluded that there is a subgroup of aggressive children (namely Machiavellians), that clearly shows signs of better social relations, and better adaptation over time than purely coercive or aggressive children. We have seen an unambiguous difference in the friendships of these two groups of aggressive children.

6.1.3. Child characteristics, friend characteristics, and their interactions: Links with children's externalizing and internalizing behavioral problems

The study presented in Chapter 4 examined whether having aggressive or withdrawn friends is associated with children's adjustment, and thus focused on the second dimension proposed by Hartup. In addition to looking at whom children befriend, we extended Hartup's framework, with looking at the interactions between child and friend characteristics. That is, having certain friends might have a different meaning for different types of children. In Chapter 4 we thus examined whether child characteristics (aggression, passive withdrawal, and active isolation), friend's characteristics (aggression, passive withdrawal, active isolation), or interactions between child and friend characteristics contributed to children's internalizing and externalizing problems.

Results showed that child characteristics predicted concurrent internalizing and externalizing behavior. As expected, a child's peer rated aggression was associated with teacher rated externalizing behavior, and a child peer rated passive withdrawal (but not

active isolation) was related to that child's teacher rated internalizing behavior. Further, friend characteristics only uniquely contributed to the prediction of externalizing behavior. More specific, having an active isolated friend (rather than having an aggressive friend) uniquely predicted a child's externalizing behavior, when controlled for child characteristics. Two interaction effects were found, in that having a passive withdrawn friend, reduced the positive relation between children's active isolation and externalizing behavior. Having an active isolated friend augmented the positive relation between children's aggression and externalizing behavior. Thus, for active isolated children, having a friend who is passive withdrawn can be a protective factor, whereas for aggressive children, having an active isolated friend can be a risk factor.

We concluded from this study that child characteristics, and to a lesser extend friend characteristics, contribute to the concurrent prediction of adjustment. Remarkably, having aggressive friends did not seem to play a role in predicting internalizing and externalizing problems, when controlled for children's own levels of aggression.

6.1.4. Competence, problem behavior, and the effects of having no friends, aggressive friends, or nonaggressive friends

In the fourth study, presented in Chapter 5, we examined the longitudinal relations between two important measures of competence (academic and social competence), and two measures of problem behavior (loneliness and aggression). In addition, we examined the moderating effects of having no friends, aggressive friends, of nonaggressive friends. This second question is similar to the second dimension in Hartup's work. That is, when studying children's adjustment, it should be considered who its friends are. In this study, we contrasted children without friends and children with aggressive friends (both at risk for later adjustment problems, according to the literature) with children with nonaggressive friends. We hypothesized that especially aggressive behavior would be predictive of later academic and social incompetence, whereas both academic and social competence would be negatively associated with both later loneliness and aggression. Although little research has focused on moderating effects of friendship in children in regular elementary schools, we expected that longitudinal relations between competence and problem behavior would be different for children without friends, children with aggressive friends, and children with nonaggressive friends. For instance, negative relations between social incompetence and loneliness could be expected to become increasingly strong for children without friends than for other children. Similarly, negative relations between aggression and subsequent social competence may become increasingly strong for children without friends or children with aggressive friends, than for children with nonaggressive friends.

Results showed that competence was related to later problem behavior. Academic competence was related to a lower level of later loneliness, whereas social competence was related to both lower levels of loneliness, and aggression over time. Problem behavior, in contrast, was not associated to later competence, except for aggression, which was related to subsequent social incompetence.

With respect to the friendship analyses, we found main effects of having no friends, aggressive friends, and nonaggressive friends. That is, children without friends in grade 1 were less liked over time by their peers and subsequently were lonelier than children with (aggressive or nonaggressive) friends. Furthermore, children without friends and children with aggressive friends in grade 1 displayed higher levels of aggression over time than children with nonaggressive friends. With respect to academic competence, no differences appeared for children without, children with aggressive, or children with nonaggressive friends. Although main effects appeared, we did not find any of the hypothesized moderating effects of friendship on the longitudinal relations between competence and problem behaviors.

In sum, the three friendship groups differed in their levels of competence and problem behaviors, but the longitudinal associations between competence and problem behavior were similar. Having aggressive friends thus did not function as a risk factor for children's adjustment over time (nor was having no friends a risk factor), and having nonaggressive friends did not serve a protective function.

6.2. The friendships of aggressive children in elementary school

One of the main themes of this thesis was to examine the friendships of aggressive children in elementary school. What can we conclude from the empirical studies in this thesis about the friendships of aggressive children? Chapter 2 showed that aggressive children, in grade 5 of elementary school, form mutual friendships with other children in elementary school. We also demonstrated that aggressive children do not merely choose other aggressive children as their friends, but that they also affiliate with nonaggressive children. Nonetheless, on average, their friends display higher levels of aggression than other children's friends. Further, the friendships of aggressive children were of equal quality when compared to control children.

Thus, in short, the study presented in Chapter 2 does not seem to provide much support for the premise that aggressive children suffer from problems with their friendships. They have friends, their friends are as often nonaggressive as aggressive, and their friendships are of good quality.

The study presented in Chapter 3 extended these findings, by making a distinction between different types of aggressive children. We found that there is a subset of aggressive

children (Machiavellian children) that has friendships of relatively high quality. In contrast, there is also a group of purely aggressive children who reports their friendships to be of lower quality than that of Machiavellians. Although this seems to be in contrast to our findings in Chapter 2 (friendships of aggressive children are of equal quality than that of other children), it is important to note that although the friendship quality of purely aggressive children was lower than that of Machiavellians, it was not lower than that of control children. So, what we conclude is that the friendships of coercive children are of average quality, as are the friendships of control children. The friendships of Machiavellians and prosocial children are plainly of even higher quality.

