Children’s Peer Status and Their Adjustment in Adolescence and Adulthood

Developmental issues in sociometric research

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In memory of my parents
Abstract

The present research intended to examine the relationship between childhood stable peer status and adjustment in midadolescence for both genders, and adjustment in early and middle adulthood for women. One-year stably peer rejected, popular, and average boys and girls were identified by an age 10 and age 11 sociometric classification procedure using positive nominations and rank-ordering. These groups were examined in midadolescence. Findings indicated that stable peer rejection in childhood was associated with negative school adjustment and problems in peer relations in adolescence for both genders, and that many rejected boys were school dropouts. However, rejected children did not associate with deviant peers or show more antisocial behavior than their counterparts. For the adulthood follow-up, cluster analysis using LICUR was applied on rank-ordering data from age 10 and age 13 in order to identify 3-year stably rejected, popular, and average groups of girls. A methodological comparison with a standard sociometric method showed that the applied cluster analysis seems to be a useful additional tool in the arsenal of sociometric classification methods. Furthermore, one seems to arrive at larger stable peer status groups with this method than with other sociometric classification methods. The longitudinal follow-up into adulthood showed that rejected girls were at increased risk for criminal offending and alcohol abuse in young adulthood. Childhood aggressive behavior explained the significant association between peer rejection and criminality. There were no significant differences between the stable peer status clusters in the midadulthood adjustment areas of social relations, health, occupation, and subjective well-being, except that popular girls had achieved more successful vocational careers (which in its turn was explained by their higher academic achievement in childhood). Constraints and implications for future research were discussed.

Keywords: sociometric peer status, classification, stability, cluster analysis, longitudinal, long-term adjustment, childhood, adolescence, adulthood
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Peter Zettergren
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List of studies

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Contextual and historical background

Human development and peer relations

The theme of the present thesis concerns stable peer status in childhood – with a special focus on peer rejection – and its developmental significance for adjustment in adolescence and adulthood. Sociometric classification methods are also discussed and a classification method based on cluster-analysis is introduced. The research presented here is embedded in a wide area of peer relations research and I will begin with a short discussion of this matter.

In different kinds of psychological developmental theories, social factors play an important role in the development of the individual. From infancy through to childhood, adolescence, and adulthood, the individual is engaged within a complex web of relationships with other people. Hartup (1989), among others, differentiated between vertical and horizontal relationships and argued that both kinds of relationship are necessary for the child's development. First, the child must form vertical relationships or attachments, that is, relationships with individuals who have greater knowledge and social power than her/himself. These persons are usually adults (first the family caregivers, primarily the mother in most societies; then other adults, such as preschool teachers) who provide the child with nurturance, protection, security and basic social skills. Later, the child can form horizontal relationships with individuals who have about the same amount of social power as he or she – usually other children (most often of the same age and gender), with whom the child can develop social skills, and cooperate and compete in a reciprocal way (e.g., Aboud & Mendelson, 1996; Fabes, Martin, & Hanish, 2004; Maccoby, 2000).

The contributions and diverse functions of “horizontal” relations with peers in the socialization process of children have received increased attention in developmental research and a widespread consensus now exists among social developmental researchers that children's peers provide unique and essential contributions to social, cognitive, and emotional development (e.g., Asher & Coie, 1990; Berndt & Ladd, 1989; Deater-Deckard, 2001; Hartup, 1983, 2005; Parker, Rubin, Price, & DeRosier, 1995; Rubin, Bukowski, & Parker, 1998). Damon (1983) made a distinction between the individuation and socialization functions of development, and McLellan and Pugh (1999), in referring to Damon’s theory, argued that peers enable the young person to see himself both as distinct from others and as a member of groups, cultures, and, ultimately, the greater society. Accounting for the trends of modern society, Asher (1990) assumed that peers might be even more important today than in earlier times. The number of single-parent families has increased, and in families with two parents,
it is usual for both parents to work. Both these family changes have led to an earlier entry of young children into organized peer group settings such as day-care homes, nursery schools, and day-care centers. Most children also stay in school for more years than was previously the case, and participate in organized peer group activities to a higher degree. Asher concluded that this means children will spend a considerable amount of time with similar-age peers. Two decades ago, Harkness and Super (1985) noted that “current scientific interest in peer relations reverses a long-standing bias in western psychology that overemphasized the role of the parents, especially the mother, as socialization agents” (p.219).

Considering the functions that peer relations fulfill in the life of children, not only in western societies (for a cross-cultural review, see Krappman, 1996), it is a sad fact that many children lack peers and friends at school and in their leisure time. Different studies indicate that about 5-10% of the children in elementary school are not selected as a friend by anyone in their class (Gronlund, 1959; Hymel & Asher, 1977; Kuhlen & Lee, 1943). If the stronger criterion of reciprocal friend selection is used, the percentage is even higher (Bukowski & Hosa, 1989; Hartup & Stevens, 1997; Putallaz & Gottman, 1981). Asher, Parker, and Walker (1996) estimated that at least 10% of school-age children have serious difficulties with peer relations.

Children’s peer relations can be classified into two large sectors, namely, group-based peer interactions and relations, and dyadic peer interactions and relations (e.g., Gifford-Smith & Brownell, 2003). Inside these sectors, different social phenomena have been studied. At the group level, there has been a growing theoretical and empirical interest in children’s peer networks among psychologists. Social network analysis has a sociological origin and a basic premise is that children cannot be understood outside their social contexts. The analysis aims to identify the dynamic processes and structures of children’s peer groups (e.g., Cairns, Xie, & Leung, 1998; Farmer & Rodkin, 1996; Gifford-Smith & Brownell, 2003). However, most research pertaining to the group level has been concentrated on children’s sociometric peer status or social acceptance by other group members (e.g., being popular or rejected). Sociometric peer status has been defined and studied both as continuous dimensions of popularity/likeability and rejection/dislike (e.g., Buhs & Ladd, 2001; Laird, Pettit, Dodge, & Bates, 2005), and as categorical, one- or two-dimensional peer status group classifications (e.g., Coie, Dodge, & Coppotelli, 1982). While peer status is certainly a group-referent construct and processes leading to popularity or rejection are group processes, popularity has also been seen as representing a characteristic of the individual (e.g., Bukowski, 2001; Newcomb, Bukowski, & Pattee, 1993; Rubin et al., 1998; Terry, 2000). Furthermore, sociometric popularity has been contrasted to peer-perceived popularity and dominance social structures (e.g., Parkhurst & Hopmeyer, 1998). At the dyadic level,
research interest has been focused on children’s friendships (e.g., Bukowski, Newcomb, & Hartup, 1996). In later years, other, more negative dyadic relationships have also been studied, such as mutual antipathies or enemies (e.g., Hartup & Abecassis, 2002; Witkow, Bellmore, Nishina, Juvonen, & Graham, 2005). The three major research domains pertaining to children’s social networks, children’s peer status, and children’s friendships/dyadic relations have developed in relative independence from each other, but they are theoretically, conceptually, empirically, and methodologically interrelated (e.g., Gest, Graham-Bermann, & Hartup, 2001; Gifford-Smith & Brownell, 2003; Kindermann, 1998; Schneider, Atkinson, & Tardif, 2001).

In Figure 1, I have schematically summarized what has been discussed in this section about children’s social relations, with focus on peer relations. The research presented here has its place in the peer-status research domain (the gray area in Figure 1). To be more specific, categorical peer status groups of rejected, average, and popular children are studied, where the sociometric measures are restricted to same-sex class peers.

![Figure 1. Hierarchical schema of children’s social relations with focus on peer relations.](image)

The sociometric research tradition

The term sociometry has been connoted with at least two different meanings (Hallinan, 1981). The first and literal meaning of the term refers to a research method for the measurement of social relations. It is a technique for gathering and studying data about interpersonal choices and peer preferences in a group. Sociometric research tools are often used by social scientists to examine individual differences in popularity. A second and more general meaning refers
to the whole process of analyzing data from sociometric questionnaires to drawing conclusions. Sociometry then becomes not only a data collection technique but also a whole body of research pertaining to the study of social relations and resulting from the analysis of data about preference choices. When referring to the sociometric research tradition, it is often this second meaning one has in mind.

The history of sociometry is closely interwoven with the history of peer relations research, and Moreno (1934) stands out as the most influential researcher in the early days of sociometry. He designed and introduced the sociometric methods among researchers studying peer relations during the 1930s. While Moreno's main interest was the group and its structure, other early investigators used sociometry to assess individual differences in social acceptance and competence, and tried to relate characteristics and behaviors of individuals to the positions they occupied in the peer status structure of a group (e.g., Bonney, 1943; Gronlund, 1959; Koch, 1933; Lippitt, 1941; Northway, 1946; Young & Cooper, 1944). The participants were mainly preschool children and school children.

Besides documenting the importance of peers for “normal” development, the research of the last two or three decades has mainly studied problematic peer relations as antecedents of maladjustment. This research has been characterized by increased articulation and differentiation pertaining to conceptualization and methodology, including methods for peer status classification and for prediction (e.g., Bukowski & Adams, 2005).

The two issues of peer status classification and prospective prediction are at focus in the present thesis. I will begin with a theoretical discussion about peer status concentrating on peer rejection and its developmental consequences, after which I will include a methodological part as a background to the specific sociometric assessments of the present project. Adhering to the second meaning of sociometry as a whole research process (Hallinan, 1981), I will then give a research overview of peer status as a predictor or indicator of later adjustment and development as a basis for my own longitudinal research efforts, which will thereafter be accounted for.
Theoretical issues

Theoretical underpinnings pertaining to rejected peer status

Sociometric research has often been descriptive and not guided by a single unifying theoretical perspective. However, some authors have presented theoretical models of the possible mechanisms and processes that govern the social interactions of children, and may underlie successful or unsuccessful peer relationships (e.g., Crick & Dodge, 1994; Parker et al., 1995). In 1990, one of the most productive and distinguished researchers in the sociometric research tradition, John D. Coie, outlined a developmental theory of peer rejection that can be of value as a background to the research presented here. The theoretical contributions of Coie seem especially suitable for describing and explaining the emergence of persistent peer rejection and its consequences.

Coie (1990) argues that in examining peer rejection research, it is possible to trace the outlines of a theory, or at least a model, of the development of disorder related to childhood peer rejection. To begin with, he places the research on peer rejection in the larger scientific area of developmental psychopathology (e.g., Sroufe & Rutter, 1984), which is concerned with understanding the evolution of patterns of adaptation and maladjustment throughout the life span, with the etiology of conditions that are predictive of disorder, and with the development of coping skills that buffer individuals against disorder. In his theory, Coie distinguishes between four phases in the process of being rejected by peers:

...a precursor phase, in which the behavior patterns, attitudes, social expectations, affective response patterns, social goal priorities, and competences that relate to eventual peer status take shape; an emergent status phase, in which the child's interactions with a significant peer group result in the child being rejected by that group; a maintenance phase, during which time rejection by the group becomes a stable and enduring reality for some rejected children; and, finally, a consequence phase, in which other aspects of the individual's life adjustment have deteriorated to the point of identifiable disorders. The phases, as they are described here, represent large time periods. Within these large time periods the developmental processes involved can be described at a finer level of analysis. For example, there are microprocesses reflecting recursive sequences of behavior by the child, reactions by the group, affective and cognitive processes, and even patterns of parental influence that determine a course of social development that sometimes results in persistent peer rejection. (p. 365)
Coie (1990) then discusses several assumptions that the model is based on. One assumption is that a child’s social behavior, including interpretations, affective reactions, and acquired behavioral strategies used in specific social situations, is primarily responsible for rejection by peers. Nonbehavioral factors such as appearance, academic achievement, and athletic ability are important, but only when mediated by specific behavior reactions. Coie presents some research findings that support the notion of a close relation between the child’s negative social behavior in the peer group and social rejection (although the causal chain remains unclear).

The second assumption in Coie’s (1990) model of peer rejection is that the situation-specific cognitive processes, affective reactions, and behavioral patterns emerge out of the child's socialization history. Biologically linked attributes such as temperament, physique, and cognitive abilities also play a role, but the character of a child's reactions to specific social circumstances is largely shaped by the history of that child's interactions with parents, siblings, and other social agents. In taking a developmental perspective on social rejection, this seems to be an essential and necessary assumption.

A third assumption is that in the process of acquiring social status in the peer group, the behavior of the child is primary and group behavior is secondary. In contrast, a stable identity as a rejected person is maintained more by group dynamics than by the behavior of the child.

Coie’s (1990) fourth and final assumption is that sustained peer rejection has indirect causal effects on the long-term adjustment of the rejected child. Although one possibility is that peer rejection may only be a marker of early adjustment problems that simply continue into adolescence and adulthood, another hypothesis is that peer rejection has several consequences (e.g., inadequate social skills and lack of social support) that contribute significantly to the incidence of future disorder. This assumption could be said to lie behind the present, as well as most other, longitudinal approaches in peer-rejection-risk research (e.g., Bukowski & Adams, 2005) and it is also a guideline for different specific hypotheses pertaining to expected disordered outcomes.

As an underlying assumption, Coie (1990) points to the fundamental shift in the socialization influences that take place as the child grows older. Initially, parent and family values, beliefs, and social interaction patterns are the major influences on the social orientation of the young child (e.g., Costanzo & Fraenkel, 1987) and a preparation for later social interactions in the larger world of non-familial adults and children. Gradually, the peers become increasingly more important for the child and social failures with peers are both a reflection and a precursor of individual maladjustment. I have already discussed this
assumption in the background part of this thesis, referring to Hartup’s (1989) distinction between vertical and horizontal relationships.

Finally, Coie (1990), in discussing the precursors to or origins of peer rejection, argues that there could be two kinds of answers to the question of why children come to behave in such ways that they get rejected by peers, involving either proximal or distal causes. Distal causes have to do with the socialization processes by which children acquire the behavioral, cognitive, or affective orientations that they bring to the social situation and that are the proximal causes of peer rejection. Distal causes, such as parental socialization influences and differences in temperament, seem to play a role in the evolution of peer status (see also Parker et al., 1995; Putallaz & Heflin, 1990; Rubin et al., 1998; Rubin, LeMare, & Lollis, 1990). The parent-child relationship could be seen as the affective prototype of all future relationships, as proposed in attachment theory or as a training arena for social behaviors and social skills that the child brings with him to other social relationships (learning theory). Among proximal causes for peer rejection are the internal cognitive and affective processes of the child that underlie maladaptive social behavior. Social-cognitive processes can be seen as determining social behavior, which in turn is a major determinant of peer status (see also Dodge & Feldman, 1990; Parker et al., 1995; Rubin et al., 1998). But it is also clear that social cognitions are not affectively neutral. All cognitions are affectively loaded and the evaluation of alternative strategies is a process that heavily involves the affective dimension, because these decisions reflect the individual values and goals of the child. An important task for the child is to learn to control strong negative emotions so that social interactions can be carried out in a constructive way. Those who fail to acquire control mechanisms may be at risk for future peer rejection.

Although Coie (1990) acknowledges the importance of the peer group and the interaction effects for peer rejection, his main focus is on the behaviors and internal processes of the rejected child. From a more explicit interactional perspective, Cillessen, Bukowski, and Haselager (2000) have identified four explanations for the process of acquiring stable peer status, including both individual and peer group factors. First, stable child characteristics, such as aggression or prosocial behavior, might result in stable peer status. Secondly, a child’s positive or negative interactions with peers may determine the continuation of his/her earlier acquired peer status. A third explanation pertains to peers’ social perceptions, attributions and expectations of a child’s characteristics and behavior based on previous impressions of that child, which might prevent changes in peer status. Finally, a child’s social self-perceptions and interpretations of peers’ behavior may contribute to the maintenance of his/her peer status. Cillessen and colleagues conclude that stable peer status seems to result from a complex interplay of individual and group factors. Other authors have also emphasized the importance of the reciprocal nature of
children’s social exchanges with their peers, including cognitive and behavioral components, for peer adjustment (e.g., Parker et al., 1995).

Connection to the present research

Of primary interest for this thesis are the third and fourth phases in Coie's (1990) process theory of peer rejection, namely the maintenance phase and the consequence phase. As we have seen, the maintenance phase is a period of considerable length during which the rejection of the child becomes stabilized and enduring. The consequence phase includes the short-term and long-term problems and adversities associated with being rejected by peers. In the research presented in this thesis, stably rejected children (together with stably popular and average children) are studied (the maintenance phase) with the aim of examining the future consequences of being rejected (the consequence phase).
Methodological issues

Sociometric classification methods and peer status groups

Introduction. This section focuses on sociometry as referring to a research method for the measurement of social relations (Hallinan, 1981). Methodological issues will be discussed with special focus on the stability problem of peer status groups and on both traditional and new classification methods, one of which has been used in this thesis (cluster analysis).

