

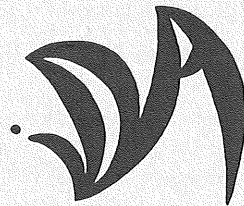
Reports from the project

Individual Development and Adaptation

**PEER REJECTION AND FUTURE
SCHOOL ADJUSTMENT**

A longitudinal study

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The research program Individual Development and Adaptation (IDA) was initiated by David Magnusson in 1964 and was led by him until 1996 when Lars R. Bergman became the principal investigator.

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- No. 72 Publications 1961 - 2000. (*December 2000*)
- No. 73 Zettergren, P. Peer rejection and future school adjustment. A longitudinal study. (*October 2001*)

Foreword

This report concerns the study of peer rejection and popularity in relation to school adjustment. The data collections behind this study have taken the efforts of many people. Foremost, I want to thank David Magnusson who initiated and led the IDA-program for over 30 years until 1996. In the collection of the peer data, fil. lic. Berit Adebäck played an important role.

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Stockholm, October 15, 2001

Lars R. Bergman
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Abstract

The present thesis concerns the school adjustment, academic performance, and health in preadolescence (age 12) and adolescence (age 15) of boys and girls (N=90), who in middle childhood (age 10 and 11) were long-term rejected, popular, or of average popularity in their school class. Data were taken from the Swedish longitudinal research program IDA, "Individual Development and Adaptation". Self-reports, reports from teachers and parents, school marks, standardized achievement tests, intelligence scales, and school health cards were used as follow-up instruments. School dropout rate for boys was also included (dropout from school is predominantly a male problem).

Rejected children of both sexes experienced their school situation as more negative and felt less comfortable at school than other children in preadolescence according to both self-report and reports from parents. In adolescence neither boys' nor girls' peer status groups differed significantly from each other in self-reported general attitudes towards school and the schoolwork. Thus, it seems that rejected children have come to like school better in adolescence than they did in preadolescence in spite of other findings of this project that point to continued school problems for rejected children in adolescence.

In preadolescence, rejected girls, and to a lesser degree also boys, judged their overall relationship with the teacher as bad. At the same time period, the teachers, on their hand, preferred the rejected children of both gender less and found them more troublesome compared to average and popular children. Peer rejection seems to precede and/or occur alongside distortions in the contact between the teacher and the child.

Peer rejection was related to poorer academic performance in both preadolescence and adolescence, which indicates that the academic difficulties of rejected children are a long-standing problem. Furthermore, the intelligence level of rejected adolescent boys and girls were short of the standards of children from the other status groups. The academic achievement and intelligence measures of popular boys and girls were mostly of superior standard in both preadolescence and adolescence compared to the other groups, which indicated that high peer popularity is linked to high academic standards.

Mental health problems and physical health problems, as noted on the school health cards in preadolescence, were more frequent in rejected children, especially in boys.

The school dropout rate of rejected boys was much higher than that of other boys, which indicates that at least some rejected boys in higher grades find school unbearable to such an extent that they become school dropouts.

In conclusion, although there are some gender differences, peer rejection seems to be associated with later school and health problems for both boys and girls in the school years from at least preadolescence to midadolescence. Interventions are needed at an early stage to put an end to this negative development for peer rejected children.

The causality problem was discussed in connection to different models.

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STUDIES

This thesis is based on the following studies:

- I. Zettergren, P (submitted for publication). Later school adjustment and health of children with stable sociometric peer status.
- II. Zettergren, P (submitted for publication). School adjustment in adolescence for previously rejected, average and popular children.

Preface

This thesis concerns different aspects of future social development and adjustment in school for three groups of elementary school children differing in peer status; rejected children, popular children, and children of average popularity. The two follow-up periods cover the school situation for the participants as preadolescents and as adolescents. In our choice of time periods we are mainly in agreement with Sullivan (1953) and a common supposition and practice in peer rejection research that it is peer rejection during middle childhood and preadolescence that is presumed to lead to later disorder in adolescence (and early adulthood) (Coie, 1990; Parker & Asher, 1987).

It is worth pointing out that the present project and thesis have a longitudinal and prospective direction with the use of follow-up designs and data analyses. The longitudinal perspective is of considerable length with a time span of about 5 years covering the period from the early elementary school years to midadolescence.

Contextual, Historical, and Methodological Background

Human Development and Peer Relations

In different kinds of psychological developmental theories, social factors play an important role in the development of the individual and his self (ego, experience of her/himself). From infancy over childhood and adolescence and up to adulthood the individual is engaged within a complex web of relationships with other people. Hartup (1989b) differentiated between vertical and horizontal relationships and argued that both kinds of relationships are necessary to the child's development. First the child must form vertical relationships or attachments, that is, relationships to individuals who have greater knowledge and social power than her/himself, usually adults (first the caregivers, primarily the mother, then other adults as for example 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 the same amount of social power as he or she, usually other children (often of same-age), with whom the child can elaborate their social skills, cooperate and compete in a reciprocal way.

The contributions and diverse functions of peer relations in the socialization process of children have received increased attention and nowadays there seems to exist a clear consensus among social developmental researchers that children's peer relations provide unique and essential contributions to social and emotional development (see for example, Asher & Coie, 1990; Belle, 1989; Berndt & Ladd, 1989; Coleman, 1980; Hartup, 1983). 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).

Asher (1990), accounting for the trends of modern society, assumed that peers may be even more important today than in earlier times. In many families both parents are working and there is also an increasing number of single-parent families, which has led to a greater importance and at an earlier age for 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 in earlier times, and participate to a higher degree in

organized peer group activities. Asher concluded that this means that children will spend a considerable amount of time with similar-age peers.

Considering the functions that peer relations and friendship fulfil in the life of children, it is a sad fact that many children lack friends in their schools and in their leisure time. Different studies indicate that about 5 to 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 (Bukowski & Hosa, 1989) the number is even higher.

The Sociometric Research Tradition

Sociometry is since long one of the most practical and effective ways of measuring and studying social relationships like peer relations, and sociometric research tools are often used by social scientists in examining friendship relations and individual differences in popularity. The history and development of sociometry is closely interwoven with the history of peer relations research.

The term "*sociometry*" has been connotated with at least two different meanings (Hallinan, 1981). The first and literal meaning of the term is referring to a research method, the measurement of social relations. It is a technique for gathering and studying data about interpersonal choices in a group, especially friendship choices. The instrument could be a sociometric questionnaire with questions about friendship preferences, as for example "Who are your best friends?" or "Who do you like to play with?". Usually the choice is limited to a certain number of peers, like for example three classmates you like to play with. Other instruments include a judgement of all peers in a group, for example peer ratings (e.g., ratings of all peers on a scale from, usually, 1 to 5 depending on how much one wants to play 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 one's own feelings, like attraction or aversion, toward other group members, should be distinguished from another use of the instruments, namely peer assessment. In peer assessment, the instruments are used to judge the characteristics of other group members, like the extent to which they have exhibited specified traits, behaviors, or achievements (Kane & Lawler, 1978).

A second and more general meaning of the term "*sociometry*" refers to the whole process of analyzing data from sociometric questionnaires and of drawing conclusions (Hallinan, 1981). Sociometry then becomes not only a data collection technique, but 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.

Moreno (1934 and 1953) stands out as the most influential researcher in the early days of sociometry. He developed and made the sociometric methods widely used among researchers studying peer relations during the 1930s. While Moreno's main interest was the group and its structure, other investigators included sociometry in their research to assess individual differences in social acceptance and competence, uses that are pre-eminent even today. In this tradition one tried to relate characteristics of individuals to the positions they occupied in the friendship structure of a group. The research participants were mainly schoolchildren and the researchers studied the individual differences between popular and unpopular children in the hope of getting

tools for helping children gain acceptance in their peer group. One of the pioneers was Koch (1933, 1935), who correlated popularity with adjustment measures. Her intention was to show that social competence with peers was related to other measures of social adjustment, and further she wanted to find ways to help children with problems in their peer relations. Other early researchers in this tradition were Bonney (1943), Gronlund (1959), Lippitt (1941), Northway (1943, 1944, 1946), and Young and Cooper (1944).

Several studies from the early days of sociometric research to the present day have documented that peer relations in childhood are important determinants in social development and adjustment. Failure to achieve social status in a peer group places children at risk for concurrent and subsequent adjustment difficulties, while positive peer status seems to be an important predictor of good adjustment (see for example the reviews by Hartup, 1983; Parker & Asher, 1987).

An essential drawback of many sociometric risk studies in the past is their confounding of two conceptually different types of unpopular children: rejected children, who have no or few peers and are openly disliked, and neglected children, who also have no or few peers but are not unduly disliked (Parker & Asher, 1987). At the positive end there has often been the same kind of confusion between genuinely popular children and controversial children, who are also popular but at the same time disliked by some peers (Coie, Dodge, & Kupersmidt, 1990).