Previous studies on the prevalence of friendships of aggressive children have also shown that these children do form friendships, in spite of their risk of being rejected by their classmates (Cairns, Cairns, Neckerman, Gest, & Garipey, 1988; Rose, Swenson, & Carlson, 2004). Similarly, research has shown that aggressive children have as many friends as their nonaggressive peers (Deptula and Cohen, 2004). In this respect, our findings are in line with previous research on aggressive children's friendships.

With respect to the similarity-attraction hypothesis ("birds of a feather flock together"), our findings force us to be cautious to conclude that aggressive children solely choose aggressive children to be their friends. Although, on average, we saw that friends of aggressive children were more aggressive than friends of other children, we must not forget that about half of aggressive children's friends are nonaggressive. Vitaro, Brendgen, and Tremblay (2000) also pointed out that correlation coefficients of .40 to .50 between the behaviour of a child and its friend also indicate that dissimilarity occurs more often than researchers often acknowledge in their studies.

With respect to friendship quality, previous studies concluded that the friendships of aggressive children were of somewhat less quality than the friendships of nonaggressive children (Rubin, Bukowski, & Parker, 2006). However, these were friendships between aggressive children. Research that examined the quality of *all* friendships of aggressive children (i.e., not only with other aggressive children) has found that there were no differences in the quality of best friendships of aggressive and nonaggressive boys (Bagwell & Coie, 2004). In our study, we did not find differences in friendship quality in dyads with two aggressive children (similar dyad), or dyads with one aggressive and one withdrawn child (dissimilar dyad). Even more, no differences were found between similar or dissimilar dyads involving aggressive children and dyads with two nonaggressive, nonwithdrawn children. Thus, regardless of who the friends of aggressive children were in our study, their friendship quality did not differ from that of control children.

What our findings further add to previous research is that even when agentic friendship characteristics (such as competition, power, and status) are taken into account, friendships of aggressive children are of equal quality as those of control children.

6.3. The effects of having aggressive friends in elementary school

The second theme of this thesis was to examine the effects of having aggressive friends in elementary school. In Chapter 4 we saw that children's own aggression was predictive of externalizing behavior, but that their friends' level of aggression was not concurrently predictive of a child's externalizing behavior. For internalizing problems, merely the child's own characteristics, and not the friends characteristics were important in predicting a child's adjustment. It is not to be concluded that friends are not important for a child's adjustment though. For externalizing behavior, we saw that friends' active isolation was predictive of a child's externalizing behavior, when the child scored high on aggression. Friends' passive withdrawal, in contrast, seemed to buffer against externalizing behavior, in cases of the child being actively isolated by the peer group. Thus, although the aggressiveness of the friend did not add to the prediction of a child's externalizing behavior, friend active isolation and passive withdrawal did influence a child's externalizing behavior in specific cases.

In Chapter 5, we found that children with friends showed higher levels of adjustment than children without friends. Thus, our data show that having friends is indeed important for a child's adjustment, as Hartup (1996) argued. However, we also demonstrated that friendship does not buffer the longitudinal relation between four major measures of competence (academic and social competence) and problem behavior (loneliness and aggression). That is, we did not find evidence for the importance of examining whom children befriend, as Hartup argues (dimension 2). Our results suggest that, although having friends is important, having aggressive friends does not seem to effect children's adjustment cross-sectionally and longitudinally in a different way than having nonaggressive friends.

This is in contrast to other studies in the field. Several studies examined the associations between affiliating with deviant peers and the development of problem behavior (especially the child's antisocial behavior) (e.g., Bot, Engels, Knibbe, & Meeus, 2005; Dishion, 2000). These studies mostly defined deviancy in terms of antisocial behavior, smoking, using drugs or drinking alcohol. These behaviors are obviously mostly studied in adolescence. Researchers have shown that, through social learning, and deviancy training, children are reinforced by their friends to start displaying deviant behavior themselves (e.g., Dishion, Spracklen, Andrews, & Patterson, 1996; Dodge, Coie, & Lynam, 2006). The modeling and positive reinforcement of peer influence has especially been observed in adolescents who display severely disruptive behavior, for example antisocial behavior or substance use (Dishion, Andrews, & Crosby, 1995; Dishion et al., 1996; Patterson, Dishion, & Yoerger, 2000; Thornberry & Krohn, 1997).

Since we were not able to replicate these patterns of influence in regular elementary schools, with children who display less severe forms of deviant behavior, we can draw some important conclusions regarding the effects of having deviant friends.

First, it seems that peer influence is highly dependent on the developmental period (that is, age) under study. It might be that in the elementary school period, the influence that peers have is less strong than in adolescence. Adolescents spent more time with each other, and this time is increasingly spent outside formal settings (such as school), and without adult supervision (Rubin, Bukowski, & Laursen, 2009). Therefore, it is possible that in adolescence, influence of peers increases relative to the influence of peers earlier in children's lives.

Second, we examined a non-risk sample of elementary school children. These children are likely to display less severe forms of deviant behaviors than the adolescents who are studied in the at-risk samples described above. Moreover, these children are likely to grow up in more favorable circumstances, which offer them opportunities to develop in a more positive way.

Third, the type of deviant behavior may also play a role in differences found in friend influences. Some deviant behaviors (such as smoking and drinking) may be more susceptible to the influences of peers than others (for instance, physical aggression). More research is needed that specifies more clearly what types of deviant behaviors are vulnerable to the influences of peers, and what types of deviant behaviors are not.