The definition of sociometric target groups is partly a method problem; a question of selecting a suitable sociometric method. Furthermore, included in the method, a decision has to be made as to which classification scheme and which numerical criteria should be used for classifying children into sociometric groups (e.g., Newcomb & Bukowski, 1984; Terry, 2000; Terry & Coie, 1991). The instrument could be a sociometric questionnaire with general questions about peer relationship or friendship preferences, such as "Who do you like most?" or "Who are your best friends?" or more specific, situation-dependent questions, such as “Who do you want to sit next to in the classroom?” This distinction goes back to Moreno (1947), who advocated the use of concrete, task-specific or indirect preference sociometric criteria, such as “play with” or “sit next to” rather than abstract, direct preference or more multidimensional criteria, such as “liking” or “friendship” questions (for up-to-date criteria discussions, see Hymel, Vaillancourt, McDougall, & Renshaw, 2002; Jiang & Cillessen, 2005; Terry, 2000). Often the choice is limited to certain peers and a specific number of these peers; for example, three classmates one likes to play with. Other instruments include a judgment of all peers in a group; for example, peer ratings (e.g., rating of all peers on a scale from 1 to 5 depending on how much one wants to play or work with that person) and peer ranking (e.g., rank ordering of all peers in a school class according to how much one wants them to join in a class journey). The sociometric use of these instruments, which could be defined as a process of assessing children’s feelings towards other group members (“affective sociometry” in the words of Babad, 2001), should be distinguished from another application, namely, peer assessment. In peer assessment, the instruments are used to judge characteristics of other group members, such as traits, behaviors, and achievements (Kane & Lawler, 1978). Another application is to assess who are perceived as the most popular or unpopular by the group. It deserves to be mentioned that peer-perceived popularity has been a rather widely used concept in peer relations research and has been studied both in its own right and compared with social network position and sociometric peer status (e.g., Farmer, Estell, Bishop, O’Neal, & Cairns, 2003; Kosir & Pecjak, 2005; Parkhurst & Hopmeyer, 1998).
Over the years a vast amount of literature has shown that sociometric methods give relatively reliable, stable, and valid information about children's peer preferences (for a recent meta-analysis, see Jiang & Cillessen, 2005) and that sociometric choices are consistently related to children's actual interactions with peers (e.g., Bukowski & Hoza, 1989; Frederickson & Furnham, 1998; Rubin et al., 1998; Wu, Hart, Draper, & Olsen, 2001). For example, children give positive sociometric nominations to peers they consider to be prosocial and with whom they have frequent positive interaction (Gottman, Gonso, & Rasmussen, 1975; Masters & Furman, 1981; Warden & Mckinnon, 2003), and give considerable visual attention to (Adams & Roopnarine, 1994; Vaughn & Waters, 1981).

Especially since the early 1980s, there has been a lively discussion about operational definitions of peer popularity and unpopularity. An essential drawback of many sociometric risk studies in the past was their confounding of two conceptually different types of unpopular children: rejected children, who have no or few peers and who are openly disliked; and neglected children, who also have no or few peers but who are not unduly disliked (Parker & Asher, 1987). This heterogeneity may yield weaker findings than approaches that separate children into more homogeneous groups (Coie, Dodge, & Kupersmidt, 1990). A large body of research has demonstrated that rejected children, but not neglected children, are at risk in their social and psychological adjustment (e.g., Cantrell & Prinz, 1985; Coie et al., 1990; Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Ollendick, Weist, Borden, & Greene, 1992; Roff, Sells, & Golden, 1972). It also appears that there is more agreement among peers about the rejected status than about the neglected status. Crick and Ladd (1989) found that all sociometric classifications became less accurate when the relative number of nominators decreased (all classmates, random samples of 90, 80, 70, 60, and 50%), and particularly so for the average and neglected groups. The rejected group was most resistant to classification errors due to fewer nominators. At the positive end there has often been confusion between genuinely popular children and controversial children who are also popular but at the same time disliked by some peers. Most of the studies referred to above have shown that being popular among peers is related to good social and psychological adjustment.

**Positive and negative nominations.** By, for example, adding a measure of negative peer nominations to the measure of positive nominations, one could differentiate the actively disliked or rejected children, who get no positive nominations and many negative nominations, from the neglected children, who get almost no nominations at all, neither positive nor negative. There also seems to be, however, difference between neglected and rejected children in the positive nominations measure. Unlike rejected children, neglected children tend to be positively nominated by at least one peer (Coie & Dodge, 1983).
Furthermore, one can distinguish between the popular group with high “liking” scores and low “disliking” scores, and the controversial group, which is high in both dimensions. Roff et al. (1972) have suggested that the controversial children behave in ways different to the popular children. Bukowski and Newcomb (1985) found that the controversial group "evidenced higher variability scores on the liking ratings and on the withdrawal and prosociability clusters" (p. 1032), which is consistent with their classification.

Finally, there is the large group of children of average popularity in the middle span of both the positive and the negative nomination dimension. Interestingly, there is evidence that neglected and controversial peer status groups, identified by different sociometric classification methods, do not consistently differ from the average group in their behavioral profiles (e.g., Frederickson & Furnham, 1998).

The validity of the distinction between rejected and neglected children, as well as between popular and controversial children, is supported by the evidence that the positive and negative sociometric nomination measures assess relatively independent dimensions of social status; only low to moderate negative correlations are typically found between the two measures (e.g., Gottman, 1977; Wu et al., 2001).

Several multidimensional schemes for classifying children according to their peer status have been developed (e.g., Asher, 1990; Asher & Dodge, 1986; Cantrell & Prinz, 1985; Coie et al., 1982; Newcomb & Bukowski, 1983; Peery, 1979; and early precursors such as Dunnington, 1957; Lemann & Solomon, 1952; Thompson & Powell, 1951). By far the most common two-dimensional classification procedure based on positive and negative nominations is the standard score method developed by Coie et al. (1982). In that method, the standardized positive and negative nomination totals are combined to produce an index of social preference or relative peer likeability (“like most” scores minus “like least” scores) and an index of social impact or relative social salience/visibility (“like most” scores plus “like least” scores). These indices are then used to determine peer status with a classification system based on normal distribution theory.

Newcomb and Bukowski (1983) criticized the standard score method for not considering differences in the raw-score distribution between nominating peer groups. Building on the work of Bronfenbrenner (1945), Newcomb and Bukowski instead determined social status directly from the positive and negative nomination totals for each child by a classification based on rare numbers of liked and disliked nominations according to binomial probability theory. Other ways of combining the positive and negative nominations in the classification procedure were developed by Cantrell and Prinz (1985), Cox
(1974), and French and Waas (1985), to select a few. It is not surprising that some discrepancies and incomplete overlap in the peer-status-group compositions are found as a result of the classification procedure used (e.g., Newcomb & Bukowski; Terry & Coie, 1991).

**Ethical considerations.** The use of negative nominations has, however, elicited concerns and objections from parents, school officials, practitioners, and some researchers, and the instrument has occasionally been prohibited by the school authorities (Putallaz & Wasserman, 1989). They view it as objectionable to sanction negative nominations and thus, implicitly, negative statements about others that may increase negative interactions and negative views about rejected children among peers and lead to increased unhappiness and loneliness (e.g., Asher & Dodge, 1986; Rubin et al., 1998).

The few studies that have addressed this issue have not found evidence of adverse effects on peer relations after the administration of the negative sociometric measures. This was equally true for preschool children (Hayvren & Hymel, 1984), as it was for elementary school children (Bell-Dolan, Foster, & Christopher, 1992; Bell-Dolan, Foster, & Sikora, 1989; Iverson, Barton, & Iverson, 1997). Thus, the potential ethical risks appear to be less serious than originally thought. A word of warning is in place because of the limited number of studies and "therefore, the findings of no obvious harm to children cannot be considered definitive" (Iverson et al., 1997, p. 111). Furthermore, all studies had limitations that raise questions about their generality; a fact of which the authors of the studies were well aware and discussed. Besides, as Bell-Dolan et al. (1989) noticed, some participants may object to the use of negative nominations on moral grounds, quite apart from their possible aversive effects on children's behaviors or feelings. Thus, there seem to be good reasons to proceed cautiously when considering inclusion of negative nomination measures, as well as good reasons for a "less controversial procedure" (Asher & Dodge, 1986, p. 448).

**Rank orderings and peer ratings.** A number of alternative classification methods are available to distinguish between different sociometric peer groups. The peer-rating method with a positive-to-negative scale has been a widely employed choice, either alone or in combination with another measure; in most cases positive nominations. Asher and Dodge (1986) have found that rejected as well as popular children could be identified with reasonable accuracy by a specific transformation of rating-scale scores into negative nominations scores, which was then combined with positive nominations scores and analyzed according to the classification algorithm proposed by Coie et al. (1982).

An alternative sociometric method with some advantages is the rank-order measure, where the individual is asked to rank all members in the sociometric
population according to some preference criterion. This method has its place in sociometric research, although it is not used as frequently as the nomination measures or the rating scale. Early writers such as Davitz (1955), Horowitz (1962), and Koch (1933) made use of the rank-ordering scale to differentiate between low and high sociometric status. Later, Bell-Dolan, Foster, and Tishelman (1989) developed and used a repeated positive nominations measure that led to a popularity rank-ordering of pairs of classmates.

The ranking measure gives more information about individual differences than other methods, because it takes account of all individuals and gives them equal consideration in the ranking procedure. However, despite its advantages, peer ranking is seldom used. The method is time consuming and the procedure might lead to inconsistent placing of participants in the middle of the distribution. The raters may know those who they like the most and those who they like the least but be more unsure about the ordering of peers about whom they feel more indifferent or are unfamiliar with (Hymel et al., 2002; Terry, 2000). Thus, in using the rank-order method it is important to choose a rather small group, such as a school class or all same-gender peers in a school class, where all members know each other relatively well.

*Traditional sociometric classification methods – conclusions.* Terry and Coie (1991) have compared several of the most commonly used procedures for classifying children into peer status groups. The comparison included classification systems using both negative and positive nominations (Coie et al., 1982; Newcomb & Bukowski, 1983), the rating scale and positive nominations (Asher & Dodge, 1986), and solely the rating scale (French, 1988, 1990; Ladd, 1983). The study led to no definitive conclusions, but the results indicated that some costs in terms of group homogeneity and behavioral distinctiveness are incurred by using a one-dimensional peer-ratings-based system rather than any of the two-dimensional systems. The different classification systems gave some differences in sizes and membership in similar status groups. From their method comparison, Terry and Coie draw the conclusion that the group selection method should be dependent on the research purposes it is to serve. For instance, in prediction studies, with stable peer status groups as predictors, it might be necessary to select a method that identifies rather large extreme groups.

What seems clear from the above review is the variety of sociometric methods and classification procedures used in selecting children to different peer status groups and the relative arbitrary nature of cut-off scores for status inclusion, which ultimately result in a certain variability, both in group sizes and group belongings. It seems that cut-off scores for group selections reflect statistical criteria rather than correspond to an underlying psychological meaning or functional or conceptual demarcations (e.g., Cillessen & Bukowski, 2000a). As
Asher and Dodge (1986) pointed out, status classification systems are just heuristic devices for studying social adaptation, and the peer groups defined by sociometric criteria are not discrete entities in the way that, for example, psychiatric diagnoses are.

**Temporal stability among peer status groups.** Ollendick et al. (1992) emphasized that psychometrically sound measures of the construct of sociometric status and its stability over time are prerequisites for the use of peer status as a predictive tool. For example, congruent with the theory by Coie (1990), one might expect that stably rejected children will be of greater short-term and long-term risk of adjustment problems than temporarily rejected children (e.g., Kupersmidt, Coie, & Dodge, 1990). A growing body of confirmatory evidence for this expectation comes from studies of kindergarten and elementary school children (e.g., Cillessen et al., 2000; DeRosier, Kupersmidt, & Patterson, 1994; Ladd & Troop-Gordon, 2003; Parke et al., 1997; Vitaro, Tremblay, Gagnon, & Boivin, 1992).

Many researchers have found that the popular, average, and rejected peer status categories display a moderate stability that decreases with the total length of the time span and the number of sociometric data collections (e.g., Bukowski & Newcomb, 1984; Cillessen et al., 2000; Feinberg, 1964; Ollendick, Greene, Francis, & Baum, 1991). In one study, stability in peer status decreased from about 75% to 35% for initially rejected school children when the time interval increased from 1 month to 2 years (about the same figures were obtained for popular children) (Newcomb & Bukowski, 1984). In another study examining preschool boys, half the participants designated as rejected at the beginning of the preschool year maintained this status at the end of the same preschool year (Olson & Brodfeld, 1991). In a 5-year longitudinal study covering a period from late childhood to midadolescence, Coie and Dodge (1983) found that the rejected status group was more stable than any other extreme group (with the popular group coming next in stability). The stability of the rejected group varied from 45% after 1 year to 30% after 4 years. Terry and Coie (1991) obtained about the same stability percentages in their 2-year follow-up study. Finally, Vitaro et al. (1992) found that about 20% of rejected children were stably rejected each year over a 3-year period from kindergarten to grade 2.

While the above studies mainly reported a moderate stability for both the popular and rejected peer status categories, the controversial and neglected categories are more volatile over time (Asher & Dodge, 1986; Cillessen et al., 2000; Frederickson & Furnham, 2001; Newcomb & Bukowski, 1984; Ollendick et al., 1991; Terry & Coie, 1991). Furthermore, relatively few children are categorized into these latter groups (Brendgen, Little, & Krappmann, 2000; Frederickson & Furnham, 2001) and they have not been consistently associated
with concurrent and future maladaptive adjustment (Frederickson & Furnham, 1998; Newcomb et al., 1993; Ollendick, et al., 1991). Neglected children tend to shift in their social status across time to average or sometimes even popular peer status, but seldom in a more negative direction (Coie and Dodge, 1983). Thus, the usefulness and representativeness of the neglected and controversial categories have been questioned (Frederickson & Furnham, 1998, 2001; Hymel et al., 2002, Newcomb & Bukowski, 1984; Rubin et al., 1990). For example, Newcomb and colleagues (1993) speculated that neglected children may simply be selecting a lower level of involvement in the peer group, and, thus, be more invisible and not so well known by their peers (low social impact). From their meta-analysis, these authors further suggested that the aggressive behavior of controversial children appears to be in part balanced and compensated by their prosocial and cognitive skills.

A few researchers have tried to explore mechanisms and circumstances – such as social characteristics, self-perceived peer status, locus of control, peer group norms, and parental monitoring – that enable some rejected children to improve their social position among peers (e.g., Sandstrom & Coie, 1999). Newcomb and Bukowski (1984) draw attention to the effects of regression toward the mean (Nesselroade, Stigler, & Baltes, 1980) as one possible explanation for the lack of sociometric stability among extreme peer status groups from one data collection to the next. In any case, the imperfect temporal stability of sociometric assignments warns us away from using information from only one occasion when assigning children to sociometric groups. Selecting criteria from two occasions with a proper time interval between may assure us that stable sociometric groups will be obtained.

**New directions – cluster analysis.** Commenting on the moderate stability figures pertaining to peer status, Bukowski and Hoza (1989) suggested that “to some extent, ‘at risk’ sociometric status may be either a rather temporary phenomenon, or it may not be adequately measured by current sociometric methods” (p. 29). Partly for this reason, sociometric methods have been reconsidered and new classification methods have been discussed and introduced into sociometric research (for an introduction, see the editors’ notes and the articles in Cillessen and Bukowski, 2000b). Among the newly introduced tools in sociometry are the cluster-analytic methods.

In an effort to circumvent the disadvantages of using traditional sociometric categorization methods on repeated measurement data, Brendgen, Vitaro, Bukowski, Doyle, and Markiewicz (2001) applied a semiparametric clustering technique for continuous longitudinal data, TRAJ (Nagin, 1999). In this way, they were able to follow the longitudinal course of children’s social standing among peers over a period of six years, with repeated measurements, and
identify longitudinal profiles and three stable groups with different social preference trajectories. The authors classified their longitudinally stable groups as the popular group, the average group, and the unpopular group. They were able to show that there was a relatively good overlap between their social preference profile groups and the corresponding sociometric categories of popular, average, and rejected children according to the standard score method (Coie et al., 1982). Furthermore, their groups differed over the years in externalizing problem behaviors, so that unpopular children showed the highest rates of these behaviors and popular children the lowest. The findings of Brendgen and colleagues are promising, as they found three groups of stable social standing over time that adhered to earlier sociometric research about peer status groups and their associations to behavioral problems. One disadvantage that the authors mention is that the TRAJ procedure assigned everyone in the sample to one of the identified trajectory groups, which means that the groups have a rather high within-group heterogeneity.

In another study, Haselager, Van Lieshout, Riksen-Walraven, Cillessen, and Hartup (2002) used hierarchical clustering according to Ward (1963) to successfully identify four subgroups of initially rejected boys with different developmental pathways of prosocial behavior and aggression at three measurements waves over 5 years. The stable and changing behavioral trajectories of the different subgroups were associated with different patterns of sociometric acceptance and rejection over time. The results also showed that the majority of initially rejected boys were no longer rejected at the end of the examined time period. Likewise, Frederickson and Furnham (2004) and Sandstrom and Cillessen (2003) applied cluster analysis in cross-sectional studies to identify rejected subgroups with different behavioral profiles.

Longitudinal cluster analysis is another way of conceptualizing and empirically deriving groups of children with different sociometric trajectories compared to the traditional sociometric classification methods. However, these latter methods can be applied to validate a cluster approach, as was done in the Brendgen et al. (2001) study.