An expanding 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). There are also reports of stability over time especially for rejected status but also for popular status, as contrasted to the low stability for neglected as well as for controversial status (e.g., Asher & Dodge, 1986; Bukowski & Newcomb, 1984; Coie, 1985; Coie & Dodge, 1983; Coie & Kupersmidt, 1983; Newcomb & Bukowski, 1983, 1984; Ollendick, Greene, Francis, & Baum, 1991; Terry & Coie, 1991). For example, Coie and Dodge (1983) reported that rejected status was quite stable over a 5-years period from elementary school to high school, whereas neglected status was not. Neglected children tend to shift in their social status across time to average or sometimes even popular peer status, but never in a more negative direction. 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 most so for the average and neglected groups. The rejected group was most resistant to classification errors due to nominator attrition.

Accordingly, there seems to be ample research evidence that rejected children ought to be in the focus of sociometric risk research and they are chosen as the basic target group in this study and are compared to popular children and a baseline control group of average status children.

Sociometric Classification Methods and Peer Status Groups - an Overview

The definition of target groups is partly a method problem, a question about which sociometric method to select to obtain the groups of interest. Different methods have been used like sociometric choices (nomination measures), rank-ordering, peer-ratings, teacher-classifications, and rate-of-interaction. Furthermore, coupled to the choice of

method, a decision has to be made as to which classification scheme and which numerical criteria to use for classifying children into sociometric groups (Newcomb & Bukowski, 1984; Terry & Coie, 1991).

Especially from the beginning of the 1980ths there has been a lively discussion about operational definitions of peer popularity and unpopularity. The unidimensional social acceptance approaches seem to confound two distinct status groups at the low end (rejected and neglected), as well as at the high end (popular and controversial), and this heterogeneity may yield weaker findings than approaches that separate children into more homogeneous groups (Coie, et al., 1990). Coie, Dodge, and Coppotelli (1982), like many other researchers, are of the opinion that to accurately identify the different sociometric peer groups in, for example, a classroom, one must use a two-dimensional sociometric approach with both a measure of social acceptance and a measure of social rejection, that is, measures of positive and negative peer choices. This methodological step is a decisive shift away from the simple identification of children as popular or unpopular toward placement of children into more precise social status groups (Newcomb & Bukowski, 1984), and 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 as Dunnington, 1957; Lemann & Solomon, 1952; Thompson & Powell, 1951).

One of the most common two-dimensional approaches is the nomination-based system where the members of the population are asked to identify a small number of peers, often three, whom they like most and a similar number of peers whom they like least. Positive nominations is a limited-choice method with reasonable stability, the test-retest reliability being about $r = .60$ over 5 to 6 months for both preschool and school children (Wasik, 1987; Kalfus & Berger, 1985). Busk, Ford, and Schulman (1973) reported a test-retest correlation over an 8-week period across different classrooms that averaged $r = .76$ for fourth-grade students and $r = .84$ for sixth-grade students. Test-retest reliability correlations for negative nominations are in general lower than for positive nominations (e.g., Roff et al., 1972). Over the years a vast literature has shown that sociometric choices are a reliable and valid index of children's peer preferences and that sociometric choices are consistently related to children's actual interactions with peers (e.g., Bukowski & Hoza, 1989). For example, children give positive sociometric nominations to peers with whom they have frequent positive interaction (Gottman, Gonso, & Rasmussen, 1975; Masters & Furman, 1981) and to whom they give more visual attention (Vaughn and Waters, 1981).

In contrast to a restricted nomination procedure, one can, of course, allow unrestricted nomination like Cantrell and Prinz (1985) in a study where they asked children to nominate a free number of liked and disliked classmates.

When negative peer status is defined solely in terms of few nominations from peers in a measure of social acceptance, there is, as mentioned, a confounding of two types of negative status, namely of being actively disliked and of not being nominated at all, neither positively nor negatively (Coie et al., 1982). 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 are not nominated at all, neither positively nor negatively. There seems, however, to be some difference between neglected and rejected children also in the positive nominations measure.

Unlike rejected children, neglected children tend to be positively nominated by at least one peer (Coie & Dodge, 1983).

A similar kind of confusion appears at the positive end of the acceptance dimension when only positive nomination items are used. If one adds the negative nomination scale to the positive scale, one can distinguish between the popular group with high liking scores and low disliking scores, and the controversial group high on both dimensions. Roff et al. (1972) have suggested that the controversial children behave in ways different from popular children. McMichael (1980) found that low-achieving, low-sociometric boys tended to nominate each other as friends, and Parke and Asher (1983) suggested that these children may turn out to be the children identified as "controversials". 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, to complete the picture, there is of course also the large group of children of average popularity in the middle span of both the positive and the negative nomination dimension.

That the distinction between socially rejected and socially neglected children, as well as between popular and controversial children, can be made with some validity is shown 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 (Ferrer & Krantz, 1987; Goldman, Corsini, & de Urioste, 1980; Gottlieb, Semmel, & Veldman, 1978; Gottman, 1977; Green, Forehand, Beck, & Vosk, 1980; Hartup, Glazer, & Charlesworth, 1967; Hymel & Asher, 1977; Moore & Updegraff, 1964; Roff et al., 1972).

The two most common two-dimensional classification procedures based on positive and negative nominations, although with several modifications among different authors, are the probability method advocated by Newcomb and Bukowski (1983) and the standard score method developed by Coie et al. (1982). Coie et al. combine the standardized positive and negative nomination totals 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 criticizing the standard score method for not considering differences in raw-score distribution between nominating peer groups, determine social status directly from the positive and negative nomination totals for each child by a classification based on binomial distribution theory as first formulated by Bronfenbrenner (1945). There are of course also other ways of combining the positive and negative nominations in the classification procedure. Cox (1974), Cantrell and Prinz (1985), and French and Waas (1985), to select a few, all used classification procedures that differed from each other and from the ones of Newcomb and Bukowski and Coie et al.

Some discrepancies and incomplete overlap in the peer-status-group compositions are to be expected as a result of classification differences as documented by for example Newcomb and Bukowski (1983) and, as we shall see below, Terry and Coie (1991).

The above classifications of children into different sociometric groups are examples of categorical sociometric indices (Shantz, 1983). That is, one places individuals into specific sociometric categories depending on their liking and disliking scores. One can also use a dimensional index that rank children according to how much

they are liked by their peers or how socially visible they are in their peer group (Shantz, 1983), without a subsequent division into different sociometric groups. This is what Peery (1979) has done, when discussing the possibility to combine the negative and positive peer nomination scores to create two new dimensions of sociometric status. What Peery calls "*social impact*" is the sum of a child's liking score and his/her disliking score, and "*social preference*" is the liking score minus the disliking score. Social impact is the relative degree to which children are visible in their peer group (both positively and negatively) and social preference is the relative extent to which children are liked by their peers (the extent to which the liking score is higher or lower than the disliking score). Of course, these scores might be used for categorical purposes as well with the purpose of placing children into different social status groups, as was done by Coie et al. (1982).

In another dimensional use of the positive and negative peer nominations, Rys and Bear (1997), instead of combining the two measures, equalized frequency scores for negative nominations with overall peer rejection and frequency scores for positive nominations with overall peer acceptance. In a similar manner, Bagwell, Newcomb, and Bukowski (1998) used the average of two negative nominations scores from different assessments as their rejection score.

The use of negative nominations has however elicited concerns and objections from parents, school officials, practitioners and some researchers, and 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 (Asher, 1985; Asher & Dodge, 1986; Asher & Hymel, 1981; Foster & Ritchey, 1979; Hallinan, 1981; Moore, 1967). A few studies have addressed this issue but they found no evidence of negative effects on peer relations after the administration of the negative sociometric measures. This was equally true for preschool children (Hayvren & Hymel, 1984), and 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 that the authors of the studies are well aware of and mention. Besides, as Bell-Dolan et al. (1989) themselves notice, some participants may object to the use of negative nominations on moral grounds, apart from their possible aversive effects on children's behavior or feelings.

Thus, there seems to be good reasons to proceed cautiously when considering inclusion of negative nomination measures and also good reasons for the use of a less controversial procedure (Asher & Dodge, 1986). Our research project is part of a larger longitudinal program IDA (Magnusson, 1988) with a huge amount of data to collect in the schools at different time periods, which required a good cooperation with participants, parents, teachers, and school authorities. We could not jeopardize the future of the program because of doubts about its ethical standard. Thus, negative nominations were omitted from the program.

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 like the positive nominations. In the rating-scale measure (Roistacher, 1974; Singleton & Asher, 1977; Thompson & Powell, 1951), children are asked to rate all classmates (or as is more usual those of the same gender) in a particular criterion, for example how much they want to play or work with each peer. A child's score is the average rating received from all classmates. The rating scale method gives an indication of each child's perception of every other classmate, in contrast to the nomination method with its limited choice. Asher, Singleton, Tinsley, and Hymel (1979) suggested that this difference might be the reason for the higher test-retest reliability of the rating-scale compared to the nomination measures they found for preschool children and several other authors have found for elementary school children (Asher & Dodge, 1986; Oden and Asher, 1977; Thompson & Powell, 1951). If one or a few raters change their judgment of a child from one time to another, it will have a rather little effect on the rating-scale score for the child, while the nomination score would be greatly affected by a change with one or two nominations.