6.4. Strengths, limitations, and future directions

The empirical studies presented in this thesis share a few important strengths and limitations. Acknowledging these can possibly serve future research endeavors.

A strong point of the papers is that they refer to several innovative methodological ideas in the field of peer relations. For instance, the study presented in Chapter 2 makes a distinction between best, good, and occasional friends. Although researchers have suggested making this distinction in friendship intensity (Erdley, Nangle, Newman, & Carpenter, 2001; Hartup, 1996), this distinction has hardly ever been made before in friendship research. In addition, the inclusion of friendship needs in the measurement of friendship quality (in Chapter 2 and Chapter 3) is also a very new approach in measuring friendship quality (see also Zarbatany, Conley, & Pepper, 2004). Although future research should work on further validating this measure, the conceptual idea underlying this questionnaire is promising. Lastly, in Chapter 3 we tag on a rather recent development in research on aggression that includes looking at those aggressive children who are capable of using both aggressive and prosocial behavior at the same time (e.g., Hawley, Little, & Card, 2007). Herein, the focus is not on different types of aggression, as is the focus of much research on aggression. Rather, the focus is on the usage of multiple behavioral strategies within one person. An interesting issue for future research is to examine the range of possible behaviors children are able to display, and the flexibility of switching between these

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behaviors. From our findings it can be hypothesized that Machiavellians, for instance, are relatively well adapted, because of their ability to display multiple behavioral strategies, and flexible choose the behavior that is suitable in a specific situation. Thus, a large range of behavioral choices, and a large flexibility in using them, would then contribute to children's adjustment.

Further, it is important to note that two studies in this thesis presented cross-sectional analyses, which do not allow for causal conclusions to be drawn. Cross-sectional studies can provide researchers with interesting avenues for future research, which also holds true for the studies presented in Chapter 2 and 4 of the present thesis. Correspondingly, the strength of the studies in Chapter 3 and Chapter 5 is the longitudinal design that is used. The Utrecht Social Development Project is a longitudinal study that encompasses the entire elementary school period. Such databases are rare in peer relations research, and enable us to map children's friendships, and the effects of having friends on children's adjustment over a long time period. Whereas this dataset is very suitable to register these long-term developments, it does not allow to gain insight in short term developments or dynamics in, for instance, friendships or aggressive behavior. Especially friendships can be relatively unstable in the early elementary school years, and therefore other research designs are needed that allow for monitoring such short-term fluctuations in friendships. Of the longitudinal samples used in friendship research today, many use a design in which children report on their friendships about twice a year. Designs that use an even shorter time interval (e.g., monthly) would greatly enlarge our knowledge of children's friendships.

An important advantage of the Dutch sample (used in Chapter 2, 3, and 5) is that it was unusual large. These kinds of samples are well needed in friendship research, since they sustain statistical power despite of the cuts in sample size that one has to make in order to obtain statistically independent data. Furthermore, databases like this make it possible to use statistically advanced methods, even when comparing multiple groups of children. In addition, a strong point of all studies in this thesis is that multiple informants were asked to report on children's behavior and social relations. Using a multiple informant approach to assess data adds to the reliability of the research findings. Using different informants to assess constructs minimizes the risk of inflated correlations, that exists when single informants are used.

Another issue that needs to be addressed is the fact that all four empirical studies in this thesis focus mainly on two levels of social complexity (see Hinde, 1997), namely the individual and the dyadic level. Although we also included some important group variables in children's everyday social life (the degree to which children are socially preferred by their classmates and children's social impact), examining the group context more thoroughly could further extend our findings on, for instance, peer influence. One important direction for future research that has recently gained increased attention from peer relation researchers is the

cliques in which children are enrolled in. Examining the behavior of all clique members, children's position within a clique, clique norms, and the closeness between clique members are important issues that have to be addressed in further studies, to obtain a better picture of the complex social environment children grow up in every day.

On the individual level, it might be fruitful to more thoroughly examine which individual factors make children more susceptible for peer influences. For instance, children with low self-esteem, or with a low status in the group, may be more vulnerable to peer influence. Such interactions between child characteristics and friend characteristics can be studied by using interactional models, as presented in Chapter 4 of this thesis.

Lastly, researchers have examined the role that different social contexts play in children's development mostly independent of each other. That is, as this thesis focuses on the peer context only, other studies focus merely on, for instance, the family context. More studies are needed that combine these different contexts in order to better represent the complexity of children's everyday social life.

6.5. Concluding remarks

To conclude, this thesis demonstrated that aggressive children, who are claimed to suffer from peer relation problems, did not experience difficulties with their friendships. It was concluded that these children were able to form mutual friendships of good quality. Children without friends in the beginning of elementary school, in contrast, clearly showed signs of maladjustment over time. This highlights the importance of friendships for children's adjustment, which has been proven in a large amount of studies before.

Furthermore, we cross-sectionally and longitudinally showed that having aggressive friends in elementary school did not augment children's maladjustment (nor did having nonaggressive friends buffer against maladjustment). Apparently, different processes of peer influence are involved in the elementary school period, when compared to adolescence.

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Summary

Research has demonstrated the importance of friendship for children's adjustment (e.g., Ladd, 1990). However, some children may be less capable of maintaining satisfying relationships with their peers. Aggressive children, for instance, have been found to experience peer relation difficulties (e.g., Dodge, Coie, Pettit, & Price, 1990). Most research on aggression and peer relations has focused on children's status within the peer group (group interaction), rather than friendship (dyadic interaction). Group interactions and dyadic interactions are unique aspects of social experience, though, and therefore it is important to differentiate between them in research (Erdley, Nangle, Newman, & Carpenter, 2001). Friendships, for instance, may be more intimate, and therefore may have more impact on children's development. Consequently, this thesis' first aim was to examine the dyadic *friendships* of aggressive children (e.g., prevalence, behavioral similarity, and friendship quality; see Chapter 2 and 3).