A theoretical motivation behind the clustering type of classification-based methods is given by Bergman and Magnusson (1997). They motivated what they called a person-oriented approach in the following way: It is based on a model of individual functioning where the individual is seen from a holistic perspective. Both internal and external individual factors interact in lawful ways to optimize individual functioning. In a person-oriented approach, the interest is on the studied system as a whole, as it is mirrored by the variables under study. Then each individual’s value profile in these variables comes in focus and this profile is treated as an indivisible whole in the pattern-oriented statistical analyses. Since the whole pattern of values is examined and the groups are
formed on the basis of having similar patterns within each group, it means that higher order interactions and nonlinear relationships between the studied variables are taken into account. This is not the case when using standard variable-oriented methods. Bergman and Magnusson further argued that there are often reasons to believe that a small number of typical patterns are in some sense “optimal” and will therefore often be observed. These can be searched for using different methods – for instance, by applying a classification method. In our context, the person-oriented approach leads to an interest in the classification of the observed longitudinal peer relation patterns into types of patterns where all subjects belonging to a type have a similar typical pattern. In the hitherto very few sociometric studies that have taken such an approach (accounted for above), cluster analysis has been the preferred classification method. More general examples of the implementation of the person-oriented approach in empirical psychological research are given by special issues of Merrill-Palmer Quarterly (Laursen & Hoff, 2006) and New Directions for Child and Adolescent Development (Peck & Roeser, 2003).

The peer context – school, age, and gender

Schools and school classes as peer contexts. Sociometric peer status research has been almost exclusively school-based (Gifford-Smith & Brownell, 2003), and classroom and grade sociometry (i.e., social status among classmates or grade mates, often same-sex) have been the preferred criterion measure. This criterion has been chosen because schools are important contexts for socialization where children spend a great deal of time in classrooms and playgrounds with same-age or near-age peers. Perhaps somewhat provocatively, Berndt and Ladd (1989) have claimed that “popularity with peers could hardly be assessed and would probably have little significance if schools did not exist or did not group large numbers of peers together” (p. 133).

The school milieu can be viewed as a quasi-experimental context, where children are forced to spend large amounts of time with other children, who they have not primarily chosen themselves. This is of course especially apparent when it comes to the school class, where membership is typically an administrative decision (e.g., Kiesner & Pastore, 2005; Ladd & Kochenderfer, 1996). As time goes by, children develop relations of different kinds with class peers, and popularity, friendship, and peer network groupings evolve through intertwined selection and socialization processes (e.g., Kindermann, 1998) taking place in the particular school class social situation or context. Children’s close connection to class peers is also reflected in nomination tasks, where it seems that they predominantly choose class peers in social constructs, such as popularity or social preference, even when free to choose other school children
Furthermore, as Zakriski and Coie argued, elementary school children spend most of their school day with classmates, and, thus, within-class perceptions are likely to be more stable and reliable than grade-wide perceptions.

**The peer group delimiters of age and gender.** In sociometric popularity research, the peers included as raters in the selection criteria are in many cases of the same gender and close in age. This choice of raters acknowledges the importance of same-sex and same-age peers and friends in the life and development of the child (e.g., Aboud & Mendelson, 1996).

Although the nature and structure of children's peer relations may be confused by similarities in contextual, ecological, or environmental factors (Allen, 1981; Epstein, 1989; Harkness, 1980), there is considerable evidence supporting the view that children prefer age-mates as friends (e.g., Ellis, Rogoff, & Cromer, 1981; French, 1984; Furfey, 1927). For example, Hartup (1976) reported that if there is an adequate number of same-age peers, friendships with age-mates predominate. Two other studies showed that preadolescent children had more same-age than cross-age friends across both the classroom and nonschool social settings (George & Hartmann, 1996; Smith & Inder, 1990).

Likewise, it seems as if a child's primary membership group mostly consists of same-sex peers (e.g., Benenson, Apostoleris, & Parnass, 1998; Fabes et al., 2004; Hay, Payne, & Chadwick, 2004; Maccoby, 1990; Smith & Inder, 1990), and as if there are often more negative evaluations of opposite-sex peers (e.g., Duncan & Cohen, 1995; Hayden-Thomson, Rubin, & Hymel, 1987; Singleton & Asher, 1977). Hartup (1983) stated that children of all ages associate preferentially with members of their own sex, and that this tendency is most pronounced in middle childhood and early adolescence, but seems to be less dominant later in adolescence (e.g., Strough & Covatto, 2002). Preschool and school children's peer contacts are largely sex-segregated, even in contexts where children of both genders have the opportunity to play together (e.g., Ellis et al., 1981; Fabes et al., 2004). Card et al. (2005) found that sixth graders nominated same-sex peers to a higher degree than cross-sex peers on social status items in a school class context. As with same-age preferences, cultural and contextual factors are influential (Epstein, 1989), as shown in a study among school children in a rural community in Kenya (Harkness & Super, 1985).

Hymel et al. (2002) argued that there may be no advantage in sociometric research to use the more time-consuming practice of including both same-sex and opposite-sex evaluations. Asher and Hymel (1981), after an empirical examination of the issue, took the rather firm stand that when examining children with peer problems, it seems advantageous to use same-sex sociometric scores, thus excluding the risk that opposite-sex scores might lead to the
selection of children who are actually fairly well accepted by their primary membership group of same-sex peers (or at least not negatively valued). The decision to use same-sex scores may also be influenced by a purpose to get as pure and clearly explicable sociometric groups as possible.

Furthermore, there might be differences in the development and adjustment for boys and girls, although it seems wise not to over-emphasize gender differences considering meta-analytic evidence that the genders are more psychologically similar than dissimilar in most characteristics, with some exceptions pertaining to primarily aggression (e.g., Hyde, 2005). Newcomb et al. (1993) stressed the importance of including the evaluation of gender as a moderator variable in sociometric research “as process-related components of children's peer relations may vary between the genders, especially in the area of aggressive behavior” (p. 124). This recommendation is consistent with evidence that girls exhibit more subtle forms of aggression that are more indirect and relational, focusing on social exclusion and relationship destruction rather than on physical dominance and control (e.g., Crick & Grotpeter, 1995; Keane & Calkins, 2004). Rys and Bear (1997) found that, among boys, peer rejection was related to overt aggression, with relational aggression failing to explain additional variance, while, among girls, peer rejection was more strongly linked to relational aggression.
Longitudinal peer status research

Peer status and adjustment – an introduction

An essential and significant issue in peer relations research has been to find out what significance good or bad peer relations have in the life of the child and for his or her future development and adjustment in adolescence and adulthood. This issue has, in fact, been a potent stimulus for much of the interest in children's peer relations (Hartup, 2005; Kupersmidt et al., 1990); as well as for our longitudinal project.

Peer status and adjustment in adolescence

School adjustment. In acknowledging the importance of the school context as a social arena for children, it might be assumed that negative class peer relations are accompanied or later followed by other social and psychological disturbances in school. Earlier research in this field includes both external adjustment factors, such as social relations and academic functioning; and internal adjustment factors, such as psychological well-being and mental health (for a review, see Rubin et al., 1998).

Cross-sectional and longitudinal studies have demonstrated that peer rejection is associated with both concurrent and subsequent academic disabilities and difficulties and below-average intelligence (e.g., Bagwell, Newcomb, & Bukowski, 1998; Czeschlik & Rost, 1995; Flook, Repetti, & Ullman, 2005; Ollendick et al., 1992; Wentzel & Asher, 1995). In their meta-analysis of several studies in the sociometric research area, Newcomb et al. (1993) concluded that rejected children's academic and intellectual abilities (or cognitive abilities) were significantly lower than those of other children, while popular children showed higher levels of cognitive abilities. Although not as extensively investigated as cognitive factors, athletic competence has also been recognized as a correlate to popularity. This supports the common notion that athletic prowess and popularity go together, especially in adolescence and for males (e.g., Bagwell et al., 1998; Coie et al., 1990; Coleman, 1980; Eitzen, 1975). From the findings of this research, it seems justified to expect that popular children might display higher intellectual and athletic skills over the school years, while rejected children might have academic deficits.

Another sign of school adjustment is how comfortable the child feels when at school; the child’s school well-being. How do children of different peer status experience their school situation, what attitudes do they have towards school,
and what meaning do school and schoolwork have for them? Cross-sectional studies have found that rejected children feel uncomfortable and show signs of loneliness and social dissatisfaction (e.g., Asher & Wheeler, 1985; Boivin, Poulin, & Vitaro, 1994; Crick and Ladd, 1993). Recently, Flook and colleagues (2005) performed a longitudinal study and found that teacher-rated peer acceptance in grade 4 predicted academic self-concept and psychological well-being in grade 5, which in turn predicted academic achievement the following year. These findings give some support to the hypothesis that peer acceptance has an impact on children’s internal well-being and psychological adjustment in school over time (as well as on academic performance), although there were also indications of reciprocal causal paths. The assumption about the subjective school distress of rejected children needs further corroboration.

An important indicator of social maladjustment is premature school dropout. School dropout indicates grave school discomfort and distress, and is bound to affect future adjustment in a negative way. The incidence rate has been shown to be affected by a multitude of individual, family, peer, and school factors (for a review, see Farmer, Estell, Leung, Trott, Bishop, & Cairns, 2003). Peer rejection seems to be one of these factors. Follow-up studies have demonstrated that peer rejection is associated with later school dropout (e.g., Kupersmidt et al., 1990; Ollendick et al., 1992; Parker & Asher, 1987), although there are indications that only those rejected youth who are high on antisocial behavior are at increased risk for leaving school early (e.g., French & Conrad, 2001). It must be pointed out that dropping out of school has predominantly been a boys' problem and therefore seems most suited to differentiate between male participants. For example, in the large-scale longitudinal project IDA, from which the participants of this thesis’ studies were selected, about 7% of the boys were early school dropouts and 1% of the girls (Magnusson, Dunér, & Zetterblom, 1975). However, some recent research findings suggest that there may have been a certain leveling out of the gender differences in incidence rate in later years (e.g., Farmer, Estell, Leung et al., 2003).

Peer adjustment. Peers and friends come forward as very important and powerful socialization agents and resources for the individual in the social transitions that take place during adolescence, when youngsters go from childhood dependency on the family to growing independence and autonomy in young adulthood (e.g., Fasick, 1984; Hartup, 1995; Hindy, 1980; Sullivan, 1953). It has been found that demographic characteristics, such as age, gender, and school grade, are attributes that strongly relate to the types of friendship that are formed in late childhood and up to mid adolescence (Duck, 1975; Kandel, 1978; Kupersmidt, DeRosier, & Patterson, 1995; Smith & Inder, 1990). Adolescents typically associate with peers that are proximal to themselves in such demographic characteristics. One might say that same-age, same-gender,
same-class, and same-grade peers make up the common and strictly conventional types of peers and friends of adolescents.

A conventional peer network seems to be one prerequisite for an age-normative pattern of adolescence adjustment and development into psychosocial maturity (e.g., Stein & Newcomb, 1999). Thus, there are reasons to be worried about adolescents who lack these kinds of peers or who associate with nonconventional peers, such as younger, older, working or antisocial peers. Associating with younger peers may slow down the process of maturing, while associating with older and/or working peers may accelerate or deform the same psychosocial transition process. On the other hand, chronological age is but one determining factor of psychosocial maturity, and differences in chronological age do not necessarily imply differences in psychosocial maturity. Furthermore, having few or no conventional peers may indicate that the adolescent is slow or ahead of these peers in her or his psychosocial and/or biological development and, thus, prone to associate with those nonconventional peers that are more similar to her or him in maturity. Associating with nonconventional peers may also be an attempt to compensate for difficulties with conventional peers, whether related to differences in maturity or not. As this short discussion shows, the question about nonconventional peer relations and psychosocial maturity is complicated and offers no simple answers. All the same, with the knowledge that the vast majority of peers and friends are conventional peers, association with nonconventional peers seems to be of special interest when studying the relation between different peer contacts and psychosocial adjustment. This is especially apparent when studying deviant or antisocial peers.

Because of their popularity, popular children have more opportunities to find friends than other children do, and, with their wealth of positive traits and positive social actions, they also appear to have the behavioral repertoire that promotes success with peers (Newcomb et al., 1993; Roistacher, 1974). In contrast, rejected children are viewed as lacking positive social actions, positive social traits, and friendship relations (Deptula & Cohen, 2004; Newcomb et al., 1993). Thus, one might hypothesize that rejected children would have fewer conventional peers of different kinds in adolescence than other children, while popular children would have more conventional peers. In a second step, rejection by classmates may lead to compensatory attempts to associate with nonconventional peers – in terms of age, educational or vocational situation, and social characteristics – as a substitute for the problems with conventional peers (e.g., Bagwell, Coie, Terry, & Lochman, 2000; Brendgen, Vitaro, & Bukowski, 1998; Hoff, DuPaul, & Handwerk 2003).

Furthermore, focusing specifically on nonconventional peers that are antisocial, early peer rejection has been pointed out as one important antecedent to deviant or antisocial peer associations in adolescence, (e.g., Bagwell et al., 2000;
Brendgen et al., 1998; Coie, Lochman, Terry, & Hyman, 1992; Laird et al., 2005). As peer rejection has also been shown to affect later antisocial maladjustment (e.g., Deater-Deckard, 2001; Deptula & Cohen, 2004; Hay et al., 2004; Laird, Jordan, Dodge, Pettit, & Bates, 2001), the association between early peer rejection and deviant peer affiliations in adolescence may at least in part be related to the teenager’s own antisocial behavior (in which case antisocial peers appear to be rather similar to the rejected child and in that sense are “conventional” peers). There has been some support for this confounding selective process in which adolescents prone to antisocial behavior tend to associate with deviant peers (e.g., Fergusson, Swain-Campbell, & Horwood, 2002; Heinze, Toro, & Urberg, 2004; Kiesner & Pastore, 2005). This might be a circular or transactional chain (e.g., Sameroff, 1975) where rejected children’s association with deviant peers may, in turn, amplify their tendencies toward antisocial behavior in adolescence (e.g., Dishion & Dodge, 2005; Miller-Johnson, Coie, Maumary-Gremaud, Bierman, & Conduct Problems Prevention Research Group, 2002; Parker et al., 1995); a maladaptive process that seems to be nurtured by the tendency of rejected (and aggressive) children to be biased towards overestimating the antisocial behaviors of their friends (e.g., Prinstein & Wang, 2005) and the general tendency to adjust to the aggression mean level of the group (Boxer, Guerra, Huesmann, & Morales, 2005).

Recent cross-cultural research, involving children aged 7 to 12, has given support to the usefulness of a complex enhancement model for the development of antisocial behavior as a combination of affiliation with deviant peers (according to the selection model) and rejection by the normative peer group (in line with the socialization model) (van Lier, Vitaro, Wanner, Vujk, & Crijnen, 2005). However, there were also indications of somewhat different pathways into deviancy for boys and girls. Boys’ antisocial development was highly in accordance with the enhancement model, while girls’ development was more in accordance with the socialization model, as they affiliated to a lower degree with deviant peers but were affected by rejection by nondeviant peers to the same degree as boys. The lesser importance of deviant peer associations for females’ future delinquency compared to males has also been corroborated for middle adolescents in a study by Piquero, Gover, MacDonald, and Piquero (2005). On the other hand, Laird and colleagues (2001) found no evidence of this type of gender difference. Instead they found that especially chronic peer rejection in childhood had a much more pervasive impact on later externalizing behavior problems in adolescence for both genders, than association with deviant peers had. The findings in this research area do not converge into any clear-cut standpoint about causal inferences, but do give support to the assumption that parallel to being more prone to antisocial development in adolescence, rejected children might have more deviant peers, possibly with some gender differences.
According to the model presented by Coie (1990), the maintenance phase of peer rejection has to be of considerable length in order to lead to negative adjustment in the consequence phase. Thus, a central question is whether the sociometric status among same-gender classmates undergoes any change or if the childhood sociometric groups remain clearly separated in popularity in adolescence. As we have seen, stability estimates have been found to be moderately high for rejected, average, and popular groups, which would suggest that peer status remains rather stable up to adolescence, at least for groups with earlier established peer status stability in childhood.

Several studies have shown that children often have more negative valuations of opposite-gender peers than of same-gender peers (e.g., Duncan & Cohen, 1995; Hayden-Thomson et al., 1987) or at least have a greater liking for same-gender peers (Bukowski, Gauze, Hoza, & Newcomb, 1993). This might indicate that there are rather small differences in how well-liked the participants in different peer status groups are by their opposite-gender class peers, owing to the less positive view most children seem to have of the other gender. On the other hand, there seems to be consistency between same-gender and opposite-gender sociometric assessment and the resulting sociometric status groups (e.g., Hymel et al., 2002; Terry & Coie, 1991). Further study is needed to examine whether, for example, rejected children are differently preferred by opposite-gender peers than they are by same-gender peers in adolescence.