Rating-scale scores can be seen as a continuum of degree of overall acceptability, reputation, likeability or popularity within the peer group (Asher & Hymel, 1981; Foster & Ritchey, 1979; Green, Vosk, Forehand, & Beck, 1981; Greenwood, Walker, & Hops, 1977; Gresham, 1981), or as a type of composite measure of popularity ranging from highly accepted to highly rejected and unaccepted children (Bukowski & Hoza, 1989; Hymel, 1983). Those children usually receiving positive ratings would be called popular and those children usually receiving negative ratings would be called rejected. Those children who receive ratings near the mean of the scale might prove to be either average or neglected. Finally, those children receiving a high variance in ratings with several ratings at each extreme would be called controversial. To distinguish between average and neglected children one would have to include a positive nominations measure, where neglected children are in the low end, while average children are near the mean (Coie et al., 1982).

Asher and Dodge (1986) have found that rejected, as well as positive status children could be identified with reasonable accuracy by the rating-scale sociometric measure combined with the positive nominations and analyzed according to the classification algorithm proposed by Coie et al. (1982). Asher and Dodge got a more than 90 % similarity for the rejected group between their classification using the number of lowest "play with" sociometric ratings and the one by Coie et al. (1982) using negative nominations in the calculation of the disliking score. On the other hand the method was not very successful in identifying neglected children, which according to Asher (1985) might be due to the less distinctive pattern of ratings neglected children receive on the rating-scale measure, as shown by for example French and Waas (1985). Also the fairly simple classification method of summing the positive nominations score with the rating scale score (both standardized within classrooms) gave a low-status group composed of predominantly rejected children and with only one neglected child as compared to the classification procedure proposed by Asher and Dodge (Putallaz & Wasserman, 1989).

Fincham and Hokada (1987) went a step further in a reanalysis of the sociometric groups in a study by Goetz and Dweck (1980). By substituting both the positive and negative nominations for the rating scale and by using the highest rating value as a positive nomination and the lowest rating value as a negative nomination, they were able to select and differ between neglected and rejected groups according to the Coie et

al. (1982) algorithm. A unidimensional rating-scale system has also been used by some other authors (Ladd, 1983; French, 1988, 1990) to identify groups of rejected and popular children drawn from a standardized mean play rating with a low and a high cutoff point of -1.0 and 1.0.

A rather compelling, although indirect, evidence for the usefulness of a sole rating scale in classifying sociometric groups are the results of French and Waas (1985). The authors used positive and negative "play with" nominations to classify children into different sociometric groups and also obtained "play with" peer rating scores. Their results showed that rejected children were rated significantly lower than neglected, average, and popular children in the rating scale, while neglected children, although rated significantly lower than popular children, did not differ from average status children. Further, neglected children did exhibit no more problem behaviors according to teacher and parent ratings than popular or average children. Virtually the same results concerning the rating scale were found by Bukowski and Newcomb (1985) in a study where they used the positive and negative nominations for their social status classifications. While popular children were liked most and rejected children were liked least, neglected children were as well liked as average (and controversial) children according to the results from the rating scale. Finally, a study by Asher and Wheeler (1985) about feelings of loneliness of rejected and neglected children produced as a byproduct support for the conclusion that neglected children are not discriminable from average children in their rating scale scores, while rejected children receive extremely low ratings.

The sole positive nominations method that has been applied in early sociometric studies to differentiate between popular and unpopular children might perhaps prove useful also for finer social-status differentiations. As, to our knowledge, not yet realized possibility would be a classification system that takes advantage of the reported stability over time of rejected status and to some degree also of popular status as contrasted to the low stability of neglected as well as of controversial status (Bukowski & Newcomb, 1984; Coie & Dodge, 1983; Coie & Kupersmidt, 1983; Newcomb & Bukowski, 1984; Ollendick et al., 1991; Terry & Coie, 1991) by relying on positive nomination measures from two occasions to select rejected and popular peer status groups. Another classification system using a sole positive nomination measure, somewhat in resemblance with the use of a single rating-scale measure presented above, has been developed by Bell-Dolan, Foster, and Tishelman (1989). These authors presented a modified positive nomination sociometric measure, or what they call a repeated positive nomination sociometric measure, as an alternative to the positive and negative nomination measures. In what can be seen as a rank-ordering procedure they had their participants (fourth to sixth graders) nominate the two classmates with whom they especially liked to play, then two more they liked next best, and so on, until only two children remained unchosen. The first two children chosen were considered the equivalent of the positively nominated playmates in a traditional positive nomination measure, while the two unchosen children were considered the equivalent of the negatively nominated playmates in a negative nominations measure. Applying the system developed by Coie et al. (1982) to classify the children, Bell-Dolan et al. found that the repeated positive nomination sociometric measure could be used as a substitute for a positive and negative nomination measure in identifying rejected (more than 80% convergence) and to some extent popular, but not neglected, children.

Terry and Coie (1991) have compared and discussed several of the most commonly used, and above discussed, procedures for classifying children into social status groups. Their comparison included classification systems using both negative and positive nominations (the binomial distribution theory as used by Newcomb & Bukowski, 1983, and the normal distribution theory as used by Coie et al., 1982), the rating scale and positive nominations (e.g., Asher & Dodge, 1986), and the sole rating scale (e.g., Ladd, 1983; French, 1988, 1990). The study led to no definitive conclusions, but the results indicated that some cost 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-dimensionally based systems. The different classification systems gave differences in group sizes and membership in similar status groups.

As seen by Terry and Coie (1991), the classification system using positive nominations together with the rating scale as proposed by Asher and Dodge (1986) is clearly a good compromise between the system of positive and negative nominations as used by Coie et al., (1982) and the rating-scale system (e.g., Ladd, 1983; French, 1988, 1990) in terms of concordance. All of these systems use cutoff points according to the normal distribution theory, while Newcomb and Bukowski (1983) used the binomial distribution theory on positive and negative nominations with a more selective criterion than the other systems for the extreme social status groups.

The temporal stability and coherence, as well as behavioral and social cognitive characteristics, of status groups might change dramatically by including more or fewer children (Asher & Dodge, 1986). Terry and Coie (1991) found, as they expected, that the larger the proportion of participants assigned to an extreme status group, the less behaviorally homogeneous and discriminable from other groups the group is, but the better the stability in membership across time. Another of their results is that peer nomination data seems to generate status groups that are more behaviorally discriminable than are the groups generated by data from peer ratings, holding group sizes constant.

What seems clear from the above review is the variety of sociometric methods and classification procedures used in selecting children to different status groups and the relative arbitrariness of cutoff scores for status inclusion, which in the end result in a variety both in group sizes and status-group-membership belongings. As Asher and Dodge (1986) have pointed out, status classification systems are just heuristic devices for studying social adaptation and the social status groups defined by sociometric criteria are not discrete entities such as for example psychiatric diagnoses.

Terry and Coie (1991) concluded that the group selection should be dependent on the research purposes it is to serve and, in general, a particular choice of sociometric system should be geared to the context of the research problem. One important test of a sociometric method is whether it has predictive utility and can discriminate between and identify groups of individuals with different adjustment outcomes.

The Research Area: Peer Rejection and Future School Adjustment

An essential and significant issue in peer relations research must be to find out what importance good or bad peer relations has in the life of the child and for his or her future adjustment in adolescence and adulthood. This issue has, in fact, been a potent stimulus for much of the interest in children's peer relations (Kupersmidt, Coie, & Dodge, 1990); so also for our longitudinal project.

Early in the 1970s, reports were published that indicated that maladaptive peer relations in childhood are predictive of academic failure, antisocial behavior, and psychopathology in adolescence and adulthood. Since then, a substantial amount of research has documented that peer relations in childhood are important determinants of social development and adjustment, and that being rejected by peers places children at risk of a wide range of subsequent adjustment difficulties (e.g., Bagwell et al., 1998; Coie, Terry, Lenox, & Lochman, 1995; Coie, Terry, Lenox, Lochman, & Hyman, 1998; Cowen et al., 1973; Ialongo, Vaden-Kiernan, & Kellam, 1998; Kupersmidt et al., 1990; Ollendick et al., 1992; Parker & Asher, 1987; Roff et al., 1972). In contrast, positive peer reputation or status in childhood seems to be a predictor of good future adjustment (e.g., the above studies; Morison & Masten, 1991). The sociometric research paradigm (Hallinan, 1981), which implies using some sociometric assessment technique for measuring friendship formation, social status, or social adjustment, has been central to much of the peer status risk research. Classroom sociometry (i.e., social status among classmates, often same-sex), has been the preferred criterion variable. This criterion has been chosen because schools are important contexts for socialization, where children spend a great deal of time in classrooms and school playgrounds with same-age or near-age peers. Berndt and Ladd (1989) claim 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).