The second aim of this thesis (examined in Chapter 4 and 5) was to examine the adjustment of children who affiliate with aggressive children. Research in adolescence has shown that involvement with deviant peers can have a negative influence on children's own adjustment (e.g., Patterson, Reid, & Dishion, 1992). However, this area of research mainly focuses on adolescents who come from families with low socio-economical status, and adolescents who display severe forms of antisocial behavior or risk behaviors that specifically gain importance in adolescence (e.g., smoking). It is important to examine whether or not the same patterns of peer influence also hold for younger children in regular elementary schools. At this age, children show other forms of deviant behavior (e.g., physical aggression or relational aggression), that can be precursors for more severe antisocial behavior in adolescence.

All empirical studies in this thesis can be placed in Hartup's (1996) framework of friendship and adjustment. This framework states that there are three important friendship dimensions to examine when studying the contribution of friendships to children's adjustment. Firstly, it is important to know whether children have friends or not. Secondly, it is important to know who their friends are, and thirdly, the quality of children's friendships should be taken into account.

More specifically, Chapter 2 aimed to describe the friendships of aggressive and withdrawn children in fifth grade of elementary school. These friendships were compared to those of control children (i.e., nonaggressive, nonwithdrawn children). Addressing all three friendship dimensions suggested by Hartup (1996), we investigated whether or not aggressive and withdrawn children have friends, who their friends are (are they similar or dissimilar), and whether their friendships differ in quality when compared to other children's friendships.

Summary

With respect to aggressive children, results showed that aggressive children had an equal amount of mutual best, good, and occasional friends compared to control children. Thus, we concluded that aggressive children are able to form mutual friendships with their peers in school. Further, we found that, although friends of aggressive children displayed higher levels of aggression, dissimilarity between aggressive children and their friends occurred as often as similarity. Specifically, about half of the friends of aggressive children were dissimilar to them with respect to aggression. Lastly, friendship quality analyses showed that, whether measured from a child's perspective, friend's perspective, or dyadic perspective, aggressive children reported equal levels of communal and agentic friendship needs and provisions, and friendship quality as control children. In addition, aggressive children were equally satisfied with their friendships as control children. Results also revealed that aggressive children in similar or dissimilar friendship dyads did not report differences on either indicator of friendship quality.

In sum, in this study, we demonstrated that aggressive children are able to form mutual friendships, that they not merely befriend other aggressive children, but also nonaggressive children, and that their friendships are of good quality.

Chapter 3 focused on the third friendship dimension described by Hartup (1996). This study distinguished between aggressive children who are purely aggressive (i.e. coercive) and aggressive (i.e. coercive) children who, at the same time, are prosocial (Machiavellians). The friendships of these children were compared to prosocial and control children's friendships (e.g., friendship needs and provisions, friendship quality, friendship satisfaction). In addition, the adjustment (social preference, academic achievement, loneliness and aggression) of these four groups was examined over a period of four years.

In terms of social relations, Machiavellians were highest on social impact (i.e., high prominence) in their classrooms, when compared to prosocial, coercive and control children. Further, they maintained better quality, and more satisfying friendships than purely coercive children and, even, control children. Their friendships resembled those of prosocial children (although prosocial children were better liked by their peers than Machiavellians). Regarding longitudinal levels of adaptation, Machiavellians in grade 1 showed equal levels of academic competence and loneliness as control children, whereas purely coercive children were lonelier than control children. Furthermore, Machiavellians initially were better liked by their peers than control children and coercive children. Coercive children and Machiavellians did, however, display equally high levels of aggressive behavior. So, only in that respect, Machiavellians did not show better adaptation than coercive children. With respect to their changes in development over time Machiavellians showed the same pattern of development in academic achievement, loneliness, and aggression as coercive and prosocial children. Coercive children became better liked over time, whereas Machiavellians stayed stable in

their levels of social preference. Prosocial children showed a decline in being liked by their peers over time.

In short, this study led us to conclude that there was a subgroup of aggressive children (those who are able to combine their aggression with prosocial behavior), that clearly showed signs of better social relations, and better adaptation over time than purely coercive or aggressive children.

The second main question of this thesis (the effects of having aggressive friends) was the focus of the studies presented in Chapter 4 and Chapter 5. In Chapter 4, we examined whether *having* aggressive or withdrawn friends is associated with children's adjustment, and we thus focused on the second dimension proposed by Hartup (that is, it is important to consider whom children befriend). We examined whether child characteristics (aggression, passive withdrawal and active isolation), friend's characteristics (aggression, passive withdrawal, active isolation), or interactions between child and friend characteristics contributed to children's internalizing and externalizing problems.

Results showed that child characteristics predicted concurrent internalizing and externalizing behavior. As expected, a child's peer rated aggression was associated with teacher rated externalizing behavior, and a child peer rated passive withdrawal (but not active isolation) was related to that child's teacher rated internalizing behavior. Further, friend characteristics only uniquely contributed to the prediction of externalizing behavior. More specific, having an active isolated friend (rather than having an aggressive friend) uniquely predicted a child's externalizing behavior, when controlled for child characteristics. Two interaction effects were found, in that having a passive withdrawn friend, reduced the positive relation between children's active isolation and externalizing behavior. Having an active isolated friend augmented the positive relation between children's aggression and externalizing behavior. Thus, for active isolated children, having a friend who is passive withdrawn can be a protective factor, whereas for aggressive children, having an active isolated friend can be a risk factor.