Self-perceived peer support and acceptance have in the literature often been discussed and studied as mediators between actual peer status and social adjustment. The findings point to the important role of these self-perceptions for adjustment (e.g., Guerra, Asher, & DeRosier, 2004; Hymel & Franke, 1985; Pardini, Barry, Barth, Lochman, & Wells, 2006; Wentzel, 2003). For example, Sandstrom and Coie (1999) found that rejected preadolescents, especially boys, who believed they were well-liked by their peers actually improved their social standing among peers over time. Thus, self-perceived peer popularity seems to be important to include as an additional indicator of adolescence peer adjustment. Furthermore, this indicator gives an opportunity to examine how accurate adolescents are in their social information processing when it comes to judging their actual peer position. Self-perceived peer status has been found to be relatively correct from third grade (Krantz & Burton, 1986) and, thus, one might expect it to be fairly accurate for adolescents. However, in a more recent study, Pardini et al. (2006) found that the association between self-perceived peer standing and sociometric status was significant but rather low for aggressive-disruptive fourth graders. As their sample was not a normative group of school children it seems difficult to draw any far-reaching conclusions from this finding.
Peer status and adjustment in adulthood

Introductory remarks. The adulthood years are of developmental significance although they have not been as thoroughly explored in developmental psychology as the childhood and adolescent years (note, however, the increasing interest in lifespan psychology in recent decades, e.g., Baltes, Staudinger, & Lindenberger, 1999; Berry & Jobe, 2002; Magnusson, 1996). Counted in time, adulthood is the longest period in most peoples’ lives and in research contexts, it is often divided into different age spans or developmental stages, such as young or emerging adulthood, middle adulthood, and old age (e.g., Arnett, 2000; Levinson, 1986). Furthermore, adulthood has turned out to be a period of more individual change than previously supposed (e.g., Helson & Soto, 2005).

While Campbell and Cluss, as early as 1982, suggested that early peer problems could be among the most robust predictors of poor adult adjustment, the large majority of prospective longitudinal studies about future effects of problems in childhood peer relations has so far concentrated on follow-ups in childhood and adolescence. However, preliminary support for the suggestion of Campbell and Cluss has come from some relatively recently published studies about the late adolescence and early adulthood development and adjustment in different life areas (Bagwell et al., 1998; Bagwell, Schmidt, Newcomb, & Bukowski, 2001; Nelson & Dishion, 2004; Prinstein & La Greca, 2004; Reiner, Giacconia, Hauf, Wasserman, & Paradis, 2000; Woodward & Fergusson, 1999, 2000). For the development into more mature adulthood, the research situation is quite different. Because of lack of longitudinal follow-ups for that age group, one has to rely on findings for younger age groups and from these findings derive hypotheses about how sociometric status in childhood might be associated with midadulthood adjustment.

Young adulthood adjustment. Young adulthood is often seen as an era of freedom, identity exploration, possibilities, and instability. It has its costs in the form of increased rates of many risky and antisocial behaviors, which seem to peak during that time period and then decline substantially with the familial, parental, and occupational responsibilities of more mature adulthood (e.g., Arnett, 2000). These antisocial and other risk behaviors seem to be important indicators of adjustment in young adulthood. Earlier empirical studies have found an association between childhood peer status and future antisocial behavior – such as criminality and substance abuse – up to late adolescence and the early twenties for both females and males. This association seems mainly to be due to aggressive and externalizing behavior problems in childhood. Children with elevated aggression may find it difficult to gain acceptance among peers and their antisocial problems can grow over time as a result of their rejection and lead to long-term adjustment problems (e.g., Deater-Deckard, 2001; Nelson
Mental health problems, especially internalizing problems, are far more common among women than among men from late adolescence onwards (e.g., Crick & Zahn-Waxler, 2003; Culbertson, 1997; Nolen-Hoeksema & Girgus, 1994) and, thus, are an important indicator of female adjustment. The empirical support is rather mixed for a link between childhood peer status and psychopathology in late adolescence and early adulthood (e.g., Bagwell et al., 1998; Bagwell et al., 2001; Reinherz et al., 2000; Woodward & Fergusson, 1999). Considering the seriousness of psychiatric problems, further studies are motivated. In connection with this problem area, it seems worth mentioning that an eventual association between peer rejection and subsequent internalizing problems might partly be explained by withdrawn behavior with peers (e.g., Deater-Deckard, 2001; Rubin et al., 1998).

**Midadulthood adjustment.** Midlife is often characterized by a striving to succeed in vocational life, at the same time as handling the tasks of daily family life. Most adults experience having children and seeing them grow up and gradually strive for independence. They may also have to be concerned about the needs of their elderly parents. Furthermore, middle-aged adults may have to face the prospect of giving up some of their early dreams and aspirations and many adults may experience personal shortcomings and perceptions of personal inadequacy “making one feel socially unaccepted and rejected and thus lonely” (Rokach, 2000, p. 77). In short, midadulthood is a period with many demands, challenges, rewards, and decisions of crucial importance to development and adjustment, or what in the tradition of Erikson’s (1963) theory of life stages could be seen as developmental challenges and tasks to be solved in the generativity life stage.

This may be especially salient for women, who, in Western societies, still have the main responsibility for the home and the children, as well as for elderly relatives, at the same time as they are fully available on the labor market (for a review of the changes in women’s roles in the last few decades, see Aube, Fleury, & Smetana, 2000; also Halpern, 2005; Meleis & Lindgren, 2002; Rokach, 2000; Schultheiss, 2006; Woods & Mitchell, 1997). Research findings have pointed to a negative association between work-family conflict and job and life satisfaction, particularly among women (e.g., Kossek & Ozeki, 1998; Ozer, 1995; Peake & Harris, 2002). The life satisfaction of midadulthood women seems to be an important aspect of their adjustment and self-identification (e.g., Meulemann, 2003), and closely associated with important life areas such as family and work.
Cross-sectional and longitudinal evidence links having friends with psychological well-being and life satisfaction from childhood to old age (Hartup & Abecassis, 2002; Hartup & Stevens, 1997; Ladd, 1999). Having friends seems to be associated with feelings of self-worth or self-competence, to ward off feelings of loneliness, and to provide children with competences for future close relationships (e.g., Gifford-Smith & Brownell, 2003; Hartup & Abecassis, 2002; Laursen, 1996; Smollar & Youniss, 1982; Sullivan, 1953). Furthermore, the association between rejected peer status and inadequate interpersonal or social skills has been firmly established by many research findings (e.g., Cantrell & Prinz, 1985; Casiglia, Lo Coco, & Zappulla, 1998; Coie et al., 1990; Rys & Bear, 1997). It is, thus, quite conceivable that childhood peer rejection may be particularly associated with difficulties in those future adjustment tasks that require adequate social skills, as in the task of relating to other people.

As we have seen, satisfaction with family life is vital for midlife women, and Parker and Asher (1987) have suggested marital adjustment as one of the outcomes of interest in future peer status risk research. Earlier research pertaining to this issue is sparse and does not specifically focus on rejected children. Existing evidence suggests that children with peer problems either do not marry, or if they marry, experience difficulties in their marriages that may lead to divorce (for a literature review, see Parker & Asher, 1987). Kupersmidt et al. (1990) argued that marital adjustment and the ability to sustain intimate friendship are forms of behavior that are most affected by social deficiencies. Ladd (1984) has suggested that:

...if it were the case that low, stable scores on a friendship nomination measure were a sign of a child's failure to form friendships and learn many of the skills needed to establish and maintain intimate relationships (e.g., loyalty, trustworthiness, conflict resolution), then information from this measure might also be useful for predicting his or her success in adult intimate peer relationships (e.g., marriage). (p. 319)

In accounting for research about social relationships and their influence on primarily physical, but also mental, health, Cohen (2004) argued that different aspects of social relationships, especially social support, social integration, and negative interaction, are associated with health outcomes. She recapitulates findings from prospective and retrospective studies of both student and adult samples, and concludes that there is often a significant association between social environment variables and health, depending on both health-promoting, stress buffering mechanisms and disease-promoting mechanisms. In her own studies, she found that this association was reduced when controlling for social personality traits, especially sociability, but also that it remained substantial and significant nevertheless. Although the findings accounted for by Cohen cannot be seen as direct evidence for a relationship between childhood peer status and
adulthood health, they do give some strength to such a hypothesis, supplemented by the assumption (not tested in this thesis) that mediators might be later social relationships up to adulthood.

There is some evidence in support of the view that low-accepted children have problems with their later occupational adjustment (Janes, Hesselbrock, Myers, & Penniman, 1979; and the literature review by Parker & Asher, 1987). Kupersmidt et al. (1990) are of the opinion that different problems at the place of work might be associated with prior social rejection. Existing evidence of the academic problems of rejected children (e.g., Newcomb et al., 1993) indicates that they finish school earlier than other children and therefore get rather unqualified jobs. Some recent empirical findings (e.g., Bagwell et al., 1998, 2001; Woodward & Fergusson, 2000) have extended our knowledge by showing that childhood peer status is associated with educational and job success in late adolescence and early adulthood.

The above empirical findings and theoretical suggestions lead to the conclusion that childhood peer relations may be associated with subjective well-being and life satisfaction in important middle adulthood life areas pertaining to family relations and other social relations, as well as to work and health. However, one argument against our suggestions about an association between childhood peer status and midadulthood adjustment is that the more stable life situation in middle adulthood for most women (Arnett, 2000; Levinson, 1986) should result in lower rates of adjustment problems compared to those experienced in young adulthood, and that any potential impact from childhood peer relations would be diluted. To test such a proposition, one would need to have indicators in at least one adjustment area for both young adulthood and midadulthood.

In the light of the multiple outcomes that have been of interest in sociometric research, a plausible hypothesis is that vulnerabilities from past life may resurface as different symptoms and difficulties in handling various aspects of the individual’s current adult social life. To be more specific: Unsuccessful peer relations in childhood and adolescence may instigate social vulnerabilities that carry over into negative implications of different kinds for midadulthood adjustment. For example, Kupersmidt and Coie (1990) found that peer rejection in childhood was not a strong predictor of late adolescence specific outcomes, but they found a stronger link between rejection and some kind of negative outcome. They interpreted their findings as consistent with arguments that, because peer rejection may provide a measure of stress operating on children, it will be better at predicting the outbreak of later disorder rather than its specific form (e.g., Sroufe & Rutter, 1984; see also Parker et al., 1995).
Peer status and concurrent correlates – importance for later adjustment

In sociometric research there has been a considerable interest in relating children’s peer status assignments to contemporaneous behavioral reactions (e.g., Asher & Coie, 1990; Coie et al., 1990; Furman & Buhrmester, 1985; Hymel et al., 2002; Ladd, 1999, 2006; Newcomb et al., 1993; Pope, Bierman, & Mumma, 1991). Two problem behaviors have been frequently related to status among peers and shown to be major obstacles to peer acceptance – aggression and shyness/withdrawal – and it seems well worth to dedicate some space here to a discussion of these behaviors.

Research findings regarding aggressive behaviors and withdrawal have largely been supportive of the first and second assumptions put up by Coie (1990) as a basis for his theoretical model about the peer rejection process (see above). According to the first assumption there is a close association between negative social behaviors and peer rejection. The second assumption includes a statement that temperamental differences might play a role for these behaviors (e.g., Hay et al., 2004; Walker, Berthelsen, & Irving, 2001), albeit Coie places more importance on the child’s socialization history. Rubin et al. (1990) have presented two developmental pathways or precursors to peer rejection that can be seen as more fine-graded accounts of what Coie proposed in these two assumptions and in the two first phases of his theory – the precursor phase and the emergent status phase. One pathway is closely connected to early aggression and the other to a more withdrawn behavior pattern. In interaction with negative family patterns, these developmental pathways may create a platform for the development into being rejected by peers. Although speculative, the developmental scenarios suggested by Rubin et al. point to the importance of early aggression and withdrawal as potential determinants of peer rejection.

Overt and relational aggressive behaviors have been associated with problematic friendship relations and peer rejection among both boys and girls (Brendgen, Vitaro, Turgeon, & Poulin, 2002; Grotberg & Crick, 1996; Vaillancourt & Hymel, 2006; Werner & Crick, 2004). The combination of peer rejection and aggressive behavior seems to be extremely negative for future adjustment (e.g., Coie et al., 1992; Hymel et al., 2002; Kupersmidt & Coie, 1990; Ladd, 2006; Parker & Asher, 1987; Parkhurst & Asher, 1992). Withdrawn, anxious behaviors seem to be especially salient to the peer group from late childhood onwards and have consistently been linked to peer rejection, especially for girls (e.g., Coie et al., 1990; French, 1990; Hartup & van Lieshout, 1996; Ladd, 2006; Rubin, Burgess, & Coplan, 2002; Rubin et al., 1998) and in different cultures (Valdivia, Schneider, Chavez, & Chen, 2005).

Negative behavioral reactions, such as aggressive behavior or social withdrawal, may also alienate peers and restrict a child’s access or possibility to make
friends (Schneider et al., 2001). Lately, some findings have indicated that both verbal (communicative) and behavioral aspects of withdrawal and aggression are important for peer acceptance (and self-perceived social competence), both concurrently and longitudinally, among adolescents (Chang et al., 2005). Furthermore, it seems that the negative and prosocial behaviors that predict membership of a specific peer status category also predict stable membership in that category, so that, for example, aggressive behavior predicts both incidental and chronic rejection (e.g., Cillessen et al., 2000). Externalizing and internalizing behavior problems together with peer rejection – and also other peer problems, such as harassment and victimization (e.g., Cullerton-Sen & Crick, 2005) – seem to form an intriguing and interrelated developmental pattern, where concordance has not yet been reached about causal paths and where bidirectional and reciprocal influences seem to be the most likely explanation (e.g., Zimmer-Gembeck, Geiger, & Crick, 2005). For example, in the victimization process, some rejected children might turn out to be either bullies or victims, depending to some extent on their level of aggressive or withdrawn behavior (e.g., DeRosier & Thomas, 2003; Warden & Mackinnon, 2003). The associations between peer rejection, aggression or withdrawal, and victimization (or the bullies/victims problem) are an important and somewhat neglected research task with potential implications for interventions. However, these developmental associations are not the research topic of this thesis. As we have emphasized, the focus is here on the aspect of peer relations pertaining to peer status and its role for adjustment.

Coie (1990) stressed the importance of deficits in academic achievement and athletic ability for peer rejection, especially when mediated by specific negative behavior reactions. Research findings have repeatedly associated cognitive abilities, and academic achievement and motivation with peer relations (e.g., Ladd & Kochenderfer, 1996; Newcomb et al., 1993). Peer rejected and, to some extent, friendless children have exhibited lower academic success than other children (e.g., Green, Vosk, Forehand, & Beck, 1981; Hatzicristou & Hopf, 1996; Ladd, 1990) and more negative school attitudes and dislike of school (Ladd, 1990; Ladd & Coleman, 1997).

A child’s family social background or socioeconomic class might affect both the peer status of the child and the strength of an association between childhood peer relations and later adjustment (Eisenberg, 1998; Vitaro, Tremblay, Gagnon, & Pelletier, 1994; Woodward & Fergusson, 2000). For example, Woodward and Fergusson found that associations between childhood peer problems and later educational and job disadvantage were in part explained by sociofamilial background variables, such as socioeconomic adversity.

In addition to being associated with peer status, all of the above discussed, and potentially confounding, categories (aggression, withdrawal, academic
achievement, and family social background) have been found to be unique and combined predictors of later adjustment in different life areas (e.g., Hinshaw, Lahey, & Hart, 1993; Ladd, 2006; see also handbooks such as Cicchetti & Cohen, 1995; Damon & Eisenberg, 1998). In conclusion, these adjustment dimensions correlate to peer status and, furthermore, have independent explanatory values in relation to children’s future adjustment. Thus, in including them as confounding factors, it is possible to shed some light on the longstanding issue as to whether peer relations have an independent significance for future adjustment or whether it is mainly a marker of more basic, underlying behavioral and social processes (Bagwell et al., 1998; Eisenberg, 1998; Kupersmidt et al., 1990; Parker & Asher, 1987; Parker et al., 1995; Vitaro, Larocque, Janosz, & Tremblay, 2001; Woodward & Fergusson, 2000). This issue was also addressed above in the discussion about the peer rejection model proposed by Coie (1990). I will continue this discussion in the next section.

Explanatory models

Coie’s (1990) fourth assumption, underlying his theoretical model, suggests that rejection causes disorder or sets up conditions leading to disorder. Yet, as he also mentions, it is equally plausible to argue that peer rejection serves as a marker variable for the psychological antecedents of disorder and, thus, not as a direct cause. However, Coie maintains – for the purpose of debate as he says – that prolonged experience of peer rejection is a major contributor to subsequent disorder. He develops this standpoint referring to Albee's equation for the incidence of disorder (Albee, 1984). Albee proposes that the incidence of disorder increases as a result of stress, organic variables, and exploitation factors, and that coping skills, self-esteem, and social support serve to reduce disorder. In the Albee equation, peer rejection can be interpreted as contributing to disorder in several ways. Peer rejection is in itself an element of stress for the child (rejected children tend to be badly treated by peers and consequently may retreat from social activities with peers, but continue to serve a role for the group as a group deviant). Rejection can also contribute to having fewer resources for countering the factors leading to disorder (resources such as support groups, coping skills, and self-esteem). Popular children, on the other hand, might have plenty of social resources as a buffer against and tool to reduce the risks of a troubled development.