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. There has been some research in this field over the years, including both external adjustment factors such as social relations and academic functioning, and internal adjustment factors such as psychological well-being and mental health. In the present project, the importance of the school context as a social arena for children was acknowledged, not only by using classroom sociometry as a social status criterion, but also in concentrating on the future school adjustment. The aim was to examine and shed light on the academic performance and school adjustment of preadolescents and adolescents who earlier in their middle childhood had been of rejected, average, or popular peer status in school.

For the majority of children, the most important adult in elementary school is their class teacher and one might easily envisage that the prejudices, evaluations, and reactions of the class teacher are of importance for children's adjustment. There is some cross-sectional evidence that teachers' responses to low status children are more negative than their responses to high status children (Lippitt & Gold, 1959) and that teachers rate rejected children as being disruptive, irritable, aggressive, domineering, dishonest, and selfish (Carlson, Lahey, & Neeper, 1984). These research results indicate that the relationship between rejected children and their teacher might be far from satisfactory, but more research is needed to support such a conclusion.

Other signs of good or bad school adjustment pertain to how comfortable the child feels when at school. 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? In some studies rejected children have been found to feel uncomfortable, showing signs of loneliness and social dissatisfaction (e.g., Asher & Wheeler, 1985; Boivin, Poulin, & Vitaro, 1994; Crick and Ladd, 1993). Furthermore, subjective well-being (SWB) in adults has been associated with social support and friendships (Diener, 2000; Myers 2000). However, most findings are cross-sectional and

pertain to general well-being and could only give indirect support to an assumption that rejected children feel more uncomfortable at school and have a more negative view of the school and their school situation over time compared to other, more popular, children. Thus, the assumption about subjective school distress of rejected children needs to be further investigated.

Earlier cross-sectional and longitudinal research has demonstrated that peer rejection is associated with both concurrent and subsequent academic disabilities and difficulties and below-average intelligence (e.g., Bagwell et al., 1998; Coie, Lochman, Terry, & Hyman, 1992; Czeschlik & Rost, 1995; Green et al., 1981; Hatzicristou & Hopf, 1996; Ialongo et al., 1998; Ollendick et al., 1991; Ollendick et al., 1992; Vandell & Hembree, 1994; Wentzel & Asher, 1995). In summarizing results from several studies, Newcomb, Bukowski, and Pattee (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 in the peer status research, 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 earlier research it seems justified to expect that rejected children might experience athletic and intellectual difficulties in the future, while popular children have higher levels of academic skills.

Problematic peer relations have also been related to non-specified and specified emotional and mental health problems later in life. Cowen et al. (1973) and Roff et al. (1972) reported that peer rejection in early elementary school was predictive of psychopathology in adolescence and early adulthood. More recently, DeRosier, Kupersmidt, and Patterson (1994) found that peer rejection was associated with elevated externalizing behavioral problems and teacher-rated internalizing behavior problems later on. Thus, it might be presumed that rejected children will exhibit more disturbances in these life areas over time than other children do. In view of the seriousness of mental health problems, further examinations are justified.

An important adjustment factor that indicates grave school discomfort and distress and, in addition, is bound to affect future adjustment in a negative way, is premature school dropout. The dropout problem has been addressed in some follow-up studies about the future consequences of being peer rejected. The findings show that peer rejection is associated with later school dropout (e.g., Cowen et al., 1973; Janes, Hesselbrock, Myers, & Penniman, 1979; Kupersmidt et al., 1990; Ollendick et al., 1992; Parker & Asher, 1987; Roff et al., 1972). It must be pointed out that dropout from school is predominantly a boys' problem and therefore seems most suited to differentiate between male participants. For example in the large-scale longitudinal project IDA from which our participants were selected, about 7% of the boys were early school dropouts as against 1% of the girls (Magnusson, 1988).

The above discussed aspects of school adjustment and health of peer rejected children need further research. The present project aimed to contribute by examining later academic, social, and psychological adjustment in school of stably rejected children of both gender. Sociometric tests were given at two occasions in middle childhood to measure classroom peer status. Two follow-up time periods were included, the first one in preadolescence and the second one in midadolescence. The adjustment factors that were investigated included teacher relations, children's school well-being

and liking of the school, academic achievement, physical and mental health, and school dropout. From the above discussion one might assume that rejected children develop more adjustment problems in the examined aspects of their life situation than children with better peer status do. In accordance with earlier research about the beneficial effects of good peer relations, a further hypothesis was that popular children develop fewer problems. Children of average popularity were used as a control group. As there might be gender differences, boys' and girls' groups were separately investigated.

Methodological Considerations

The Sociometric Measures

An alternative classification method with some advantages is the rank-ordering measure used alone or in combination with the positive nominations measure. In order to obtain our peer status groups we employed the rank-ordering measure and the positive nominations measure in school classes. One condition for the use of rank-orderings (as well as for the rating scale) is that the children know each other fairly well so that they can do the ranking with some validity. This seems for the most part to be the case in school classes with their rather stable group composition.

The rank-ordering measure has its place in the history of sociometric research, although not as frequently used as the rating scale. Horowitz (1962) had it as his sole sociometric measure to differentiate between low and high popularity. Davitz (1955) adopted two criteria based on rank-ordering to obtain low sociometric and high sociometric choices. Koch (1933), in one of the first studies on the basis of peer status, used a paired-comparison sociometric technique that yielded a rank ordering of peer status. Finally, as have already been mentioned, 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.

Our 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 he wishes to his peers (Asher, 1985; Asher & Dodge, 1986). Further, the rank-ordering differs from the negative nominations in as far as the measure is not asking for a specific number of disliked children. To obtain a positive to clearly negative endpoint on the ranking scale the children could, as in our research, be asked to rank every classmate of the same gender in the order they wanted them to stay with the class if it was to move to a new smaller classroom, where there is not room for everyone. This is equal to asking the children to implicitly and hypothetically exclude some classmates from the class. Of course, different children might approach the task using different covert peer evaluation processes with more or less negative features but this is equally true for other sociometric methods. Of importance is that, in contrast to the negative nominations measure, our rank-ordering measure has a positive selection focus (those classmates one wants to stay) that directs the child to think about how much he/she likes different peers and not to a selection of nonpreferred peers. However, answers to the question of how children think, feel, and react to this and other sociometric measures await further study.

Peer Status Stability

Ollendick et al. (1992) emphasized that psychometrically sound measures of the construct of sociometric status and its stability over time are prerequisites for the utility of peer status as a predictive tool. For the most part no distinctions have been made in the research literature between children for whom peer rejection is of limited duration and of a transitory nature and those children whose rejection is a more persistent social experience which may expand even into new peer situations and to different kinds of peers. One might expect the latter group of children to be of greater short-term and long-term risk for adjustment problems than the former temporarily rejected group (e.g., Kupersmidt et al., 1990). A growing body of confirmatory evidence for this expectation comes from studies of kindergarten and elementary school children with stable and unstable rejected status (Bierman & Wargo, 1995; Burks, Dodge, & Price, 1995; DeRosier et al., 1994; Parke et al., 1997; Vitaro, Gagnon, & Tremblay, 1990; Vitaro, Tremblay, Gagnon, & Boivin, 1992).

Newcomb and Bukowski (1984) have discussed the peer status stability problem. In their study there was a lack of stability in the assignment of children into the extreme sociometric groups (popular, rejected, neglected, and controversial). The authors partly blame the classification schemes used, but more interesting to us is their discussion about the effects of regression toward the mean. Their results are rather consistent with the predictions that can be made from the regression effect (Nesselroade, Stigler, & Baltes, 1980) that the extreme groups move closer toward the mean from one data collection to the next. In another study examining preschool boys, only half of the participants designated as rejected on the basis of peer nominations at the beginning of the preschool year maintained this status at the end of the same preschool year (Olson & Brodfeld, 1991). The changes in sociometric status are of course dependent on the length of the time span between data collections (see, for example Feinberg, 1964). Independently of the classification schemes used, these results warn us from using information from only one occasion when assigning children to sociometric groups. The regression effects and the risks they are for the validity of the results can to a great extent be eliminated by selecting criteria from two occasions with a proper time interval between.

Thus, to acquire a stable rejected group, as well as stable average and popular groups, the selection of our popularity groups was based on sociometric measures from two occasions within an interval of 1 year.

Behavioral Homogeneity

Besides stability in group membership, it was also important to obtain homogeneous status groups, which are clinically meaningful. As was discussed above with reference to an article by Terry and Coie (1991), smaller extreme status groups in general will be more behaviorally homogeneous and with better discriminability, but they will also have poorer membership stability over time. In the present project, a rather conservative criterion was used to select the peer status groups, which minimized the proportion of identified children and increased the homogeneity but also the risk for temporal instability. As seen above, stability was obtained by using selection criteria across time. Thus, in practice the incongruity between stability and homogeneity was

dissolved by the procedure of selecting the peer status groups from sociometric measures at two occasions with 1 year in between.