We concluded from this study that child characteristics, and to a lesser extend friend characteristics, contribute to the concurrent prediction of adjustment. Remarkably, having aggressive friends did not seem to play a role in predicting internalizing and externalizing problems, when controlled for children's own levels of aggression.

Lastly, in Chapter 5, we longitudinally examined the associations between academic and social competence, loneliness and aggression over time. Further, we tested whether these longitudinal relations differed for children with aggressive friends, children with nonaggressive friends, and children without friends, thereby again focusing on the second dimension suggested by Hartup.

Results showed that competence was related to later problem behavior. Academic competence was related to a lower level of later loneliness, whereas social competence was

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related to both lower levels of loneliness, and aggression over time. Problem behavior, in contrast, was not associated to later competence, except for aggression, which was related to subsequent social incompetence. With respect to the friendship analyses, we found main effects of having no friends, aggressive friends, and nonaggressive friends. That is, children without friends in grade 1 were less liked over time by their peers and subsequently were lonelier than children with (aggressive or nonaggressive) friends. Furthermore, children without friends and children with aggressive friends in grade 1 displayed higher levels of aggression over time than children with nonaggressive friends. With respect to academic competence, no differences appeared for children without, children with aggressive, or children with nonaggressive friends. Although main effects appeared, we did not find any of the hypothesized moderating effects of friendship on the longitudinal relations found between competence and problem behaviors.

In sum, the three friendship groups differed in their levels of competence and problem behaviors, but the longitudinal associations between competence and problem behavior were similar. Having aggressive friends thus did not function as a risk factor for children's adjustment over time (nor was having no friends a risk factor), and having nonaggressive friends did not serve a protective function.

Taken together, this thesis demonstrated that aggressive children, who have been shown to suffer from peer relation problems, did not experience difficulties with their friendships. It was concluded that these children were able to form mutual friendships of good quality. We even identified a subgroup of aggressive children (Machiavellians) whose friendship experiences resemble those of prosocial children. In contrast, children without friends in the beginning of elementary school clearly showed signs of maladjustment over time. This highlights the importance of friendships for children's adjustment, which has been proven in a large amount of studies before. Furthermore, we cross-sectionally and longitudinally showed that having aggressive friends in elementary school did not augment children's maladjustment (nor did having nonaggressive friends buffer against maladjustment).

Samenvatting (Summary in Dutch)

Onderzoek heeft aangetoond dat vriendschappen belangrijk zijn voor het welbevinden van kinderen (Ladd, 1990). Sommige kinderen hebben echter moeite om naar tevredenheid relaties met hun leeftijdgenoten te ontwikkelen en te onderhouden. Van agressieve kinderen, bijvoorbeeld, is bekend dat ze problemen kunnen ondervinden in hun relaties met leeftijdgenoten (bv. Dodge, Coie, Pettit, & Price, 1990). Het meeste onderzoek naar de relaties van agressieve kinderen met leeftijdgenoten gaat over de status van agressieve kinderen binnen een groep kinderen (groepsinteractie), en niet zozeer over hun vriendschappen (dyadische interactie). Groepsinteractie en dyadische interacties zijn unieke sociale ervaringen, en daarom is het belangrijk om ze van elkaar te onderscheiden in onderzoek (Erdley et al., 2001). Vriendschappen zijn intiemer, en hebben daardoor mogelijk een grotere invloed op de ontwikkeling van kinderen. Het eerste hoofddoel van deze dissertatie was dan ook om de dyadische vriendschappen van agressieve kinderen te onderzoeken. Meer specifiek keken we naar de prevalentie van hun vriendschappen, vroegen we ons af of agressieve kinderen en hun vrienden op elkaar lijken qua gedrag, en onderzochten we de kwaliteit van de vriendschappen van agressieve kinderen (zie hoofdstuk 2 en 3).

Het tweede hoofddoel van deze dissertatie (onderzocht in hoofdstuk 4 en 5) was te kijken naar de ontwikkeling van kinderen die bevriend zijn met agressieve kinderen. Uit onderzoek bij adolescenten weten we dat het hebben van vrienden die probleemgedrag vertonen een negatieve invloed kan hebben op de ontwikkeling van kinderen (Patterson, Reid, & Dishion, 1992). Deze onderzoeken richtten zich echter voornamelijk op adolescenten uit gezinnen met een lage sociaaleconomische status. Ook vertoonden deze adolescenten zwaardere vormen van antisociaal gedrag of lieten zij risicogedrag zien dat kenmerkend is voor de adolescentie (bijvoorbeeld roken of drinken). Naar de invloed van vrienden op de lagere school is veel minder onderzoek gedaan. Dit is niettemin van belang omdat kinderen op die leeftijd andere vormen van deviant gedrag vertonen (bijvoorbeeld fysieke agressie of relationele agressie), die een voorloper kunnen zijn voor zwaardere vormen van antisociaal gedrag in de adolescentie.

In alle empirische hoofdstukken in deze dissertatie wordt het theoretisch raamwerk van Hartup (1996) gebruikt. Hartup stelde dat er drie belangrijke vriendschapsdimensies onderzocht moeten worden om te weten hoe vriendschappen bijdragen aan de ontwikkeling of het welzijn van kinderen. Allereerst is het belangrijk om te bekijken of kinderen wel of geen vrienden hebben. Op de tweede plaats is het belangrijk om te kijken met wie kinderen bevriend zijn, en ten derde is de kwaliteit van de vriendschappen belangrijk.