However, although research findings point to an association between peer problems in childhood, especially rejection, and maladjustment in adolescence and early adulthood, this need not be interpreted as a causal chain. What is known is that a correlational continuity exists, but the mechanisms behind it are fairly unknown (Bukowski & Adams, 2005; Kupersmidt et al., 1990). It could
be that early peer rejection reflects the child's difficulties in a more general sense and that these difficulties also interfere with functioning in other life areas and in different ways over time, or, in the words of Parker and Asher (1987), that some underlying, continuously present behavioral process is directly or indirectly responsible for both problematic peer relationships and for later maladaptive functioning. In such an interpretative pattern or *incidental* model, peer rejection might be seen as a marker, but not as a causal variable, which was also discussed by Coie (1990).

In other words, which model best explains the associations between peer relations and later adjustment – a causal model or an incidental model? An example supporting an incidental model is the findings of Vitaro et al. (2001), which suggest that unpopularity and friendlessness do not directly contribute to school dropout, but are markers of personal problems such as aggression and difficulties at school (see also French & Conrad, 2001). Some of the findings in a study by Henricsson and Rydell (2006) also point to the possibility that peer rejection is at least partially a result or marker of internalizing or externalizing problems. On the other hand, some other studies have found unique links between peer rejection and later psychological and academic adjustment problems (e.g., Coie et al., 1992; DeRosier et al., 1994). Woodward and Fergusson (2000) found that child and family confounding factors substantially reduced the relation between teacher-rated peer problems in childhood and late adolescence educational and occupational disadvantages, but that there was still a significant association between early peer problems and later academic difficulties. The authors’ conclusion was that their results were in support of both the incidental model and the causal model. In another study about childhood peer problems and late adolescence psychosocial adjustment, Woodward and Fergusson (1999) found more clear-cut evidence for the incidental model. Ladd (2006), by building on earlier research evidence, has found support for an additive model (controlling for some transactional and disorder-driven models), where both peer group rejection and aggressive or withdrawn behavior make at least partially independent contributions in an additive way to later externalizing or internalizing problems over seven consecutive one-year intervals across ages 5-12.

Bagwell et al. (1998) have discussed both the causal and the incidental models, but also an *intermediate* model, which they see as potentially more useful. In this model, it is claimed that children's experiences with peers moderate the relation between risk variables and maladjustment or that peer problems interact with other risk factors and increase or decrease the risk for negative outcomes (also Bierman, 2004; Dodge et al., 2003; Masten, 2005; Parker et al., 1995; Rubin et al., 1998; Salmivalli & Isaacs, 2005). Peer rejection may interact with existing difficulties of the biologically or socially vulnerable child and thus increase the risk of negative outcomes. Good peer relations, on the other hand,
may be a protective and preventive factor decreasing the influences from other more basic risk variables of genetic, social or ecological origin. Peer relations can be seen as both predicting later adjustment, and as having a history and background that has led to the present peer situation. Or, as Bukowski and Adams (2005) have pointed out, the influence that peers have on individual development derives from a wide range of sources and processes inside a peer system with multiple levels of social complexity that are linked in multiple ways.
Aims of the thesis

The present thesis focuses primarily on different aspects of adjustment in adolescence and young and middle adulthood for individuals differing in stable sociometric standing among peers in elementary school; that is, being of stably rejected, popular or average peer status. Data from the Swedish research program Individual Development and Adaptation (IDA) (e.g., Magnusson et al., 1975) were used and the included research has a longitudinal and prospective direction. The longitudinal perspective is of considerable length. The first period has a time span of about five years covering the period from the early elementary school years to midadolescence and the second period has a time span of 33 years from early elementary school to midadulthood. In the choice of time periods for selecting sociometric groups, I am mainly in agreement with a common opinion in peer relations research that peer acceptance is most important over the years from middle childhood into early adolescence, and that peer rejection during that time period seems to be associated with potential disorder in adolescence and adulthood (e.g., Coie, 1990; Ladd, 1999; Parker & Asher, 1987).

The following specific aims were focused on:

1. The first aim was to prospectively examine the midadolescence academic, psychological, social, and peer adjustment of one-year stably rejected, popular, and average children (Studies I and II). Earlier research findings indicate that rejected children would develop more adjustment problems in these life areas than children with better peer status. It was further expected that popular children would develop fewer problems than other children.

2. The associations between three-year stable childhood peer status and young and middle adulthood adjustment for women were investigated (Study IV). The young adulthood adjustment in the examined antisocial domains of criminality and alcohol abuse was expected to be worse for rejected girls than for other girls, while a positive adjustment was expected for popular girls. For young adulthood mental health, no hypothesis was formulated due to the mixed findings of earlier research. The examined midadulthood outcomes were subjective well-being and life satisfaction in different life domains (job, social relations, family, general health), alcohol consumption, and vocational career. Due to the lack of earlier sociometric at-risk studies for midlife adjustment, the expectations of a negative adjustment for rejected girls (and a positive adjustment for popular girls) in these life domains could only be tentative and based on findings from
other, more short-term studies. Childhood aggression, withdrawal, academic achievement, and SES, which were included as control variables, might explain some of the eventual associations and, in that case, give support to an incidental explanation of the impact of childhood peer status on adulthood adjustment.

3. The three-year, stable peer status groups for the adulthood follow-up were identified by introducing a modern clustering technique (e.g., Bergman, 1998) into sociometric research. This person-oriented approach has been very sparsely applied in sociometric research. Thus, as a third aim, the usefulness of cluster analysis as a sociometric classification instrument was examined (Study III). The clustering technique was validated against the frequently used sociometric classification method developed by Coie et al. (1982), as well as against some control variables that have been shown to be associated with peer status in childhood.
Summary and methodological integration of the empirical studies

Study I: School adjustment in adolescence for previously rejected, average, and popular children

Introduction and methods. The central issue of the present study pertained to the midadolescent school adjustment of children of stable same-sex rejected, average, and popular class peer status in late childhood. The school domains examined were academic achievement, subjective school experiences, attitudes towards school, and school dropout. The general hypothesis was that rejected children in adolescence would show a poorer adjustment in different school domains compared to other children. In line with earlier research about the beneficial effects of good peer relations, a further hypothesis was that popular children would display a positive school adjustment in adolescence.

The participants of this study were boys and girls from the main group of the research program IDA (Magnusson et al., 1975). Sociometrically homogeneous peer status groups of one-year stably rejected, popular, and average boys and girls were identified by Adebäck (1969) in a procedure using a sociometric ranking measure and a positive nominations measure in grade 3 (mean age 10 years) and a positive nominations measure in grade 4 (mean age 11 years). Each peer status group consisted of 15 participants. This classification method has certain original elements, but is also in line with traditional classification methods in the sociometric research domain (for reviews, see Terry, 2000; Terry & Coie, 1991). The midadolescence school adjustment measures were taken from the large investigation that was carried out in grade 8 (mean age 15 years) for the whole main group of the IDA research program (Magnusson et al., 1975). School marks in Swedish and physical training, a standardized achievement test in Swedish, intelligence scales, and self-reports about attitudes to school were used as outcome measures. Premature school dropout rate was also included, but only for boys (as this has mainly been a male problem). ANOVAs and chi2 tests were applied to compare the peer status groups. Attrition analysis showed that the midadolescence missing cases did not differ significantly in sociometric values from the mean value of the status group they belonged to.

Main results and conclusions. The academic performance and intelligence level of rejected boys and girls were short of the standards of children from the other status groups, while the scores of popular boys and girls were of superior standard. Post-hoc analyses showed that rejected and popular groups of both
genders differed significantly from each other in most cases. While some studies have found gender differences in academic outcomes, the findings here were more in line with other prospective studies that have found no gender differences in long-term academic achievement for different peer status groups. There were slight, non-significant indications that rejected girls (but not rejected boys) had negative attitudes towards school and schoolwork, and that popular girls had positive attitudes. The school dropout rate of rejected boys was significantly higher than that of other boys. Furthermore, those rejected boys who were school dropouts seem to have had a lower peer status initially (in grade 3) even when compared to other rejected boys, and to have been absent from school more frequently before they dropped out. These might be signs of a negative social outcasting process resulting ultimately in their dropping out of school.

The findings indicated that the rejected children are a risk group for school problems over a longer period of time. The causal chain is unclear, but peer rejection combined with other negative school factors, might jointly function as an ostracizing mechanism and drive the individual into an outsider position. Considering the important developmental aspects of the adolescence years, there appear to be good reasons to worry about the future adulthood adjustment of peer rejected children. Unfortunately, the small group sizes are a limitation that reduces the power of the statistical analysis.

Study II: Childhood peer status as predictor of midadolescence peer situation and social adjustment

Introduction and methods. The participants and sociometric groups of this study were the same as in Study I. The intention was to examine conventional and unconventional peer relations in midadolescence (age 15), including deviant peer relations and sociometric peer status among pupils of both genders in the class. Antisocial outcomes in midadolescence were also studied. The general hypothesis was that rejected children would have fewer conventional peers of different kinds in adolescence than other children, while popular children would have more conventional peers. Rejected children might try to compensate by associating with unconventional peers such as different age and working peers, but especially with antisocial peers. As association with antisocial peers has been found to be related to an individual’s own antisocial activity in adolescence, it was further hypothesized that rejected children would be more antisocial than other children. Stability of same-gender sociometric status up to midadolescence was also examined, as well as opposite-gender sociometric status and self-perceived peer status. Finally, gender differences were studied.
The midadolescence peer relations and social adjustment measures were, as in Study I, taken from the large follow-up that was carried out in grade 8 (Magnusson et al., 1975). A peer rank-ordering instrument was used to obtain adolescent same-gender and opposite-gender sociometric status in the school class. Furthermore, the adolescents estimated their own ranking according to how they thought their same-gender classmates had ranked them. From a self-report instrument about peer network, it was possible to obtain the number of conventional and unconventional peers of different kinds. Information about antisocial peers and the participants’ own antisocial activity was obtained from a norm questionnaire (Chinapah, 2000; Henricson, 1971; Magnusson et al., 1975), where values, intentions, and behaviors related to norm-breaking situations were measured. In addition, an index of the self-experienced peer situation (index of friendship, loneliness, and popularity) was constructed from items in the norm questionnaire. In order to examine sociometric status and gender differences in midadolescence outcome variables, two-way analyses of variance (ANOVAs) and logistic regression analyses were conducted. Midadolescence attrition cases did not differ significantly in childhood sociometric values from the mean value of their peer status group.

**Main results and conclusions.** The findings revealed that rejected children maintained their lower popularity with same gender classmates by differing significantly from popular and average children in midadolescence, while popular children had a significantly higher peer status compared to children in the other peer status groups. An important conclusion was that the different peer status groups seem to follow different sociometric paths and, at the group level, preserve their peer status position over several years (this result was one motivation for extending the classification period for stable peer status to 3 years in the adulthood follow-up in Study IV).

The same peer status group differences were also found for opposite-gender popularity in midadolescence (with somewhat smaller but nevertheless high effect sizes). Furthermore, rejected children rated themselves as less popular among same-gender class peers in midadolescence than average and popular children. Accordingly, rejected children seem to be aware of their low status among peers at age 15.

Adolescents of both genders had most of their peers in conventional peer categories, that is, among schoolmates, same-age peers, and classmates. Some of the peer status group differences pertaining to relations with conventional peers were significant. Rejected participants reported fewer school peers than both average and popular participants and fewer same-age peers than popular participants. These findings are indications that peer rejection in late childhood has an impact on the conventional peer network in midadolescence. As
adolescents, rejected children may not succeed in finding a place among those peers that are close to them in terms of social characteristics and age. Furthermore, they experienced their peer situation as worse than average children and as much worse than popular children. These findings, together with the findings that they were still rejected in adolescence, give a picture of a rather negative peer situation for rejected children in adolescence, as judged by both peers and themselves.

There were, however, no indications that rejected children tried to compensate for these negative peer features by associating to a higher degree with nonconventional peers – in terms of age, occupation, or antisocial characteristics – than other children did. Furthermore, rejected children did not report more norm-breaking deviancies in adolescence than other children did. While some authors have found significant associations between a child’s own delinquent behavior and the delinquency of its peers and that childhood peer rejection seems to trigger such a development in adolescence, this was not the case for the rejected children of the present study. This is a hopeful result. At least up to their midadolescence years, rejected children did not seem to have developed strong antisocial tendencies or associations with deviant peers.

No significant gender differences or interaction effects between gender and peer status were found for midadolescence sociometric or peer network variables. These findings point to the possibility that the same social processes are at work for both genders and give similar outcomes. For data about own and peers’ antisocial tendencies there were no interaction effects but significant gender effects in all variables. Boys were more deviant in the measured antisocial aspects, and they also judged their peers as more antisocial than girls did. This result was not unexpected, as boys are generally more prone to antisocial attitudes and activities than girls (e.g., Barriga, Morrison, Liau, & Gibbs, 2001; Laird et al., 2005).

Study III: Cluster analysis in sociometric research: A pattern-oriented approach to identifying temporally stable peer status groups of girls

*Introduction and methods.* A prerequisite for the utility of sociometric peer status as a predictive tool seems to be its stability over time. In an effort to circumvent the possible disadvantages for stability of using traditional sociometric categorization methods on repeated measurement data, a few researchers have applied some kind of cluster analysis to identify longitudinal profiles and stable groups with different social preference trajectories (Brendgen et al., 2001; Haselager et al., 2002). An overarching aim of the present study was to follow a similar selection procedure by using a clustering technique to
Cluster analysis within the framework of the LICUR procedure (Bergman, 1998) was applied to the group consisting of all girls in the main cohort of the IDA research program (Magnusson et al., 1975) who had sociometric rank-ordering data at age 10 (grade 3) and at age 13 (grade 6) (N = 445). The sociometric ranking scores, transformed into “like most” and “like least” scores, were the basis for the longitudinal cluster analysis. The cluster solution was then validated against the peer status categories obtained by the frequently used CDC classification method (Coie & Dodge, 1983; Coie et al., 1982). In a further validation effort, the clusters were associated with some childhood control variables that have been frequently and significantly related to differences in peer status: aggression and withdrawal (teacher ratings), academic success (grade point averages), and family background (SES).

**Main results and conclusions.** The cluster analysis resulted in three temporally stable clusters identified as rejected, popular, and average, which were larger than corresponding CDC classified groups. A further finding was that inside their stable peer status assignments, rejected/popular girls became increasingly rejected/popular from age 10 to age 13. While no stable clusters of neglected or controversial girls were identified, four temporally volatile clusters were found. In validating the cluster solution, it was shown that all stably rejected and all (but one) stably popular CDC girls were members of the corresponding cluster. Furthermore, rejected and popular clusters showed the same associations to the childhood correlates as has been documented by earlier sociometric research: Girls in the rejected cluster showed the most negative adjustment (and lowest SES) and girls in the popular cluster showed the most positive adjustment (and highest SES) in these control variables.

Most traditional sociometric classification methods have arbitrary and conventional rules and cut-off scores, and could be seen as some kind of heuristic devices for assigning social status to a given individual (Asher and Dodge, 1986; Cillessen & Bukowski, 2000a; Rubin et al., 1998; Terry and Coie; 1991), which might lead to rather artificial groupings. By using the clustering technique, one makes use of other information from the studied variables, including interactions and nonlinear relationships. The clusters are, in a way, “natural” groupings, with membership in a cluster as a consequence of the individual’s “holistic” place or value profile in the space of included variables. The crucial point in analyzing the results of a cluster analysis is to scrutinize the cluster solution in order to arrive at theoretically meaningful interpretations of the clusters with reasonable correspondence to other results in the specific research area. This scrutiny has been the main purpose and content of the
present study and the findings support the empirical and theoretical meaningfulness of applying cluster analysis as a classification method in sociometric research.

Study IV: Girls’ peer status and their adulthood adjustment: A longitudinal study from age 10 to age 43

*Introduction and methods.* Although there has been a change in recent years, the psychology of peer relations is still to a high degree based on boys’ development; the role of girls’ peer relations for their development and adjustment is less well explored and understood (e.g., Bagwell et al., 2000; Ladd, 1999). From what we know, girls’ peer relations cannot be seen as blueprints of boys’ peer relations. For example, girls seem to be more allocentric than boys, that is, they tend to be affiliate more, be more cooperative, and oriented towards sources of social support (e.g., Dayan, Doyle, & Markiewicz, 2001; Yamaguchi, Kuhlman, & Sugimori, 1995). This motivates an interest in girls’ development and to assemble evidence on how good and deviant peer relations affect girls’ later adjustment. The present study intended to contribute to this endeavor by examining the importance of girls’ stable peer status for adjustment in young and middle adulthood; a follow-up period that has been rare or absent in past sociometric at-risk research.