The Peer Group Delimiters of Age and Gender

In sociometric peer relations research the peers included as raters in the selection criteria are often of same gender and close in age, as was also the case in the present research where classmates of the same gender were used. This choice of raters acknowledge the importance of same-sex and same-age peers and friends in the life and development of the child. Many of the studies of children's peer relations have been carried out in schools, especially in classrooms, that is, in settings mostly characterized by groups of same-age children. Although the nature and structure of children's peer relations may thus be confused by similarities in contextual, ecological, or environmental factors (Allen, 1981; Epstein, 1989; Harkness, 1980), there is evidence supporting the view that children prefer age-mates as friends (one early example is Furfey, 1927, who also acknowledges the importance of environmental factors).

Friendship is a typical example of a symmetric relationship which is assumed to be characterized by egalitarianism, mutuality, and reciprocity (Hartup, 1989a; Piaget, 1965; Sullivan, 1953). There is support for the view that symmetrical behaviors are characteristic of same-age interaction, while asymmetrical behaviors are characteristic of cross-age interaction (Hartup, 1983). The conclusion seems to be that most friends are of same age. There is some empirical support for that conclusion. For example, if there is an adequate number of same-age peers, friendships with age-mates predominate (Hartup, 1976). French (1984) found that children in elementary school preferred age-mates as friends and her results also supported the hypothesized symmetric-asymmetric nature of same-age and cross-age peer relations. 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). Still another study reported the same result for children from 1 to 12 years of age (Ellis, Rogoff, & Cromer, 1981).

Another important group delimiter is the gender of peers. It seems as if a child's primary membership group mostly consists of same-sex peers (George & Hartmann, 1996; Hartup, 1989b; LaFreniere, Strayer, & Gauthier, 1984; Lewis & Feiring, 1989; Smith & Inder, 1990), and as if there often are more negative valuations of opposite-sex peers (Duncan & Cohen, 1995; Hayden-Thomson, Rubin, & Hymel, 1987; Moore & Updegraff, 1964; Singleton & Asher, 1977). Asher and Hymel (1981) found that the majority of positive nominations were from same-sex peers, while the majority of negative nominations and low rating scores were given by cross-sex peers. Hartup (1983) stated that children of all ages associate preferentially with members of their own sex, and that this tendency is as most pronounced in middle childhood and adolescence. Elementary school children's peer contacts are largely sex-segregated, even in contexts where children of both gender have the opportunity to play together (Ellis et al., 1981). Bukowski, Gauze, Hoza, and Newcomb (1993) studied early adolescents and showed that the preference for same-sex peers is largely due to differences on the dimension of liking rather than disliking and that it is a relatively stable characteristic of each individual child (for a period of over 1 year). Singleton and Asher (1977) reported that elementary school children exhibit strong bias against opposite-sex peers. When cross-sex friendships are formed they tend to be much more unstable than same-sex

friendships (Gronlund, 1955). For example, Rydell (1991) found that in the first grade many of the boys received nominations from girls (but not the other way around), while for the same group of children, there were practically no nominations between boys and girls in the third grade. As with same-age preferences, contextual and cultural factors are influential (Epstein, 1989), as a study in a rural community of Kenya shows (Harkness & Super, 1985).

Asher and Hymel (1981) argue that the decision about which peers to select for the sociometric assessment has to be based on the purpose of the study. When investigating children with peer problems, as is the case in the present research, it may be important to use same-sex scores, thus excluding the risk that opposite-sex scores lead to the selection of children who are fairly well accepted by their same-sex peers (or at least not negatively valued). The decision to use same-sex scores is also influenced by a purpose to get as pure sociometric groups as possible.

Furthermore, there might be differences in the development and adjustment for boys and girls. Newcomb et al. (1993) stress 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 recent research 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 (Crick & Bigbee, 1998; Crick & Grotpeter, 1995; Rys & Bear, 1997). For example, Rys and Bear (1997), differentiating between overt aggression and relational aggression, 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 with relational aggression. Thus, the samples in the present project were differentiated according to gender so as to make possible differential diagnoses for boys and girls.

The Outcome Measures

The outcome information that has been collected for this project comes from multiple sources (i.e., self-reports, teachers, parents, achievement measures and school health cards). According to Newcomb et al. (1993), different information sources differ in several ways. They vary as to the accessibility to information about the child, they are in different ways constrained by potential cognitive biases and limitations that influence the quality of the provided information, and, finally, they vary as to the nature of the relation with the child. Different instruments and information sources may well be assumed to complement each other and make at least partly unique contributions to a field of knowledge (Achenbach, McConaughy, & Howell, 1987; Coie & Dodge, 1988; Tremblay, LeBlanc, & Schwartzman, 1988; Vitaro et al., 1992). The instruments included in a multimethod assessment approach might also validate each other to some extent. Thus, it is a strength that so many information sources are represented in this data collection.

Method

Participants

This thesis emanates from a longitudinal research program, Individual Development and Adjustment (IDA) (Magnusson, 1988). The principal population of the program comprised all children of the same batch (about 1000 boys and girls) from the elementary schools in a representative Swedish community (of about 100,000 inhabitants). The participants of the population have been followed by continuous data collections from the first years in school to adulthood.

For this project three groups of each gender from the population of the IDA program were selected; one group of rejected children, one group of popular children and one group of children of average popularity with the same-gender classmates. The inclusion of a group of children with average social status provides us with a normative standard against which to compare the development of rejected children as well as popular children. The average group represents the mass of children who are "in the middle of the road" as contrasted to our extreme "roadside" groups.

The selection of participants was made from the total longitudinal population of about 1000 children on the basis of sociometric choices and rank ordering (peer ratings) given in the end of grade 3 (mean age 10 years) and sociometric choices given in the end of grade 4 (mean age 11 years) in the Swedish primary school (*grundskolan*).

The *positive nomination procedure in grade 3* involved having children name the three same-sex classmates whom they liked to play with most at school and also the three same-sex classmates they liked to play with most at leisure time, that is, the children made two different positive nominations. The score for each child is the sum of the number of choices he or she got in the two nominations.

The *rank ordering in grade 3* involved having children rank every classmate of the same gender in the order they wanted them to stay with the class if it was to move to a new smaller classroom, where there is not room for everyone. The rank-ordering scale was normalized and the scores standardized for each class and gender to make comparisons between different classes with different number of same-sex pupils in them possible. Further, the score for each child was calculated as the mean of the sum of his standardized scores. This last calculation implies that heterogeneous classes, where there are a clear hierarchy of peer likings and dislikings, are represented in the sample while homogeneous classes, with no extreme status positions (i.e., more even scores for different children) are excluded in accordance with our purpose to obtain children with extreme peer status positions.

Both these instruments were group administered by the class teachers at the end of the school year in grade 3.

The *grade 4 positive nomination procedure* was the same as in grade 3 but involved only peer preferences for play at school and, thus, excluded peer preferences for play at leisure time (so as not to put too much demand on the class teachers and because the correlation between play at school time and at leisure time in grade 3 was relatively high; about .85 for both boys and girls). Like the other sociometric instruments, this instrument was also group administered about a year after the initial assessment of social status in grade 3.

By our selection procedure, with its time interval of 1 year, the effects of regression toward the mean for the extreme social status groups were to a high degree

eliminated (Newcomb and Bukowski, 1984; Nesselroade, Stigler, & Baltes, 1980) which reduced the problem of group instability. Furthermore, the stability of the status groups was deliberately strengthened by the choice of time interval. There are some significant changes in the class system when moving from grade 3 to grade 4. The pupils move from one stadium (grade 1 to 3) to another (grade 4 to 6) in the Swedish elementary school system, which implies a new teacher, a new classroom, and sometimes a new school or schoolbuilding. By taking advantage of this fact and deliberately chose grade 3 and grade 4 as the selection points, we included these potentially influencing factors in the timespan. Thus, their effect on the social status groups was eliminated, which ought to contribute to stability and increase the validity of the findings.

As a first step, the boys and girls with the lowest social status, the rejected children, were selected. The numerical selection criteria were very strong to obtain as homogeneous status groups as possible. In the rank-ordering measure, a value lower than -0.5 for the mean of the sum of the standardized scores (about 15 % of the boys and girls had a value below -0.5) was the limit for identifying rejected children. For the positive nominations, the probability theory with a deviation-from-chance-expectancy-model of receiving particular scores (Bronfenbrenner, 1945; Newcomb & Bukowski, 1983) was used to select the groups. A maximum of one choice in either the grade 3 positive nominations or in the grade 4 positive nominations was used to select rejected children. According to the combined selection criteria of the rank-ordering and the positive nominations, 15 boys and 14 girls were defined as rejected. The deviation of allowing for two choices instead of one choice for one girl on the positive nomination measures was accepted to make the female rejected group of equal-size to the male rejected group. A control showed that this girl compensated for the slightly higher value in the positive nominations by having one of the lowest values on the rank-ordering criterion. Most of the selected boys, as well as one third of the girls, got no choices at all in the nomination measures; the rest of them got one choice at one occasion and no choice at the other occasion. This microanalysis shows that rejected children had no permanent same-sex friends in their schoolclass; they were not selected as friends by anyone in both or at least one of the two occasions.