Het doel van het onderzoek in hoofdstuk 2 was het beschrijven van de vriendschappen van agressieve en teruggetrokken kinderen in groep 7 van de basisschool. Hun

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vriendschappen werden vergeleken met die van controle kinderen (kinderen die geen agressief en geen teruggetrokken gedrag vertonen). We onderzochten alle drie de vriendschapsdimensies die door Hartup beschreven zijn. Dat wil zeggen, we keken of agressieve en teruggetrokken kinderen vrienden hadden, wie hun vrienden waren, en van welke kwaliteit hun vriendschappen waren in vergelijking met die van de controle kinderen.

De resultaten lieten zien dat agressieve kinderen evenveel beste, goede en tamelijk goede vrienden hadden als controle kinderen. We concludeerden dan ook dat agressieve kinderen in staat zijn vriendschappen te vormen met hun klasgenoten. Verder vonden we dat, hoewel de vrienden van agressieve kinderen gemiddeld agressiever waren dan de vrienden van andere kinderen, de helft van de vrienden van agressieve kinderen niet als agressief gekenmerkt kon worden. Tot slot bekeken we de kwaliteit van de vriendschappen van agressieve kinderen. Zowel vanuit het perspectief van het kind, als van de vriend, als ook vanuit het dyadisch perspectief vonden we dat agressieve kinderen niet verschilden van controle kinderen wat betreft hun vriendschapsbehoeften en de kwaliteit van hun vriendschappen. Bovendien waren agressieve kinderen en hun vrienden even tevreden met hun vriendschappen als andere kinderen en hun vrienden.

Samenvattend lieten we in deze studie zien dat agressieve kinderen in staat zijn om wederkerige vriendschappen te vormen, dat ze niet alleen andere agressieve kinderen als vrienden hebben, en dat hun vriendschappen niet van mindere kwaliteit zijn dan die van andere kinderen.

In het onderzoek in Hoofdstuk 3 lag de nadruk op de derde vriendschapsdimensie van Hartup (1996). In deze studie maakten we een onderscheid tussen pure agressieve kinderen en agressieve kinderen die tegelijkertijd ook pro sociaal gedrag laten zien (Machiavellisten). De vriendschappen van deze kinderen werden vergeleken met die van pro sociale en controle kinderen. We keken onder andere naar de vriendschapsbehoeften (wat verlangen kinderen in hun vriendschappen), vriendschapsprovisies (wat leveren de vriendschappen kinderen daadwerkelijk op), naar vriendschapskwaliteit, en naar de mate van tevredenheid met de vriendschappen. Bovendien keken we naar de adaptatie (sociale preferentie, schools presteren, eenzaamheid en agressie) van deze vier groepen kinderen over een periode van 4 jaar.

Wat betreft hun sociale relaties, vonden we dat Machiavellisten hoger scoorden op sociale prominentie (sociale impact) in de klas dan pro sociale, puur agressieve en controle kinderen. Verder hadden Machiavellisten vriendschappen van hogere kwaliteit dan die van puur agressieve, en zelfs controle kinderen, en waren zij meer tevreden met hun vriendschappen. Hun vriendschappen evenaarden de vriendschappen van pro sociale kinderen, maar pro sociale kinderen werden wel aardiger gevonden door hun leeftijdgenoten dan Machiavellisten. In onze longitudinale analyses over de adaptatie van de vier groepen kinderen zagen we dat Machiavellisten in groep 3 even hoog scoorden als controle kinderen

op schools presteren en eenzaamheid. Puur agressieve kinderen, daarentegen, gaven aan eenzamer te zijn dan controle kinderen. Bovendien werden Machiavellisten in groep 3 aardiger gevonden door hun klasgenoten dan de agressieve en controle kinderen. Puur agressieve kinderen en Machiavellisten lieten aan het begin van de basisschool echter evenveel agressief gedrag zien (meer dan controle kinderen en pro sociale kinderen). Dus alleen op het gebied van agressiviteit lieten Machiavellisten geen gunstigere ontwikkeling zien dan agressieve kinderen. Wanneer we keken naar het verloop van de vier groepen over 4 jaar zagen we dat Machiavellisten dezelfde ontwikkeling lieten zien als agressieve en pro sociale kinderen wat betreft schools presteren, eenzaamheid en agressie. Wat betreft sociale preferentie werden agressieve kinderen in de loop der tijd aardiger gevonden door hun klasgenoten, terwijl Machiavellisten stabiel bleven in de mate waarin ze aardig gevonden werden door hun klasgenoten. Pro sociale kinderen werden minder aardig geworden door hun klasgenoten in de loop van de basisschool.

Kortom, in deze studie lieten we zien dat er een subgroep van agressieve kinderen bestaat (agressieve kinderen die agressief gedrag en pro sociaal gedrag combineren) die betere sociale relaties hebben, en een betere ontwikkeling over tijd laten zien dan pure agressieve kinderen.

De tweede centrale vraag van deze dissertatie (wat zijn de effecten van het hebben van agressieve vrienden) bestudeerden we in de studies in Hoofdstuk 4 en 5. In Hoofdstuk 4 bekeken we of het hebben van agressieve of teruggetrokken vrienden gerelateerd is aan internaliserend en externaliserend gedrag van kinderen. De nadruk lag dus op de tweede dimensie van Hartup (1996), namelijk dat het belangrijk is te weten met wie kinderen bevriend zijn. We onderzochten of kindkenmerken (agressie, passief teruggetrokken gedrag, of actieve isolatie door de groep), vriendkenmerken (agressie, passief teruggetrokken gedrag, of actieve isolatie door de groep), of interacties tussen kind- en vriendkenmerken bijdroegen aan de voorspelling van internaliserend en externaliserend gedrag van kinderen.