Stable age 10 to age 13 peer status clusters (see Study III for details about the applied cluster analysis and peer status stability) of girls were identified from the main group of girls in the IDA research program (Magnusson et al., 1975). Adulthood adjustment was examined in mostly the same life areas that earlier sociometric research has focused on for adolescence and early adulthood adjustment. Adulthood data was taken from official registers (young adulthood) and from the large intensive investigation for women aged 43 that was carried out in the IDA program (Bergman, 2000). From theoretical accounts and temporal extrapolations of earlier empirical findings, a number of hypotheses were formulated: Peer rejection was expected to be associated with higher rates and peer popularity with lower rates of young adulthood alcohol abuse and criminality; the examination of the association between peer status and young adulthood mental health problems was exploratory due to the mixed findings of earlier research; alcohol consumption was also followed up into midadulthood to test the hypothesis that any potential impact from childhood peer relations would be diluted or changed over this long time perspective, considering the more stable life situation in midadulthood; peer rejection was supposed to have a negative impact on subjective well-being and life satisfaction in a variety of important life domains in midadulthood (job, social relations, family, general health), as well as on educational and job success up to midadulthood (while the
reverse association was hypothesized for peer popularity). Four potentially confounding behavioral and social correlates from the childhood period were included: aggression, withdrawal, academic achievement, and SES.

**Main results and conclusions.** Only a few hypotheses were supported. Results showed that, by young adulthood, rejected girls were at increased risk of criminal offending and alcohol abuse (2 and 8 times increased risk compared to the average status cluster, respectively). In midlife, the only significant finding was that popular girls had obtained higher-qualified jobs than other girls. For all other midlife adjustment areas, such as social relations, subjective well-being, health, and alcohol consumption no significant associations were found. Childhood confounding variables were introduced and explained two of the three significant results. The significant association for higher-qualified jobs in midlife was explained by childhood academic achievement, and young adulthood criminality was explained by childhood aggression. Thus, these significant findings more or less seem to fit into an incidental model, where peer problems are seen as markers of other problems. However, alcohol problems in young adulthood were significantly related to childhood peer rejection, even after the childhood correlates were introduced. This finding points to a causal model: The results of the study were also shown to hold if the method of analysis is switched to a conventional, variable-oriented one, applying regression analysis to predict adulthood adjustment from childhood peer relations.

The unusually long time period might be seen as a strength in the sense that we investigated far-reaching effects of childhood peer relations. However, it is also a weakness and a limitation, as potential developmental influences might be diluted over time and without more measurement points in between, we have no knowledge about what happens at different time periods and possible developmental turning points. In future investigations, it is also of importance to include both men and women, and to compare their development and adjustment in the light of childhood peer problems.

The absence of any appreciable impact of negative childhood peer relations on the adjustment in midlife is hopeful. However, the relatively small peer status groups and attrition problems lead to limited ability to detect group differences in cases where the effect sizes are small.

**Overview of the measures included in the studies**

The measures that were used in the studies are presented in Table 1. The intention is to give the reader an overview of what measures have been used in
### Table 1.

**Overview of the measures in Studies I to IV**

<table>
<thead>
<tr>
<th>Study</th>
<th>Sociometric measures</th>
<th>Control measures</th>
<th>Outcome measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td><strong>Grade 3 (age 10)</strong></td>
<td><strong>Grade 3 (age 10)</strong></td>
<td><strong>Grade 8 (age 15)</strong></td>
</tr>
<tr>
<td></td>
<td>- Positive nominations PR</td>
<td>-(Intelligence T)</td>
<td>- Intelligence T</td>
</tr>
<tr>
<td></td>
<td>- Rank orderings PR</td>
<td></td>
<td>- Marks in Swedish and physical training R</td>
</tr>
<tr>
<td></td>
<td><strong>Grade 4 (age 11)</strong></td>
<td></td>
<td>- Test in Swedish T</td>
</tr>
<tr>
<td></td>
<td>- Positive nominations PR</td>
<td></td>
<td>- School attitudes SR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- School dropout (boys) R</td>
</tr>
<tr>
<td>II</td>
<td>See Study I</td>
<td><strong>Grade 3 (age 10)</strong></td>
<td><strong>Grade 8 (age 15)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-(Aggression TR)</td>
<td>- Rank orderings PR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-(Withdrawal TR)</td>
<td>- Self-estimated peer ranking SR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-(Intelligence T)</td>
<td>- Peer network measures SR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Measures about antisociality SR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Peer situation SR</td>
</tr>
<tr>
<td>III</td>
<td><strong>Grade 3 (age 10)</strong></td>
<td><strong>Grade 3 (age 10)</strong></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Rank orderings PR</td>
<td>- Family SES PaR</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Grade 6 (age 13)</strong></td>
<td><strong>Grades 3 and 6 (age 10/13)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Rank orderings PR</td>
<td>- Academic achievement R</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Aggression TR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Withdrawal TR</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>See Study III</td>
<td>See Study III</td>
<td><strong>Young adulthood</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Alcohol abuse R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Criminality R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Mental health R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Midadulthood</strong></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>- General health SR</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Alcohol consumption SR</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Subjective well-being SR</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Measures about satisfaction with social relations SR</td>
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<td></td>
<td></td>
<td></td>
<td>- Job satisfaction SR</td>
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<td></td>
<td></td>
<td></td>
<td>- Vocational career SR</td>
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<td></td>
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</tbody>
</table>

**Note.** PR = peer-report; SR = self-report; TR = teacher-report; PaR = parent-report; R = register data; T = test. Measures in brackets are accounted for in the text of the study, but are not formally treated as control variables.

which study and how the studies are connected to each other in that respect. Study III stands out from the other studies as it is a methodological study and not a prospective study with outcome measures.

**Comparison between the sociometric classifications used in the studies**

In this section, I intend to compare and connect the cluster solution in Studies III and IV with the classification method used in Studies I and II for identifying stable peer status groups. The latter one-year longitudinal classification procedure is described in detail in Adebäck (1969), in Magnusson et al. (1975), and in Study I, and it is here referred to as the AM method. Bearing in mind the discussion above about arriving at rather similar results with different
Table 2.
Girls in AM peer status groups classified into specific clusters

<table>
<thead>
<tr>
<th>Clusters</th>
<th>AM peer status groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>1. Average</td>
<td>7</td>
</tr>
<tr>
<td>2. Popular</td>
<td>1</td>
</tr>
<tr>
<td>3. Rejected</td>
<td>1</td>
</tr>
<tr>
<td>4. Near average at age 10 with a positive change</td>
<td>4</td>
</tr>
<tr>
<td>5. A marked positive change into average at age 13</td>
<td>-</td>
</tr>
<tr>
<td>6. A negative change into near average at age 13</td>
<td>2</td>
</tr>
<tr>
<td>7. A marked negative change into near average at age 13</td>
<td>-</td>
</tr>
<tr>
<td>All AM girls</td>
<td>15</td>
</tr>
</tbody>
</table>

*Note.* AM peer status groups refer to sociometric categories according to Adebäck (1969), Magnusson et al., (1975), and Study I. The clusters are from the sociometric classification in Study III.

Sociometric measures and classification methods, it seems probable that a considerable overlap will be found in sociometric group belongings identified by the two classification methods. In addition, the classification time periods are overlapping, although differing in length (one year and three years, respectively), and rank ordering at age 10 is used as a sociometric measure in both classifications.

Table 2 account for how the girls in the three AM groups of one-year, stably rejected, average, and popular peer status are distributed over the different clusters. An exact, cell-wise probability test (Bergman & El-Khoury, 1987) showed that the cell with members belonging both to the rejected cluster and the rejected AM peer status group, the cell with members belonging both to the popular cluster and the popular AM peer status group, and the cell with members belonging both to the average cluster and the average AM peer status group indicated, in all three cases, significant types at p< .001. A more detailed descriptive account of the figures in Table 2 shows that a majority of the girls in the rejected AM peer status group belongs to the rejected cluster and the rest of them, but one, to the volatile Cluster 5, which is characterized by low peer status at age 10 (see Study III for cluster identifications). Likewise, most of the popular AM peer status girls are members of the popular cluster, and the rest of them are members of the volatile Clusters 6 and 7, characterized by high status at age 10. The same tendency was found for the average AM peer status girls. Most of them belong to the average cluster or in second hand to Cluster 4,
characterized by average status at age 10, while the rest of them are spread out in other clusters.

In conclusion, the congruence between the two methods used in this thesis to assign girls into different peer status groups is rather high for the girls included in the AM classification. It also seems logical that the correspondence is highest at age 10, where both classification methods had the first of their selection points, while the second selection point was separated in time between the two classifications (at age 11 and age 13, respectively). Judging from our findings, some age 10 rejected and popular girls, while still rejected and popular at age 11 (according to AM), have changed their peer status at age 13 (according to the cluster solution). In referring to the maintenance phase of the Coie (1990) model, it might be suggested that one year is too short a period to capture the developmental processes taking place in that phase of peer rejection and that three years is a more appropriate time period to separate stable peer rejection from more transient states of peer rejection. Ideally, one should wish to have more than two time points for the longitudinal sociometric measurements.
General discussion

Overview

In the general discussion, I will concentrate in more detail on the findings of the empirical studies and point to some problems and implications. Three main parts will be included. The first two parts pertain to the two-folded meaning of sociometry as both a methodology and a whole research domain (as connoted by Hallinan, 1981). First, a methodological part will focus on the sociometric methods used in the present research and on some implications of the introduction of the clustering classification approach. Then, in the second part, the adolescent and adulthood adjustment consequences of childhood stable peer status will be discussed, as mirrored by the empirical findings of this thesis. To bring the thesis to a close, a final comment will be included pertaining to constraints of the present research and the plea for future research.

Methodological issues

Introduction. By our sociometric classifications over time, we have tried to mirror the maintenance phase of peer rejection, which according to Coie (1990), is a long time period during which peer rejection becomes a stable reality for some children. In our case, the sociometric measurement period is one year for the adolescence outcomes studies (Studies I and II) and three years for the adulthood outcome study (Study IV). The first one-year time period is well in line with many other studies examining stable peer status as an adjustment predictor, while the second three-year period is rather long in comparison to most other research.

The rank-ordering sociometric measure. First, let me state that to secure good cooperation from families and school staff, negative nomination measures were omitted from the present research program and replaced by a rank-ordering measure combined with positive nominations. From the beginning, the research program aimed to examine the included cohorts in a long-term prospective perspective, and, for that reason and for general ethical considerations, it was important not to endanger the program by choosing potentially unethical and questionable measures. As a result, we then run the risk that our peer status groups include, in part, different members compared to groups where the negative nomination criterion or, for that matter, some other criterion is used. As we have seen, a variety of sociometric methods and classification procedures have been adopted in placing children in different status groups. Some
discrepancies and incomplete overlap in the peer-status-group compositions are to be expected as a result of these classification differences (e.g., Terry & Coie, 1991). However, it seems that different two-dimensional approaches give rather similar rejected and popular status group belongings with similar predictive utility (e.g., Asher & Dodge, 1986; Terry & Coie, 1991).

The choice of the rank-ordering measure is based on its psychometrical quality to force the child to place every peer in the group in a unique position on the ranking that differs from every other peer. This is a crucial difference in comparison with the rating scale, where a child can give as many or as few extreme ratings to his peers as he wishes (Asher & Dodge, 1986; Asher, 1985). Further, the rank ordering differs from the positive and negative nominations (Coie et al., 1982; Newcomb & Bukowski, 1983) in as far as the measure is not asking for a number of liked or disliked children. To obtain clearly positive to negative endpoints on the scale, the children in our project were instead given a same-sex class roster and asked to rank every classmate of the same sex in the order they wanted them to stay with the class if it was to move to a new classroom where there is not room for everyone. This is equal to asking the children to hypothetically exclude some classmates from the class. Of importance is that, in contrast to the negative nominations measure, the rank-ordering measure used in this project has a positive selection focus (those classmates one wants to stay). Thus, the child is encouraged to think about how much he or she prefers different peers, rather than to a direct selection of nonpreferred peers.

The peer status classification for the adolescence follow-up (Studies I and II). The rank-ordering measure that was administered in grade 3 was used as one of the classification criteria. The rank-order values (from 0 to n-1 where n is the number of same-sex pupils in the class) given by each child were standardized for each class and sex (transforming ordinal scores to normalized z-scores according to Fisher & Yates, 1953; Josephson, 1967), which made values from different classes with different numbers of same-sex pupils in them more comparable. The score for each child is the mean of his or her standardized values. This classification procedure implicates that children in heterogeneous classes, where there is a clear hierarchy of peer likings and dislikings, are represented in the extreme peer status groups of children. In contrast, children in homogeneous classes, with no extreme status positions (i.e., more even scores for different children), are excluded in accordance with the purpose of identifying children with extreme peer status positions. For the other criteria, positive nominations given in grades 3 and 4, classification cut-offs were based on a statistical model for rare scores developed by Bronfenbrenner (1945). This classification model is rather robust against differences in group sizes that are found in, for instance, school classes. Thus, independently of number of
nominators, the same cut-offs were used for all school classes. Like for the rank-ordering, this classification method emphasized representation from status heterogeneous classes by its consideration of differences in raw-score distribution between nominating peer groups (see discussion in Newcomb & Bukowski, 1983, whose classification model is based on Bronfenbrenner). The boys and girls who fulfilled the criteria for having a negative peer status in all three included sociometric measures (rank-ordering and positive nominations in grade 3 and positive nominations in grade 4) were classified as rejected. After that, the most popular in the same classes according to the criteria for being popular were selected and finally the average status children were selected. The procedure is described in detail in Adebäck (1969) and in Study I.

As was accounted for above, research has shown that rejected and popular groups exhibit moderate sociometric stability, while neglected and controversial status groups are highly volatile, usually changing into average status (e.g., Bukowski & Newcomb, 1984; Coie & Dodge, 1983; Ollendick et al., 1991). This was the reason for adding the positive nominations at the end of grade 4 as a single criterion, to the criteria measures at grade 3 (rank orderings and positive nominations). It secures the aim of the classification procedure to attain stable peer status groups of popular and rejected boys and girls for the adolescence follow-up, because neglected and controversial children do not usually remain in their extreme status assignments over time. It is worth to add that the stability differences between extreme status groups open up for an alternative classification system (to my knowledge not yet realized) using only positive nominations from two time points, to identify, rather pure, stably rejected (no or almost no positive nominations at both occasions) and popular (many positive nominations at both occasions) peer status groups.

By the applied selection procedure, with its time interval of one year, much of the regression effect was eliminated (Nesselroade, Stigler, & Baltes, 1980; Newcomb & Bukowski, 1984), which reduced the problem of instability in the assignment of children into the sociometric groups. Furthermore, the stability of the groups was deliberately strengthened by the choice of time interval. In advancing from grade 3 to grade 4, the pupils move from the beginning level (grades 1 to 3) to the middle level (grades 4 to 6) of the Swedish school system, which implies some rather significant changes (a new teacher, a new classroom – sometimes in another school building). As those potentially influencing factors were included in the time span, their effect on the sociometric groups was eliminated, which ought to contribute to the peer status stability of the identified groups and increase the validity of the findings.

Another methodological implication of our selection procedure for the adolescence outcome studies, with its school class matching component, is that the members of the popular groups are not necessarily the most popular children
in the population. The group selection is based on finding the most extremely rejected boys and girls according to the criteria, and then to select the most popular boys and girls in the same classes. Thus, there might be children in other school classes who are more popular, as judged by the sociometric measurements. Our classification procedure aimed at controlling for school class differences in, for example, teacher influences, peer constellations and interactions, and the school context, which were judged as more important than recruiting the absolutely most popular boys and girls to our status groups.

The peer status classification for the adulthood follow-up (Studies III and IV). A more modern classification procedure for establishing stability in peer status was introduced for the follow-up into adulthood. One of the issues that the method discussion in the literature has focused on are the problems of artificiality of sociometric groups, where classification is mainly achieved by statistical considerations rather than by conceptual reasons and underlying psychological meaning (Asher & Dodge, 1986; Cillessen & Bukowski, 2000a; Rubin et al., 1998; Terry & Coie; 1991; for theoretical and methodological discussions, see, for example, the work edited by Cillessen & Bukowski, 2000b; for discussion of different cut-off scores, see Hymel, Bowker, & Woody, 1993; and Zakriski & Coie, 1996). By using more person-oriented methods, such as cluster analysis, one may arrive at more “natural” groupings, with membership in a cluster dependent on the individual’s value profile in the space of included variables. Thus, we saw it as a methodological challenge to apply a cluster-analytic technique in sociometric research in the hope of identifying valid, stable peer status groups for use in longitudinal follow-ups.

Another reason for changing the methodological approach is that for extremely long-term follow-ups, attrition might be a substantial problem. While interesting because they represent extreme social standing among peers, the small peer status groups in the adolescence follow-up studies are very vulnerable. These groups also represent a smaller percentage of the population than is common in most other sociometric follow-up studies. Thus, it would be preferable to have a larger number of participants in the peer status groups for the follow-up into adulthood. There was a need to reconsider the use of the sociometric classification methods and furthermore to decide which criteria might be best applied to a new research design. It seems that the sociometric rank-ordering measure – which was given in grade 3 and again in grade 6 – has a key position. In an effort to identify different peer status groups that are both temporally stable over a long time period and sufficiently large for long-term follow-up purposes, a modern clustering technique was applied to the scores derived from these age 10 and age 13 rank orderings. The study by Brendgen and colleagues (2001) accounted for above was an inspiration, because large clusters of popular, average, and unpopular children were identified in that study.
As a first step, it seems important to reflect on how the sociometric data one includes should be properly represented or classified. As we have seen, the standard score method has been criticized for not considering the raw score distribution of nominations before standardizing. This will cause almost equal distributions and rather fixed-sized proportions of status group members from different groups (in our case, same-sex class peers), even if the groups differ widely in their raw score distributions. To circumvent this problem, the authors of some studies have based their definitions of sociometric status on the number of positive or negative nominations received by a child divided by the number of nominators (e.g., Green et al., 1981; Kistner, Balthazor, Risi, & Burton, 1999; Pakaslahti & Keltikangas-Järvinen, 2001; Salmivalli, Kaukiainen, & Lagerspetz, 2000; Wu et al., 2001). The same solution for representing “like most” and “like least” sociometric data was applied in the cluster-analytic studies of the present thesis (Studies III and IV).