To control for school class differences, the boys and girls that were the most popular (who scored over the cutoff point of $+0.5$ for the rank-ordering and who received more than 10 grade 3 nominations and more than 5 grade 4 nominations or else came closest to the cutoff points in the classes in question) and those of average popularity (who scored neither high as defined for popular boys and girls nor low as defined for rejected boys and girls in any of the criteria) were selected from the same school classes as the rejected boys and girls (i.e., in a school class matching procedure). Many children in each class met the criteria for average popularity, which made it necessary to select the average group through a sampling procedure. Some adjustments were made to make that group similar to the rejected group in terms of socioeconomic status (i.e., near equal distribution between groups over three socioeconomic levels) and intelligence scores in DIA-differential intelligence analysis (Härnquist, 1961) (i.e., a check was made that there were no significant differences between group mean values). The popular groups did not differ from the other status groups in socioeconomic level, but had higher intelligence scores. For girls, this difference was significant. The higher intelligence scores of popular children are in line with what has been found by other authors (e.g., Czeschlik & Rost, 1995).

As each group consisted of 15 participants, there was a total number of 45 participants of each gender.

Measurement of School Adjustment

The longitudinal program IDA contains a vast amount of information collected at several time periods during the school years and early adulthood for the whole or parts of the longitudinal population and relevant for different purposes of the program (see Magnusson, 1988). The purpose of the present project was to examine the long-time school adjustment of groups of children differing in sociometric status and the information sources that have been seen as appropriate to this purpose were selected from the IDA research program. The participants were studied in preadolescence (grade 5; mean age 12 years) and in midadolescence (in grade 8; mean age 15 years). Occasionally it has been necessary to use data sources from some other time period close to those chosen for this project, for example some academic achievement measures and school dropout rate.

The Data Collection and Outcome Measures in Grade 5 (Mean Age 12 Years)

In grade 5, different aspects of the life situation, particularly in school and at home, were examined in an intensive study specially designed for the present sample (Magnusson, 1988). Relevant aspects of the information were selected in order to examine school adjustment. Interviews with parents, teachers, and the children themselves, standardized achievement tests (in grade 6), and medical examinations, which were noted on the school health card, were used. The professional interviewers were well acquainted with the interview forms, the scales, and what data was needed (through, for example, training interviews), but were unaware of the social status groups and the purposes of the study.

The interviews with the father and mother. These interviews were made independently of each other and aimed at collecting information about the adjustment of the child at home, at school, during leisure time, and with peers. The interviews were semi-structured, and the interviewer completed a form directly after every interview. The questions pertaining to the school well-being of the participants were selected as relevant outcome measures. Both parents were asked how much their child liked being at school at the present time and how it was earlier. These variables had scales with 9 grades from very much likes/liked being at school (=1) to very much dislikes/disliked being at school (= 9).

The self-report interview. This interview was semi-structured with a form that the interviewer filled in. As help, the child was given pictures illustrating different social situations that are relevant for children of this age (for example a group of school children with one child outside of the group). These pictures were connected to the interview questions and used directly and openly in the questioning. Interview scales, categories, and subcategories were constructed to measure different aspects of the child's social life, such as relations to classmates, to other peers, and to the teacher and the child's experience of the school situation in general.

Relational and behavioral variables, pertaining to the contact between the participants and their teachers and the participants' general school situation, were used

as outcome measures for this project. All variables had a 9-graded scale with negative to positive end-points (in brackets). The five variables were:

- General teacher relation (1 = very good; 9 = very bad)
- Aggressiveness from the teacher towards the child (1 = never; 9 = always)
- Criticism from the teacher towards the child (1 = never; 9 = always)
- Difficulties and conflicts between the teacher and the child (1 = never; 9 = always)
- The child's general school situation (1 = very positive; 9 = very negative)

The interview with the teacher. This interview aimed at collecting information about the adjustment of the child in the class and in school, the teacher's own appreciation of the child and also, although to a lesser degree, the teacher's judgment of the parents and the home situation of the child. The interviews with the teachers were more structured than the interviews with the parents, as the information concerned the pupils and their parents rather than the teachers themselves. For example, the interview form was used and filled in during the interview. The information of interest for this project pertained to teachers' attitudes towards the participating children. The two selected variables were:

- The teachers' preference ranking of those three boys and/or girls in her class that participated in the study (1 = prefer most; 3 = prefer least).
- The teachers' judgment of how troublesome these children are on a 5-graded scale from no trouble at all (= 1) to very troublesome (= 5).

Academic achievement measures. Scores from standardized achievement tests in Swedish and mathematics (on a scale from 0 to 100), developed by the National Board of Education, were used to measure academic achievement. These achievement tests were given nationwide in grade 6. Thus, scores from these tests are fully comparable over classes and schools.

Medical examination. The school doctor conducted a medical examination concerning physical status that was supplemented information from earlier examinations (from the child's health card in the school). The information included height, weight, diseases, general physical status, physical or mental disorders, different school problems, and special examinations (as, for example, by the school psychologist) or special arrangements in or outside school. The two included variables pertain to mental and physical health problems or deficiencies that were noted on the health cards of the participants. All participants that had such records were counted as having health problems, independently of the content or length of the note.

The Data Collection and Outcome Measures in Grade 8 (Mean Age 15 Years)

One of the regular data collections for the whole population of the IDA research program (Magnusson, 1988) was carried out in grade 8. A fairly large battery of instruments was used to examine different aspects of the life and adjustment of the participants. The instruments and variables that were selected as relevant for this study are described below.

Questionnaire about educational and vocational choices. This is a group-administered self-report instrument (constructed for the IDA research program) with questions about present and future educational choices, about future vocational choices, and about attitudes to school. The four questions about attitudes to school were included in this study to measure subjective school adjustment. These questions pertained to how the participants liked going in school, if they considered the schoolwork as meaningful

for their future career, if they have been doing their best in school, and for how long they can imagine going in school to get a job they like. The participants had to mark one alternative on a 5-point negative (=1) to positive (=5) scale with each alternative given its own verbal description.

Intelligence and academic achievement measures. An intelligence test, WIT III (Westrin's Intelligence Scale, see Westrin, 1967) was group-administered to the whole population. The test measures verbal, logical-inductive, and spatial abilities, with the total score as a measure of general intelligence. The general intelligence value is represented by a stanine scale. Standardized achievement tests in Swedish (on a scale from 0 to 100), developed by the National Board of Education for nation-wide use, and marks in Swedish and physical training (on a scale from 1 to 5) were used to measure academic achievement (marks in mathematics could not be used because of the possibility for the pupils in grade 8 to attend different courses).

School dropout. Furthermore, data about premature school dropout (before finishing the obligatory ninth grade in elementary school) were collected for the boys (Magnusson, 1988). School dropout seems to be a problem that mainly concerns the boys; very few girls drop out of school (about 1% as against 7% for the boys in the IDA program).

Participant Attrition

As mentioned above the age 12 intensive study in grade 5 was specially designed for the present sample (Magnusson, 1988) and all selected boys and girls participated. Three years later, when the age 15 data collection took place, there were some absentees due to the fact that they had moved from the area. Among girls there were 4 missing cases from the rejected group, 3 from the average group, and 2 from the popular group. Among boys there were 2 missing cases from the rejected group, and 2 from the average group, while the popular group was complete.

To make an analysis of the age 15 absentees, the results from one of the sociometric selection variables, the rank-ordering measure given in grade 3, were scrutinized. Because of the characteristics of that scale, with its wider range of values, the participants in each popularity group differed somewhat from each other. In the two other selection criteria, positive nominations at age 10 and at age 11, the participants from the rejected groups as a rule received no nominations at all (only a few of them received one nomination), which means that there were very small differences between the group members.

The attrition analysis shows that the missing cases did not differ much on the rank-ordering scale from the mean value of the popularity group they belonged to and the results from t-tests were far from significant. For the principal groups of interest, the rejected groups, there were very minor differences, indicating that the missing cases had a slightly lower mean value.

Results

School Situation at Age 12 (Study I)

School well-being according to the parents. For both boys and girls and for all four variables, ANOVAs gave significant or highly significant group effects. Post hoc

comparisons revealed that rejected children had a lower school well-being than other children. This was reported for both rejected boys and rejected girls and for the present as well as the past school situation, according to information from both parents. For all measures, the differences were significant when compared to popular children and for a majority of measures when compared to average children. The differences between average and popular groups were considerably smaller and not significant for any measure, although popular children, especially popular girls, stood out as most content with school both at present and in the past. As an illustration of the negative school well-being of rejected children, it is worthwhile to mention a few comments that parents made during the interviews. One mother mentioned how difficult it is for her boy to get to school every morning, and another mother said that her boy shows adjustment problems in school and that he does not get along well with the teacher and the classmates.