Uit de resultaten bleek dat kindkenmerken gerelateerd waren aan zowel internaliserend als externaliserend probleemgedrag. Zoals verwacht was agressief gedrag van het kind gerelateerd aan leerkrachtbeoordelingen van externaliserend probleemgedrag, en hadden kinderen die meer passief teruggetrokken gedrag vertoonden (dus niet de kinderen die actief door de groep werden buitengesloten) volgens hun leerkrachten ook meer internaliserend probleemgedrag. Vriendkenmerken waren alleen gerelateerd aan externaliserend probleemgedrag, en dus niet aan internaliserend probleemgedrag. Het hebben van een vriend die wordt buitengesloten door zijn klasgenoten was gerelateerd aan externaliserend probleemgedrag van een kind nadat gecontroleerd was voor de kenmerken van het kind zelf. We vonden bovendien twee interactie-effecten. De positieve relatie tussen actief door de groep worden buitengesloten en externaliserend probleemgedrag werd verminderd door het hebben van een vriend die passief teruggetrokken gedrag vertoont. De positieve relatie

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tussen agressiviteit van een kind en zijn externaliserend probleemgedrag werd versterkt door het hebben van een vriend die wordt buitengesloten door zijn leeftijdgenoten. Het hebben van een vriend die passief teruggetrokken gedrag vertoont kan dus werken als een protectieve factor voor kinderen die worden buitengesloten door de groep. Voor agressieve kinderen kan het hebben van een vriend die wordt buitengesloten door de groep juist een risicofactor zijn.

De conclusie van deze studie luidde dat kenmerken van het kind zelf, en in mindere mate kenmerken van hun vrienden, gerelateerd zijn aan internaliserend en externaliserend probleemgedrag van kinderen. Opvallend was dat het hebben van agressieve vrienden geen rol leek te spelen in het voorspellen van internaliserend en externaliserend probleemgedrag, als we controleerden voor de mate van agressiviteit van het kind zelf.

Tot slot hebben we in Hoofdstuk 5 de longitudinale associaties tussen academische en sociale competentie, agressie en eenzaamheid onderzocht. Verder keken we of deze longitudinale relaties verschilden voor kinderen zonder vrienden, kinderen met agressieve vrienden en kinderen met niet-agressieve vrienden (we richtten ons dus op de tweede vriendschapsdimensie van Hartup).

We zagen in deze studie dat competentie gerelateerd was aan later probleemgedrag. Hogere academische competentie was gerelateerd aan lagere latere niveaus van eenzaamheid. Hogere sociale competentie (sociale preferentie) was gerelateerd aan zowel een lager niveau van eenzaamheid, als een lager niveau van agressie over tijd. Probleemgedrag, daarentegen, was niet geassocieerd met latere niveaus van competentie, met uitzondering van agressie, dat gerelateerd was aan latere sociale incompetentie. Verder vonden we verschillen in niveaus van competentie en probleemgedrag tussen de drie vriendschapsgroepen (kinderen zonder vrienden, kinderen met agressieve vrienden en kinderen met niet-agressieve vrienden). Kinderen zonder vrienden in groep 3 werden minder aardig gevonden door hun leeftijdgenoten en waren eenzamer over tijd dan kinderen met (agressieve of niet-agressieve) vrienden. Bovendien waren kinderen zonder vrienden en kinderen met agressieve vrienden agressiever over tijd dan kinderen met niet-agressieve vrienden. We vonden geen verschillen tussen de drie vriendschapsgroepen wat betreft academische competentie. Alhoewel we dus verschillen tussen de drie groepen vonden in *niveaus* van competentie en probleemgedrag, vonden we echter geen van de verwachte moderatie-effecten van vriendschap op de longitudinale *relaties* tussen competentie en probleemgedrag. Het hebben van agressieve vrienden was dus geen risicofactor voor de ontwikkeling van kinderen over tijd (evenmin als het hebben van geen vrienden), en het hebben van niet-agressieve vrienden was ook geen protectieve factor.

Samenvattend lieten de studies in deze dissertatie zien dat agressieve kinderen op de basisschool geen problemen ondervinden in hun vriendschappen. We concludeerden dat deze kinderen in staat zijn wederzijdse vriendschappen van goede kwaliteit te onderhouden.

We zagen zelfs een subgroep van agressieve kinderen (Machiavellisten) waarvan de vriendschappen dezelfde kenmerken hadden als die van prosociale kinderen. Daarentegen zagen we dat kinderen zonder vrienden aan het begin van de lagere school het minder goed deden over tijd. Deze bevinding onderstreept het belang van vriendschappen voor het welzijn van kinderen. Verder zagen we zowel cross-sectioneel als longitudinaal dat het hebben van agressieve vrienden op de basisschool de ontwikkeling van kinderen niet belemmert en dat het hebben van niet-agressieve vrienden geen positieve invloed had op de ontwikkeling van kinderen.

Dankwoord (Acknowledgements)

Een aantal mensen wil ik graag bedanken voor de bijdrage die ze hebben geleverd aan de totstandkoming van dit proefschrift.