The findings from the validation procedure of Study III supported the empirical and theoretical meaningfulness of cluster analysis as a classification method in sociometric research. As was hypothesized, the cluster solution included three stable clusters identified as average, popular, and rejected. These longitudinally stable clusters affiliated in important respects with the corresponding peer status groups that were identified by the CDC method (with cut-off limits introduced by Coie and Dodge, 1983, which are the most widely used in sociometric studies). However, the rejected and popular clusters were substantially larger than the corresponding CDC peer status groups, with at least twice as many members. Thus, it seems that cluster analysis helps to overcome some of the problems related to traditional sociometric methods in the identification of sufficiently large homogeneous popular and rejected groups with stable trajectories. Note that the comparison between the cluster classification and the sociometric classification (AM), which was accounted for in a previous section and Table 2, gave similar results as the Study III validation procedure.

The findings for the basic sociometric measures derived from the age 10 and age 13 rank-orderings indicated that the additional girls in the rejected cluster were less rejected than those that also belonged to the stably rejected group according to CDC. However, as was also found, these two groups of rejected girls did not differ significantly in the childhood adjustment correlates. The findings for popular girls were mainly the same (Study III, p. 104). It is worth noticing that age 10 aggression was not significantly related to rejected status. Besides the explanation given in Study III (p. 108) pertaining to multiple significance testing, another hypothesis is that the aggression measure might not adequately indicate girls’ aggression. On the other hand, the same measure was applied at age 13 resulting in a significant association with rejection, and, furthermore, it was constructed as a rather “global” and general indicator of aggression to fit both girls and boys (see Magnusson et al., 1975).
An interesting in-group status development was detected for the rejected and popular clusters, with a significant increase in degree of rejection and popularity, respectively, from age 10 to age 13. Thus, the cluster analysis produced a sociometric classification with stable extreme clusters that mainly seem to include girls that, while stable in their group membership, became more negatively/positively judged by their peers over time. Perhaps temporal stability in an extreme peer status position might indicate an interaction with peers that not only conserves this position, but also leads to increased rejection or popularity over time. As we have seen, Coie (1990), in his phasic developmental theory of peer rejection, included a third phase, the maintenance phase, “during which time rejection by the group becomes a stable and enduring reality for some rejected children” (p. 365). Among the developmental processes involved in that phase may be some that not only contribute to maintenance of peer status (e.g., Cillessen et al., 2000; Parker et al., 1995), but also to increased rejection. One may, for example, imagine increasingly negative perceptions, stereotypes, and behaviors as included among those processes and similar, but benign, processes for the popular child. Coie described several routes into a negative cycle of peer difficulties in his emergent phase of peer rejection (e.g., social characteristics, self-perceived peer standing, expectations about social success or failure, and the role of the peer group) that might be equally applicable in a process of aggravated peer rejection in the maintenance phase. While Sandstrom and Coie (1999) have recently studied factors associated with improved peer standing among elementary school children, including modest improvements within an unchanged rejected peer status, it seems that the negative process found here remains to be examined more closely.

As expected, the temporarily volatile clusters that were identified in the cluster analysis could be interpreted as including average or “near average” status either at age 10 or at age 13 (Study III, p. 100). According to previous research findings, average peer status seems to be central in children’s status translations and the developmental paths of children with transient peer status mostly start from or lead to the average status position (Coie & Dodge, 1983; Newcomb & Bukowski, 1984; Parker et al., 1995; Terry & Coie, 1991). However, transient peer status trajectories, which may include both linear and nonlinear processes over time, are difficult to analyze in detail without a more fine-graded timescale. While such an analysis was not a goal of the studies included in the present thesis, one may, nevertheless, speculate that these trajectories might not be captured by specific sociometric groups or clusters but are fluid characteristics inherent in the peer group dynamics and interactions affecting the peer status of individual children at different points in time (see also the extensive discussion in Wu et al., 2001, about stable and fluid characteristics of children’s peer status and the reliability of sociometric instruments). Thus, the volatile clusters may come out as accidental gatherings of girls that might have dissolved or changed...
into other groupings, at least pertaining to included members, if other or more time points had been included in the cluster analysis. Furthermore, stepping up or down one level in the hierarchy of cluster solutions (to the eight-cluster solution and the six-cluster solution, respectively) affects only volatile clusters, which adds to the evidence of their more accidental nature.

The cluster analysis did not identify any stable clusters of neglected or controversial peer status, which is in line with the expectations, and earlier empirical findings and theoretical discussions (e.g., Frederickson & Furnham, 1998). While the CDC classification method did not identify a longitudinally stable controversial group either, it identified a stable neglected group (Study III, p. 103). In the cluster analysis, most of these CDC neglected girls were assigned to the stably average cluster. Newcomb and colleagues (1993), in their meta-analysis, found that neglected children displayed the fewest differences from average children of all extreme sociometric groups. They speculated that neglected children may simply select a lower level of involvement in their peer group, and, thus, are more invisible and not so well known by their peers. Perhaps they represent a special group of average children with a lower profile, and accordingly they may have a natural place in “average status” clusters.

From a purely methodological perspective, one might state that there is no prior way of knowing what clusters you will obtain in a cluster analysis – it depends entirely on the associations between the included variables (the individual value profiles). However, one may form hypotheses (as in the cluster analysis in the present thesis) built on theory and empirical findings from earlier research in which the same or other classification methods have been used. Then, one has to apply the criteria outlined for the clustering method and try to interpret the centroid values of the clusters in the solution (somewhat analogous to interpreting factors in a factor analysis) and validate the interpretation. In most cases this is possible and meaningful only for some of the clusters. For the other, more “mixed” clusters, one has to search for information from the specific research area in question, which may give some hints about how these clusters might tentatively be interpreted.

**Stimulus aspects of sociometric criteria.** It seems appropriate to draw some attention to the phrasing of the questions in the sociometric measures in the light of the fact that a number of different criteria have been used in sociometric research (for up-to-date reviews, see Hymel et al., 2002; Terry, 2000). The criteria applied here in both the positive nominations and the rank-ordering measures were in adherence with a tradition in sociometric measurement that goes back to Moreno (1947) and which advocates the use of concrete, task-specific, situation-specific or indirect preference questions – such as play with, sit next to, invite to a birthday party or go on a trip together – rather than...
abstract, situation-general, direct preference or more multidimensional questions – such as “liking” or “friendship” questions. In a recent meta-analytic review, Jiang and Cillessen (2005) noticed that peer nomination methods in different studies varied substantially with regards to specificity in the aforementioned sense. These authors examined the short- and long-term stability of different dimensions of sociometric status and found that reliability and validity were not influenced by sociometric technique, nor in the sense of general or situation-specific questions, nor pertaining to peer ratings or nominations. Thus, it seems that the specific choice of sociometric questions may be of limited significance for the identification of stable peer status groups in Studies I and II or of stable peer status clusters in Study III. Furthermore, our finding of a high correlation between age 10 positive nominations and the “like most” scores of the age 10 rank-ordering is also in line with the Jiang and Cillessen findings.

**Gender related issues.** As in several other studies, same-sex peer status was examined here. As was discussed above, same-sex peers are the nearest, most familiar, and most well-known peers in childhood and early adolescence for most children and children associate to a very high degree only or mostly with those peers (e.g., Fabes et al., 2004; Maccoby, 2000). Thus, it seems justified to primarily measure children’s standing among same-sex peers because they are much more familiar with them than with cross-sex peers. On the other hand, our adolescence findings indicate that status among same-sex and cross-sex peers is rather similar (Study II), which might mean that the choice of nomination group pertaining to gender does not influence peer status membership very much.

One essential limitation of the methodological study (III) is that it only included girls. However, in a meta-analytic review, Hyde (2005) found strong evidence for the gender similarities hypothesis. Furthermore, judging from the overwhelming majority of findings pertaining to stable peer status groups of both genders (see the introduction), it seems probable that a cluster analysis may identify the same typical stable groupings for boys as for girls, and may also lead to similar results in the validating process. Most importantly, Brendgen and colleagues (2001), in their cluster-analytic study, presented findings that were similar for boys and girls, and Haselager et al. (2002) showed that cluster analysis was an effective tool in classifying rejected boys into different subgroups. As another, admittedly not very strong defense of the “only girls” position, one might point out that there has been a relative shortage of sociometric and other psychological studies about girls in the past, so in that sense, if one has to make a choice, concentrating on girls is the right decision. In addition, the cluster-analytic studies (III and IV) are included in a project about females’ longitudinal adjustment up to adulthood and it was in this context that they were planned and implemented. Finally, in the methodological study (III), the concentration is on the clustering method in itself and whether it is of
interest in sociometric research. One needs a relevant, large sample of children and if the method works with that sample one can go on to validate it in other samples and cultures.

On the other hand, in their meta-analysis, Jiang and Cillessen (2005) found some evidence that a larger proportion of boys in the samples might be associated with lower sociometric stability. Thus, future studies addressing the issue of whether cluster analysis is a reliable and valid classification technique for identifying stable peer status groups of both genders, would be valuable. In a validation of cluster analysis as a method in sociometric research, it is also important to examine different age periods from early childhood onwards, perhaps including more than two time points for the sociometric measurements, and to use a more modern data set than was used in the present study.

Peer status and future adjustment

The adolescence findings. The findings pertaining to midadolescence adjustment are mainly in adherence with earlier findings in the sociometric research area. First, in connecting to the methodological discussion above, one may notice that the sociometric measurements show that rejected children of both sexes seem to maintain their lower popularity with classmates of the same sex also in middle adolescence and that the popular children were still the most popular. Of course, this finding does not exclude the possibility that some children may have changed their social standing among peers; the results pertain to groups of children, and some individuals show different patterns of development (as was indicated by the comparison between AM groups and clusters above, see Table 2). However, the most important conclusion seems to be that the different peer status groups follow different developmental paths and as groups preserve their status position among peers over several years, and probably over the entire obligatory school period. Compared to most other studies, our time period from grade 3 to grade 8 is unusually long and could in that respect be compared to the study of Coie and Dodge (1983), where rather high stability was found for the rejected group over a 5-year period. One might speculate about whether this long-standing status stability might also be extended backwards to the preschool years. A study by Waldrop and Halverson (1975) lends support to such a supposition. These authors found a stability in peer relations from the early preschool years to the early school years, which, if applied to our peer status groups, suggests that many participants might have had the same status position in the preschool years as they had in their school years. In the nomenclature of Coie (1990), the precursor phase followed by the emergent status phase of peer rejection may start early in life (during the preschool years) and then the maintenance phase and the consequence phase
develop and affect the child’s development during the school years and into adolescence.

Similar patterns were found both for same-gender and cross-gender peer status in midadolescence (Study II). This similarity was especially pronounced for rejected children and the findings also indicated that the children were aware of their low age 15 peer status. Thus, it seems that the rejected children’s low popularity is largely gender-independent, which could be a still more aggravating fact for their adjustment than being of low popularity only among same-gender peers. Particularly during adolescence, the peer group comes forward as an important alternative in the liberation from earlier dependencies and in the search for an identity of one’s own. Furthermore, the awakening of sexuality and the sexual maturity process in adolescence increase the importance of opposite-gender peers (e.g., Maccoby, 1990). Negative reactions from peers of both genders during adolescence might therefore be obstacles in the process of forming one’s own identity and for one’s self-esteem.

Overall, the findings from both self and peer reports about peer relations during adolescence indicate that rejected children had a more negative situation among conventional peers (that is, among schoolmates, same-age peers, and classmates) in adolescence than other children. In their adolescence years, rejected children may not be as successful as other adolescents in finding a place among those peers that are close to them in terms of social characteristics and age. However, they do not seem to compensate by associating to a higher degree with nonconventional peers (in terms of age, occupation, or antisocial characteristics) or to be more antisocial themselves than other adolescents. These findings pertain to midadolescence and there may be a change in late adolescence, when antisocial activity seems to peak (e.g., Agnew, 2003). Furthermore, the early aggressive tendencies of the rejected children (documented in Study II, p. 753, for age 10) may find other expressions in midadolescence than the norm-breaking behaviors that were in focus in the present project as examples of antisocial behavior (e.g., French & Conrad, 2001). Also, the information about own and peers’ norm-breaking behaviors in this project came from self-reports. Perhaps data from other sources – for example, register data – might have given another picture (see Laird et al., 2005, for a short discussion of this issue). However, the self-report measure that was employed was partly validated by the expected finding that boys were more antisocial and also judged their peers as more antisocial than girls (e.g., Barriga et al., 2001).

Differences in academic performance and intellectual capacity were in the predicted direction and adhered to earlier research documenting a positive association between peer status and school achievement. As was discussed in Study I (p. 216), the causal direction is unclear because no control was made for academic achievement or intelligence in the early school years. However, in a
separate examination, a rather high similarity was found in intelligence score differences between the peer status groups at grade 3 and grade 8. This finding gives some support to an incidental or intermediate explanation of peer status influences on academic ability. Furthermore, other authors have found that controlling for cognitive capacities decreases the association between childhood peer status and later academic achievement (e.g., Bagwell et al., 1998; Vitaro et al., 1994).

Peer status did not predict general attitudes towards school either for boys or for girls; only slight tendencies were found for girls that were congruent with the school achievement findings. As this is a relatively unexplored research field, more investigations – perhaps with other self-report methods, such as interviews – are needed before more definitive conclusions can be reached about the relation between peer status and subjective school experiences.

One third of the rejected boys dropped out of school without finishing the last obligatory school year. School dropout is an important indicator of maladjustment and gives further evidence of the rejected boys’ exposed position in school. Other boys (or, for that case, girls independent of peer status group belonging) had a much smaller or nonexistent dropout rate. Furthermore, the rejected school dropouts seemed to be more gravely rejected initially than other boys in the same peer status group and they were absent from school more often before they dropped out than other boys and than girls. Thus, their definitive dropping out of school might be a rather late step in a social outcasting process, taking place during the maintenance phase and consequence phase of the development of peer rejection (Coie, 1990). Earlier steps in that process include long-term rejection by peers, high levels of school absence, and low school achievement. One may speculate whether these indications of a possible social outcasting process are an effect more of the dropout boys’ initial extreme rejected status (compared to other rejected boys) than of consistent rejection, in which case it comes close to an incidental interpretation of the impact of stable rejection on school adjustment for this subgroup of rejected boys (e.g., Cillessen et al., 2000). It seems important in future research to control for initial peer position, even inside a specific peer status group, to separate the effects of stable peer status from the effects of initial peer status.

An alternative explanation may be that peer rejection does not directly contribute to school dropout, but is a marker of personal problems, such as the behavioral problems pertaining to aggression and withdrawal, and the school problems that were documented in Studies I and II. This explanation is in line with the findings of Vitaro and colleagues (2001), that early disruptiveness and poor academic performance (as well as socio-familial adversity) directly predicted school dropout for boys, while unpopularity and friendlessness did not. Likewise, French and Conrad (2001) found that only rejected adolescents...
who were antisocial had a higher rate of early school dropout. Finally, Farmer, Estell, Leung, and colleagues (2003) identified three paths leading to school dropout for aggressive youth. Some aggressive youth seem to be isolated and socially unconnected in school and their dropping out may be associated with a lack of such social affiliations that could have promoted engagement in school. Farmer, Estell, Leung et al. did not include sociometric status measures in their study, but the dropout process of their aggressive and socially isolated youth may well coincide with the same process for the rejected dropouts in the present thesis.

In conclusion, peer status is related to future school adjustment factors, such as academic achievement and, for boys, school dropout. How important peer status is for school adjustment is, of course, a difficult question to answer, but one might expect that average or high popularity could function as a safety net that gives strength and support when one fails in other life areas. Rejected children of both genders seem to have problems in at least some important school adjustment areas, which may reinforce and uphold their rejected status in an interactional causal chain. As we have discussed, peer rejection combined with other negative school factors might jointly function to drive the individual into an outsider position and as an ostracizing mechanism. Thus, some of our research findings indicate that peer situation together with other adjustment factors seem to form an intriguing social pattern of developmental importance for the future life situation. This interpretation of the effect of peer rejection on adolescent adjustment comes close to an intermediate model, that is, a model between the causal and the incidental models (for a description of these models, see above).

### The adulthood findings

In Study IV, we have prospectively investigated how late childhood and early adolescence stable peer status relates to adjustment in different life domains for women in young and middle adulthood. Previous longitudinal studies have been limited to follow-ups into late adolescence and, in a few cases, young adulthood. Thus, our study has a time span that considerably extends what has been common in this research field.