Self-reported relation to the teacher and experience of the school situation. For the boys' groups, ANOVAs revealed that only one of the five included variables yielded a marginally significant peer status effect ($p < .1$), namely for the overall relation with the teacher. Post hoc analysis showed that rejected boys experienced their teacher relation as significantly more negative than popular boys. A similar, but nonsignificant status group tendency was found for general school situation.

The peer status group effects for girls were highly significant in four of the five variables. According to the post hoc analysis, rejected girls exhibited the least favorable adjustment in these four variables. That is, rejected girls were more discontent with their general school situation and perceived the teacher as more aggressive towards them than did both average and popular girls. In addition, rejected girls, when compared to popular girls, judged their general teacher relations as worse and felt more criticized by their teacher. During the interview with one rejected girl, she commented that she does not get on well in her class and thinks that the situation is extremely bad. This gives an idea of the quality of the negative school experiences for rejected girls. Popular girls had the most favorable adjustment, experiencing better general teacher relations and general school situation, and less aggressiveness from the teacher than rejected girls and, furthermore, they felt less criticized by their teacher than did both rejected and average children. In short, "very favorably disposed towards school" (comment from one interview). Although no significant group effect was found for the fifth variable pertaining to difficulties and conflicts with the teacher, the tendency was in the same direction as for the other four variables with the rejected girls having conflicts with their teacher more often and the popular girls less often.

Teachers' attitudes towards the participants. ANOVA-tests yielded highly significant peer status group effects for boys as well as girls, both when it comes to teacher preference and how troublesome the teachers thought the children were. Post hoc tests revealed that the teachers preferred the rejected boys and girls less and found them to be more troublesome compared to both the average and popular children. One teacher made the following comment about a rejected boy: "Untrustworthy, you do not know where you have him".

The girls in the popular group were the most positively evaluated by the teacher, although they differed significantly from average girls only in the preference ranking. Teachers used words like straightforward, honest, kind, friendly, helpful, positive, and cheerful to describe popular girls. There were small differences between popular and average groups for boys.

Academic achievement. ANOVA-tests yielded highly significant peer status group effects for girls on the standardized achievement tests in Swedish and mathematics given in grade 6. Post hoc analyses showed that rejected girls performed less well on the two achievement tests than did popular and average girls. The differences between the latter two groups did not reach significance, but the group of popular girls had the highest scores on both tests.

The group effects for boys reached significance for the test in mathematics and near significance for the test in Swedish. Rejected boys had the lowest group mean score and popular boys the highest group mean score on the test in mathematics, while average boys had the lowest group mean score and popular boys the highest group mean score on the test in Swedish. Post hoc analyses revealed that these differences were significant, while no other post hoc comparisons for boys reached significance.

Mental and Physical Health. From the school health cards it appears that it is only rejected children that have records about mental health problems (5 boys and 2 girls from the rejected groups) and that most of the records about physical health problems concern rejected children (3 boys and 4 girls from the rejected group, and in addition 2 girls from the average group and 1 girl from the popular group).

For boys, the results were rather clear-cut with only rejected boys having records of mental or physical deficiencies. A Pearson chi square test revealed significant differences between observed and expected values for both mental health problems and physical health problems. Although more rejected girls were noted for mental and physical health problems compared to other girls there were no significant differences according to the Pearson chi square test.

School Situation at Age 15 (Study II)

Self-reported attitudes towards school. Inspection of the univariate F values reveals that none of the four included variables yielded a significant or marginally significant peer status effect, neither for boys nor for girls. In scrutinizing the absolute values for the different status group, one might however, discern a slight tendency or pattern for the rejected girls to dislike going to school, to see schoolwork as less meaningful for their future, and to care less about doing their best in school; by contrast the popular girls tended to have the most positive attitudes towards school in all measured aspects, including a willingness to continue their education after obligatory school.

Intelligence and academic achievement. This variable area concerns scores on an intelligence test and a standardized achievement test in Swedish and marks in Swedish and physical training in grade 8. For both boys and girls, the rejected group had the lowest absolute scores and marks, and the popular group the highest in all four measures.

ANOVA-tests yielded significant peer status group effects for boys for marks in Swedish and physical training and nearly significant effects for general intelligence. Post hoc analyses revealed that rejected boys had significantly lower marks in Swedish and physical training and a lower general intelligence than popular children. No other post hoc comparisons for boys reached significance.

The peer status group effects for girls, as assessed by ANOVAs, were significant for the standardized achievement test and the marks in Swedish and nearly significant for general intelligence. According to post hoc analyses, rejected girls had significantly

lower marks in Swedish, lower scores on the standardized test in Swedish, and lower general intelligence compared to popular girls. In addition, popular girls had significantly higher marks in Swedish than average children.

School dropout. Data about premature school dropout of boys (before finishing the obligatory ninth grade) shows that as many as 5 rejected boys were dropouts (about 33 %), as against 1 from the other two popularity groups respectively (which is about 7% and, thus, equal to the percentage for all boys in the IDA cohort). A Pearson chi square test revealed significant group differences between observed and expected values. Observe that the expected frequencies in some cells in the chi square table were rather small (about 2.5) and, therefore, the results from the chi square test should be looked upon with some caution. Under all circumstances, the test gives at least an apprehension of the importance that should be attached to the group differences.

As earlier commented on, very few girls are school dropouts (about 1% as against 7% for the boys in the IDA program). It is, nevertheless, worth mentioning that in the female groups the total attrition between grade 8 and grade 9 was only two girls (one from the rejected group and one from the popular group). However, we do not know if they were school dropouts or absent for other reasons, for example moving out of the school district.

Discussion

The discussion is divided into the different school adjustment themes that have been of interest in this project. The focus is on the more rich information from the age 12 intensive study specially designed for the present sample, supplemented, whenever appropriate and possible, with the age 15 findings in a longitudinal comparison between school adjustment in preadolescence and midadolescence.

School Well-Being

Parental reports indicated that *preadolescent* boys and girls of rejected status felt less comfortable with their present as well as their past school situation than both average and popular children (Study I). Furthermore, self-report data revealed that rejected girls, and, although to a lesser non-significant degree, also rejected boys were discontent with their school situation. In *midadolescence* neither boys' nor girls' peer status groups differed significantly from each other in variables pertaining to self-reported general attitudes towards school and the schoolwork (Study II). Thus, it seems that rejected children liked school better in adolescence than in preadolescence. This might be a sign of a positive development, where the consequences of peer rejection in school decrease and fade away. On the other hand, other findings of this project point to continued school problems for rejected children in adolescence, as for example in academic achievement and school dropout. Thus, one might wonder whether it is only the subjective experience of the school situation that has changed in a positive direction from preadolescence to adolescence, so that rejected boys and girls have come to accept as a decree of fate their problematic school situation.

It might however be worth noting that there was a slight, non-significant tendency that rejected girls reported a more negative view of the school and popular girls a more positive view of the school in adolescence. This tendency might be an impetus for future

studies to penetrate deeper into the school well-being of adolescent girls with different peer status.

Teacher Relations

Rejected *preadolescent* boys and girls judged their overall relationship with the teacher as bad (Study I). The teachers, on their hand, preferred the rejected children of both gender less and found them more troublesome compared to average and popular children. Thus, peer rejection seems to occur alongside distortions in the contact between the teacher and the child. This is consistent with the findings of Carlson et al. (1984) that teachers find rejected children disruptive, irritable, aggressive, domineering, dishonest, and selfish.

Evaluations and reactions of important adults, such as teachers, have been shown to be of importance for children's peer preferences and perceptions in relation to rejected children. For example, White and Kistner (1992) found that negative teacher feedback concerning the behavior of peer rejected children resulted in lower social preference and more negative moral judgments and descriptions from peers and vice versa for positive teacher feedback. Thus, one may predict that the negative evaluations and attitudes of teachers found in the present project might contribute in preserving and even reinforcing the outsider position of rejected children among their peers. White and Kistner argue for the inclusion of teacher feedback in empirical evaluations of treatment for rejected children, which seems like a well-grounded recommendation. As part of the treatment, it appears equally justified to include procedures aimed at changing the attitudes and evaluations of teachers towards rejected children in a more positive and/or understanding direction.

Rejected boys reported about a negative overall relationship with the teacher. But, in contrast to rejected girls, they did not experience difficulties in the more specific aspects of their relation to the teacher (i.e., relational elements of conflicts, criticism, and aggressiveness). As we saw, teachers reported having trouble with both rejected boys and girls. Thus, one might hypothesize that rejected girls have a higher vulnerability or sensitivity than rejected boys, or that rejected boys might try to conceal or deny some negative facts pertaining to their relations to the teacher. In all cases, there seems to be a need for further research to examine possible gender differences among rejected children in their relations to the teacher.