Allereerst natuurlijk mijn copromotor en promotoren. Zet een creatieve, enthousiaste geest bij een pragmatische, temperamentvolle rots in de branding, en combineer dat met mannelijke nuchterheid, overzicht en humor, en je hebt een ideaal begeleidingsteam bij elkaar. Marjolijn, Maja en Marcel, fijn dat ik vier jaar bij jullie in de leer mocht. Bedankt voor jullie betrokkenheid, deskundigheid en vertrouwen.

Verder wil ik de deelnemers aan het Utrecht Social Development Project graag bedanken voor hun medewerking. Speciaal woord van dank gaat ook uit naar de onderzoekers die hebben meegewerkt aan het USDP-project in de periode voor mijn promotietraject: prof. dr. E.J.C.G. van den Oord, prof. dr. J. Rispens, prof. dr. P.P. Goudena, dr. M.H. van Aggelen-Gerrits, dr. R. Van Rossem en dr. M.M. Vermande. Ronan, jou wil ik in het bijzonder bedanken voor de zorgvuldige overdracht van de data, en voor je tijd en geduld bij het bewerken van de data in UNAP.

Eveneens wil ik graag alle collega's van Pedagogiek, en in het bijzonder de collega's van mijn eigen onderzoeksgroep bedanken voor de prettige werksfeer, gezelligheid, en belangstelling.

Muriel, ik heb je humor de afgelopen jaren méér dan enigszins gewaardeerd, evenals je gezelligheid, je luisterend oor, je goede adviezen en relativerende woorden. Ik had geen betere kamergenoot kunnen treffen. Annemiek, wat leuk dat we van goede collega's goede vrienden zijn geworden. Blij dat jullie mijn paranimfen willen zijn! Goed voorbeeld doet goed volgen, hoop ik!

Ellen, bedankt voor al je adviezen, gezelligheid en betrokkenheid de afgelopen jaren. Amaranta en Theo, jullie wil ik bedanken voor het fungeren als mijn persoonlijke Mplus-helppdesk, en niet te vergeten voor gezellige tijden in de Basket. Amaranta, ook bedankt voor je hulp bij de vormgeving van mijn proefschrift, en voor de gezelligheid tijdens onze reis naar Würzburg. Joyce, wat leuk dat we elkaar niet uit het oog verloren zijn nu je Utrecht verruild hebt voor het mooie zuiden!

Irene, na ongeveer vier jaar je kamergenoot te zijn geweest, met veel interessante gesprekken ter herinnering, wil ik jou ook heel veel succes wensen met de laatste loodjes! Sabine, een betere "vierde man" op de kamer hadden we ons niet kunnen wensen! Had je gezelligheid, daadkracht en humor niet willen missen.

Bill, you gave me the opportunity to visit your lab in 2007. Thank you very much for your hospitality and time during my stay in Montréal. John, Lina & Lina, Ana, Felicia, Holly, and Darya, thank you for making me feel at home at Concordia University. Paula, bedankt voor

Dankwoord/Acknowledgements

de Limburgse gastvrijheid en gezelligheid tijdens mijn tijd in Québec en Montréal. Nadine, thanks for being a friend and for being the best tour-guide around Québec that I could wish for.

De onderzoekers van het Nederlands Netwerk Vriendschapsonderzoek wil ik bedanken voor onze interessante bijeenkomsten de afgelopen jaren. Speciaal wil ik Ellen Peters bedanken voor de prettige samenwerking in de voorbereidingen van deze bijeenkomsten.

Graag wil ik hier ook de leden van de beoordelingscommissie bedanken voor hun bereidheid dit proefschrift te beoordelen en aanwezig te zijn bij de verdediging ervan: prof. dr. W.M. Bukowski, prof. dr. A.H.N. Cillessen, prof. dr. B. Orobio de Castro, dr. D.R. Veenstra en prof. dr. W.A.M. Vollebergh.

Jo, Mia, Karin en Anique, bedankt voor jullie interesse en support. Jullie geven me het gevoel dat alles wat ik doe geweldig is, en dat is heel fijn. Marinke, Sanne, Gülsüm, Saskia, Inge, Danielle, Tonneke, Juliette, Michiel en Arna, bedankt voor jullie interesse in mijn werk de afgelopen jaren, en voor het vormen van het levende bewijs dat vrienden heel belangrijk zijn. Monique, bedankt voor de online en offline support. Op naar ons zilveren jubileum! Eva, jij hebt echt alle ins en outs meegekregen de afgelopen jaren. Een betere vriendin kan ik me niet wensen! Tot slot, lieve Joost, wat ben ik blij dat we elkaar ontmoet hebben. Bedankt voor je steun, geduld, en vertrouwen.

Hanneke

Utrecht, april 2009

Curriculum Vitae

Hanneke Palmen was born in Heerlen on May 8, 1978. After completing secondary school (VWO, St.- Janscollege, Hoensbroek) in 1996, she studied Psychology at Utrecht University where she obtained her MA degree in Developmental Psychology in 2002. She worked as a junior researcher at the Developmental Psychology Department and the Psychopharmacology Department of Utrecht University in 2002 and 2003. In 2004, Hanneke spent ten months doing a research internship at Université Laval in Québec, Canada, after which she entered a PhD-program at the Research Centre Psychosocial Development in Context of Utrecht University in 2005. From 2005 – 2009 she worked on her PhD-project about the friendships of aggressive children and the effects of having aggressive friends. During this period, she spent three months at Concordia University in Montréal, Canada. In 2008, Hanneke also worked as a lecturer at the Institute of Pedagogical and Educational Sciences of Utrecht University. In July 2009, Hanneke starts working as a post-doctoral researcher at the Netherlands Institute for the Study of Crime and Law Enforcement (NSCR).