The young adulthood follow-up revealed that women belonging to the rejected cluster had been exposed to legal and treatment measures from the authorities due to their drinking behavior much more frequently than women belonging to the average cluster (almost eight to one). This strong significant association remained even after included childhood correlates had been controlled for. Thus, one might assume that peer rejection in childhood plays a role in later antisocial drinking over and beyond important childhood confounders such as aggression. As we hypothesized, rejected females were also significantly overrepresented in the criminal records across young adulthood into the beginning of middle

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adulthood. However, this effect disappeared, when childhood adjustment factors – and aggression in particular – were included in the analysis. Thus, aggression might be a powerful underlying factor that affects antisocial behavior, while rejection seems to be more of a marker. This is well in line with earlier research, accounted for above, about the role of peer rejection and aggression in explaining later antisocial behavior and criminality. Finally, no significant peer status differences were found for the young adulthood mental health indicator, which is in accordance with some previous studies (e.g., Woodward & Fergusson, 1999).

What is most striking when reviewing the findings pertaining to adjustment in midlife is the absence of evidence for any sweeping or appreciable impact of childhood peer relations. Women who were rejected or popular in childhood did not differ much in their adjustment 30 years later from women who had average peer relations as children. However, earlier research has only examined outcomes up until young adulthood and, thus, more research for the middle adulthood period is needed to corroborate our findings.

The only significant difference found was that popular females had achieved a higher career-level compared to average status females (while, in contrast to previous research findings up to early adulthood, rejected females did not differ significantly from average females). As we hypothesized, the significant difference between popular and average females was explained by the childhood correlates, especially academic achievement. Thus, a possible causal model seems to be excluded in favor of an incidental model, where positive peer relations are markers of other more basic strengths; in this case, academic achievement and probably intellectual capacity.

Middle-aged women’s satisfaction and well-being experiences in different life sectors do not seem to be associated with childhood peer status. The stable clusters did not differ significantly in subjective well-being, satisfaction with adulthood social relations, self-reported health (including alcohol consumption) or job satisfaction. This might indicate that childhood or later factors, either environmental and/or of a more heritable kind, are of greater importance for women’s general life satisfaction or else may dilute the effects of childhood peer problems. The long time span between childhood and midadulthood might, for example, give women with a lack of positive peer experiences in childhood and early adolescence plenty of time to repair and acquire more satisfying experiences of social relationships.

Finally, in the only adjustment area where we have measures from both young and middle adulthood, namely drinking behavior, it was possible to examine developmental adjustment over two adulthood life phases. In contrast to the significant young adulthood association between childhood peer status and
alcohol abuse, the midadulthood self-declared alcohol consumption of women that were rejected in childhood did not exceed the consumption of other women (which was rather modest, about 30 grams/week, regardless of their cluster assignment). A possible explanation for the divergent findings over time for rejected women might be that different indicators were used. Furthermore, young adulthood represents a rather turbulent life period (Arnett, 2000; Levinson, 1986), and perhaps especially so for those who have had previous adjustment problems, such as being peer rejected. One may see that period as partly a continuation of the adolescence period with its negative experiences for rejected girls. In middle adulthood, most of the rejected females reported that they had a comparatively “good” life, indicating a rather traditional and “normal” life. So the problematic behaviors of some of them, such as heavy drinking, might have diminished and been replaced by more acceptable behaviors.

The context and scope of the reported research: Limitations and constraints

A number of limiting conditions pertaining to the research included in the present thesis have, in part, been accounted for in the studies and at different places in the preceding text. However, it may be of interest to discuss some of these specific features conjointly and point to some important constraints that need consideration in future research.

The small group sizes are a limitation, especially for the adolescence studies, which implies reduced power of the statistical analyses. However, this limitation may be almost unavoidable when, as in this case, examining children with extreme and relatively homogeneous peer difficulties selected from a population that is not very large. Although larger than the peer status groups in the adolescence studies (I and II), the clusters in the adulthood study (IV) are of moderate sizes (especially at the midadulthood follow-up due to attrition), which could well have given non-significant results for small effect sizes in our analyses. Furthermore, the dropout at age 43 was higher for the rejected cluster than for the average cluster. However, an attrition analysis of the rejected cluster (mainly adhering to the steps that, according to Barry, 2005, are important to take in an examination of attrition in longitudinal research) revealed that this might not have affected our group differences in adulthood outcomes. We share the small group sizes with most other long-term prospective sociometric studies and this situation seems to be ubiquitous in this kind of research.

At the same time, some of the adolescence adjustment differences between peer status groups are relatively strong. Furthermore, where there are compatible
results from other studies (with samples from different time periods and cultural settings), they are mainly in harmony with the results presented here, which lend support to the validity of the findings. In contrast, the findings of largely no substantial relationships between childhood peer relations and midlife adjustment are at some variance to those found in our studies for midadolescence and young adulthood adjustment, and by others for late adolescence and young adulthood adjustment. There are some circumstances pertaining to the adulthood follow-up that deserve to be mentioned in the present context.

Our participants seem to be a reasonably representative sample of Swedish females from age 10 to age 43, born in 1955, but, as always, the specific features of the sample are of importance in discussing potential generalizations of the findings. Important questions are whether and how the specific time period studied has affected the results we obtained and whether these results apply to young girls of today, to males or to other cultures. These issues appeal for future studies of different samples from different cultures (e.g., Masten, 2005).

Another methodological limitation pertaining to the adulthood follow-up is that the life situation in midadulthood was mainly considered from the perspective of the participants. On the other hand, Jung (1984), for example, emphasized the importance of subjective measures of social support, since one might be more affected by the social support one thinks is present than by real, but unrecognized, social support. However, our significant findings in adulthood referred to register data in young adulthood and to a self-report of a rather “objective” criterion at age 43 about job qualification level, while none of our other self-report indicators at age 43 gave significant results. This serves as a warning against using only one kind of informant or method. A multi-method, multi-informant design, with the same indicators at different time periods, is recommended for future studies.

Notwithstanding the limitations pertaining to the adulthood study, it is also a fact that almost no other sociometric study has covered such a long period of time as we did. This fact makes it difficult to validate and generalize our findings. However, it seems likely that the relationships over time are strongly attenuated over a period of 30 years. Attenuation over long periods of time is found in almost any area of study (Mednick, Harway, & Finello, 1984; cf. the longitudinal law formulated by Clarke & Clarke, 1984), so in that sense there is no contradiction to the large body of studies that usually report findings for follow-up periods of 3-15 years. To use an analogy: We can predict the weather fairly accurately three or even five days ahead but as soon as the time period becomes longer than a week, the prediction becomes poor. Chaos in the form of infinite sensitivity to initial conditions (Barton, 1994) and intervening events not included in the initial equation may be responsible for this. To a certain extent,
this line of reasoning is also valid when predicting midlife adjustment from childhood peer relations. Differences in peer status in late childhood were associated with significant differences in school achievement and peer relations in the predicted direction five years later, while there were almost no significant findings pertaining to midadulthood adjustment.

In a methodological article about longitudinal research and different research strategies, Collins (2006) discussed some disadvantages when applying a longitudinal panel design, as was the case here. Panel designs are characterized by relatively long intervals between occasions of measurement. There may be considerable curvilinearity or transitions that are obscured or not observed by this paucity of measurement waves. For example, Helson and Soto (2005) found marked nonmonotonic developmental changes in middle age for women, which might make interpretations of findings difficult if only one or two measurement points are included. Thus, to get a better understanding of the developmental trajectories and important predictors of adulthood development and how they interact at different time periods and developmental turning points, there is a need for more frequent observations from childhood up to middle adulthood (although there are, of course, practical and economical obstacles to such an approach).

The diversity of peer relations research

**Different types of peer relations.** In this thesis, I have concentrated on one aspect of children’s peer relations – sociometric peer status – as a predictor of future adjustment. In recent years, some studies have also included friendship status as an important predictor. It seems that an overwhelming part of childhood friendship relations are beneficial and have positive effects for future development (e.g., Newcomb & Bagwell, 1996). As a contrasting example, allying with antisocial friends might lead to antisocial development (Berndt, 1996), which we have put forward as one possible explanation for the antisocial drinking behavior in young adulthood among our rejected females (Study IV). In any case, it might be important in future studies to include friendship status, friendship quality, and/or characteristics of friends together with peer status as important predictors for development and later adjustment (e.g., Berndt, 1999, Hartup, 1996). Likewise, the opposite of mutual friendship status, namely mutual antipathy between children, seems to be of interest to include together with peer rejection in studies examining the maladaptive outcomes of inadequate peer relations (e.g., Witkow et al., 2005).

Another of the perspectives that have received increased interest among psychological researchers in recent years is the study of peer networks.
However, already back in the 1930s, Moreno (1934) described sociometric methods as a mean for understanding group structure and group processes. Using sociometric research tools to only measure an individual’s peer status or friendship status leaves unexplored other features of the information about social relations that might be collected from sociometric measurement (e.g., Cairns et al., 1998; Johnson, Ironsmith, & Poteat, 1994). Important pieces of information pertain to the group belongings of the individual and “the nature of the social network within which the person is embedded, including the number, size, and composition of the component social groups and their relationship to one another” (Cairns et al., 1998, p. 30). For a comprehensive and insightful analysis of the social network perspective – and a comparison and integration with the individual, sociometric status perspective used in this thesis – see Cairns et al.

In a recently published essay review, Laursen and Mooney (2005) argued that friendship experiences are confounded with other social experiences and that it seems difficult to attribute unique variance to friendship apart from variance attributed to family and peer group relations. They see peer rejection as a better predictor of most adjustment outcomes and, furthermore, friendship quality as a stronger predictor than participation in a friendship. Salmivalli and Isaacs (2005) examined prospective relations among peer rejection, friendlessness, victimization, and children’s self and peer perceptions. Their findings indicate that peer rejection has a central importance for negative self and peer perceptions, is highly stable over time, and predicts increases in victimization and friendlessness. The authors concluded that their findings confirm prior evidence that peer rejection increases the risk of multiple forms of peer adversities, such as victimization and friendlessness. Gest et al. (2001) investigated the association of mutual friendships, social network centrality, and sociometric status with concurrent behavioral correlates. They found that all three dimensions of classroom social position were uniquely associated with some prosocial or antisocial behavioral styles, but that only being sociometrically disliked was uniquely associated with the full range of social behaviors and, furthermore, to some degree correlated with the other two dimensions of classroom social standing. Finally, Laird et al. (2001) found that peer rejection was a unique predictor of subsequent externalizing behavior problems in childhood and adolescence, while the influence of antisocial friends disappeared when controlling for concurrent externalizing problem behaviors.

In our own research, we have in some preliminary analyses (not included in the studies of the present thesis) compared females having a reciprocal best friendship at both age 10 and age 13 with females that were friendless at both ages. We arrived at about the same findings as for peer status clusters pertaining to significant and nonsignificant adjustment differences in young and middle adulthood. The significant findings were, however, somewhat weaker and, as for peer status groups, they mostly disappeared when childhood correlates were
inserted in the analyses. In line with what has been found by other researchers (e.g., Rubin et al., 1998) the “friended” group was significantly associated with the popular cluster and a similar significant association was found between the friendless group and the rejected cluster (that is, they had many common members). The weaker findings for friendship groups and the high correlation between them and corresponding peer status clusters give some support to the suggestions in the preceding paragraph about the comparatively low additional value of including friendship participation in the sociometric at-risk studies.

Thus, it seems that the contribution of including other peer problems might not add substantially to peer rejection in predicting later adjustment outcomes. Peer rejection seems to co-vary with other peer problems of importance for maladjustment, including, “negative quality” friendships, friendlessness, victimization, and/or antisocial network belonging, and, in addition, seems to be a good general “peer problems” indicator for maladjusted outcomes.

The above discussion shall not be interpreted as a justification for choosing sociometric status as the only or even main focus for studying children’s peer relations, but only as a suggestion that in research on maladapted outcomes, peer rejection may be chosen as an important indicator or predictor signaling rather general peer problems. Focusing on different aspects of a child’s position in the peer group besides social status – such as friendship, mutual antipathy, self- and peer-perceived popularity, and peer network – seems to be of the utmost importance in endeavoring to understand the development and importance of peer relations, both at the individual level and at the group or structural level.

Different peer contexts. Another important issue is how representative peer relations in the school class are as a mirror of the general peer situation of the child, characterized by different but partly overlapping peer groups (Kindermann, 1998) and peer contexts (Kiesner, Kerr, & Stattin, 2004). In the method sections above, I have cited Berndt and Ladd (1989), who attached the utmost importance to the school context for popularity research, because school groups large numbers of peers together. But this issue needs further elaboration. Although classrooms and the school and preschool contexts are primary socialization milieus in childhood, they nevertheless represent a narrow view of the social contexts of children. Children associate with peers and friends during their leisure time and in different organized activities, which may potentially compensate for negative peer relations in school (e.g., Hymel et al., 2002). In contrast, already early in the sociometric research tradition there were both explicit and implicit assumptions in theoretical and empirical writings that a child’s social standing may mirror some kind of personal characteristic and that peer status, therefore, is relatively independent of the specific peer context (e.g., see discussion in Kindermann, 1998; Newcomb et al., 1993; Rubin et al., 1998).
A recent interesting example is a sociometric measurement model introduced by Terry (2000) where he proposes a latent trait of “likeability” but also stresses the importance of simultaneously considering the perceived and the perceiver (who actually made the choices) in a perceptual framework and in their association with the latent trait. Terry gives an empirical example, but acknowledges that his latent trait model of interpersonal perception (LaTRIPP) is in need of more empirical testing to evaluate “the extent to which it provides a fruitful paradigm for further research” (p. 51).

Research findings indicate that classroom peer acceptance and out-of-school acceptance are moderately related, at least when using peer reports in both contexts. This relation seems to decrease in adolescence when at least mild forms of antisocial behavior – which continue to be negatively valued in the school class and related to rejection – become more accepted among some out-of-school peers, who tend to nominate each other (see Kiesner & Pastore, 2005). As Rubin and colleagues (1998) have emphasized, the association between a specific form of behavior and popularity depends on whether that behavior is normative for a group. Our own findings pertaining to the adolescence peer situation differ somewhat from the findings of Kiesner and Pastore, as our findings indicate at least a partial association between peer status in the class and number of in-school and out-of-school peer contacts, and, further, that rejected adolescents do not associate to a higher degree with antisocial peers than other adolescents do (Study II). These somewhat divergent research findings strengthen the need of expanding future sociometric studies to a wider range of peer groups, including those outside the school context.

Final comments

In this final part, let us go back to the title of the thesis for some reflections. How important is childhood peer status for later adjustment? It seems that troublesome peer relations over a long time period in childhood have a detrimental influence on adjustment in the adolescence years in different life areas, as multiple research findings have documented. The contribution of this thesis pertains to school adjustment and relations to peers in adolescence. An exception is that no increased risk for antisocial behavior or association with deviant peers was found for rejected boys and girls. As was concluded above, it does not seem that rejected children’s aggressive tendencies in childhood develop into antisocial behavior or deviant peer associations in midadolescence. This is a beneficial finding, and one which may indicate rather normative behavior patterns, in spite of other difficulties, and may also partly explain the later development into an acceptable level of adjustment in midadulthood that was found for rejected females. On the other hand, the rejected children may
display aggressive behavior in other ways than being explicitly antisocial, and it is also possible that they develop antisocial behaviors and deviant peer contacts later in adolescence and early adulthood, as the register findings indicate. However, the paucity of sociometric studies with follow-ups into adulthood makes any conclusions about this topic rather uncertain.

In connection with these final reflections and as a continuation of them, let us listen to some conclusions and viewpoints of one of the most experienced researchers and theorists in the sociometric and peer relations research domain – Willard W. Hartup. Recently Hartup (2005; see also Hartup, 1999) summarized what is known about peer interaction among children as a source of behavior change and the dynamics of peer influence. He considered six issues as especially important to reflect upon: (a) characteristics of the influence source; (b) characteristics of the child being influenced; (c) the relationship between influencer and influenced; (d) developmental considerations; (e) the process problem; and (f) domain constraints. Hartup argued that peer influences have complex effects on children’s behavior and that numerous moderators and mediators are essential forces in these developmental processes. Longitudinal studies are necessary to unveil developmental continuities and changes. Furthermore, he would also like to see more field experiments and interventions incorporated into multivariate longitudinal studies in order to enhance our knowledge of the social processes going on between children or adolescents. Dishion and Dodge (2005) have proposed an ecological framework in the tradition of Bronfenbrenner as a useful heuristic to understand conditions and mechanisms (moderators/mediators) at individual, group, and context levels under which beneficial and harmful peer contagion effects are more or less likely.

In the present research I have, in a variety of ways, considered circumstances that pertain to the six issues that Hartup (2005) pointed out as important to reflect upon in the study of peer relations. What is needed in longitudinal sociometric research about peer relations and adjustment is a more systematic approach to these issues and an integration of theoretical models with temporal designs and applicable statistical models (see the discussion in, for example, Collins, 2006). And last but not least, as Hartup also stressed, intervention studies are needed to give us tools to help children improve their peer situation and to increase our understanding of the processes of behavior change in the peer domain.
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