Academic Performance and Intelligence

The academic performance of rejected *preadolescent* girls was short of the standards of girls from the other peer status groups (Study I). The academic results of rejected boys in the same time period were more mixed. They performed less well in mathematics than other boys, especially than popular boys, but in Swedish they did not have the lowest scores and did not differ significantly from the other male groups.

In *adolescence*, rejected boys and girls had lower scores on the standardized test in Swedish and lower marks in Swedish and physical training than other children and, furthermore, they scored lower in intelligence measures (Study II). In most cases they differed significantly from popular children. The finding that the group differences in physical training, were significant for boys, but not for girls is in line with other studies, accounted for above, where athletic competence in adolescence was recognized as a

correlate to popularity, especially for males (e.g., Coie et al., 1990; Bagwell et al., 1998; Coleman, 1980; Eitzen, 1975).

The academic difficulties of rejected children seem to be a long-standing problem as judged by our findings from preadolescence and midadolescence. Furthermore, the finding that the academic achievement and intelligence measures of popular female and male preadolescents and adolescents were of superior standard compared to the other groups indicates that high peer popularity is linked to high academic standards. This is in accordance with the hypotheses put up for this project.

While many studies have found similar academic and intellectual outcomes for both boys and girls, some longitudinal findings have indicated that there are gender differences in the later academic adjustment of rejected children (Coie et al., 1992; Ialongo et al., 1998). Although some gender differences were detected (e.g., marks in physical training), the findings of the present project are mainly in line with the studies that have found no gender differences in future academic adjustment. The contrasting results of different studies as to whether there are gender differences in future academic achievement of rejected children, highlight the need for further research.

Although our primary interest pertains to future consequences of peer rejection, the causal chain between peer status and academic achievement is unclear and probably goes in both directions. Several interactional and behavioral factors have been considered as important determinants of social status and some interest has also been given to cognitive and athletic skills (Coleman, 1980; Eitzen, 1975; Green et al., 1980; McMichael, 1980; Wentzel, 1991; Wentzel & Asher, 1995; Yellott, Liem, & Cowen, 1969). Academic achievement may provide a reputation and competence that affects popularity in a positive direction, while deficits in academic ability may have negative consequences for popularity. This would indicate a possible treatment direction focusing on promoting the academic work of rejected children in both cognitive and athletic areas, since improved academic performance may also increase their peer popularity. There is some empirical support that such a treatment approach might be successful (e.g., Coie & Krehbiel, 1984).

Intelligence tests were also administered to the participants of this study in grade 3 (Magnusson, 1988) and the results coincide with the results in grade 8. The high status groups had the highest values in the intelligence measures also in grade 3 and for girls this result was significant both in relation to average status girls and rejected girls. As in grade 8, the average status children had scores that fell between the extreme status groups. The similarity of the intelligence findings from grade 3 and grade 8 is not surprising as intelligence tests are supposed to measure a relatively constant human ability. Furthermore, the grade 3 finding supports the supposition that cognitive abilities might influence peer popularity.

Mental and Physical Health Problems

According to the school health cards, only rejected children had psychiatric problems and more rejected children had physical problems than other children in *preadolescence* (Study I). These findings were most evident for boys, for whom the group differences were significant for both psychiatric and physical health.

Thus, rejected children seem to be a risk group for mental health problems, which is in line with the above mentioned findings of earlier research (Cowen et al., 1973; DeRosier et al., 1994; Roff et al., 1972). As for the physical problems, it is possible that

they are, to some extent, signs of underlying psychological problems and/or indirect ways of seeking help in an unbearable social situation by turning to the school health care. To our knowledge no earlier research has addressed the question at issue, but there is some evidence that poor peer relations are linked to later problems with physical health (Miller & Ingham, 1976). It seems wise for school health professionals to be observant for signs of difficulties in the peer contacts of their young patients, especially if there are no other diagnostic explanations. In a wider perspective, there is a need to see school children and their health problems in the contextual and systemic frame of the school and the social life there.

School Dropout

The finding that five rejected boys (i.e., 33 %) dropped out of school without finishing the last obligatory school year, as compared to one dropout from each of the other popularity groups (Study II), is an important indicator of maladjustment and gives further evidence of their exposed position in school. It seems that at least some rejected boys in higher grades find school unbearable to such an extent that they become school dropouts. Viewing the problem from another angle, it is evident that many school dropouts are identifiable within the group of boys who already early in their school years had an extremely low peer status. As was pointed out above, dropout from school is predominantly a male problem. Almost no girls dropped out of school.

An examination of the 5 rejected dropout boys' position on the rank-ordering criterion variable from grade 3 shows that they had a lower average ranking than the rejected group as a whole. Three of the dropout boys had the lowest rank-ordering values of all rejected boys and another dropout boy had the fifth lowest value. This examination shows that the school dropouts seem to have had a lower peer status even compared to other rejected boys. Furthermore, the school dropout boys were responsible for most of the attrition that occurred for the rejected boys in the different instruments that were used for the general data collection in grade 8. These occasional absences were also substantially more numerous than the corresponding absences of the other male popularity groups (and also compared to the female groups). Thus, it seems that the school dropouts were more non-attendant in school than others already in grade 8. This school absenteeism could be a phase in a negative social outcasting process resulting ultimately in their definitive dropout from school. This is one reason, among other reasons, to be very observant of pupils with a high absence rate in school. One may also conclude that premature school dropout among rejected boys adds more information to our pursuit of the most exposed children.

The findings about adjustment differences (i.e., school dropout) among rejected children seem to be consistent with the findings of some other researchers. One example is the study by Ollendick et al. (1992), where they found that not all children that were rejected in the fourth grade exhibited maladjusted behavior at a follow-up 5 years later, but instead some of them showed a remarkably good outcome. Ollendick et al. have the hope that further research could determine which rejected children evidence good versus bad outcomes. In this discussion was pointed to one factor that seems to affect the outcome, namely the gravity of the peer rejection.

Epilogue

Perhaps the most important methodological aspect of the project is its 5-years longitudinal perspective, as it shows that the school adjustment problems of the rejected children seem to arise and continue over several years after the initial peer rejection, at least until the last follow-up in adolescence. 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. Therefore, it appears as even more urgent to intervene at an early stage into the class peer status system to put an end to such an adverse developmental path for peer rejected children. Such interventions or treatment programs have been implemented with some success and might for example include working with the group processes in the class and to help rejected children improve their social competence (e.g., Bierman, 1986; Bullock, 1991, 1992; Coie & Koeppl, 1990).

One limitation of the present investigation is the relatively small peer group sizes, which implies reduced power of the statistical analyses. However, this limitation may be unavoidable when examining children with extreme and relatively homogeneous peer difficulties. One has to bear in mind that the peer status groups were selected from a the total population of over 1000 children. On the other hand some of the results are relatively strong. Further, where there are compatible results from other researchers, they are mainly in harmony with the here presented results, which lend support to the validity of the findings.

In conclusion, the present project demonstrates that rejected children of both genders seem to have problems in their future school adjustment, both in preadolescence and later in adolescence. In essence, our results indicate that rejected children are a risk group for school and health problems over a long period of time. The approach of this thesis has been very much an empirical and descriptive one; a longitudinal journey where peer rejected children of both gender were followed in their developmental pathways. Although our research findings point to an association between peer rejection in childhood and maladjustment in preadolescence and adolescence, this cannot a priori be interpreted as a causal chain. What is known is that there exists a correlational continuity, but the mechanisms behind it are fairly unknown. 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 concurrent and 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. For example, remembering the connection between aggressiveness and rejection that has been found for many peer rejected children (Casiglia, Lo Coco, & Zappulla, 1998; Coie, Belding, & Underwood, 1988; Ollendick et al., 1991; Parkhurst and Asher, 1992; Roff, 1992; Roff & Wirt, 1984), one hypothesis is that children who break rules and are aggressive will be rejected and disliked by peers. In adolescence, with its more intense heterosexual and same-sex peer pressures, the problems may increase for the rejected youngster and may come out as more serious acts of aggression and delinquency. This vicious circle may in adulthood lead to further problems in emotional and social adjustment.

An intermediate model between the causal and the incidental model claims that children's experiences with peers moderate the relation between risk variables and maladjustment (Bagwell et al., 1998). Peer rejection may interact synergistically with existing difficulties of the biologically or socially vulnerable child and thus increase the risk for 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. How important peer status is compared to other aversive life factors is of course a difficult question to answer, but one might expect that average and especially high popularity could function as a safety net that gives strength and support when one fails in other life areas. For the rejected child, peer rejection combined with other negative school factors might jointly function to drive the individual into an outsider position and as an ostracizing mechanism. There seems to be a very clear development in that direction for at least some of the rejected boys, namely those who dropped out of school.

The discussion above of different models of social rejection and maladaptive functioning contains explicit and implicit suggestions of possible research directions. We shall close this thesis by a few more points of view about research needs directly and indirectly connected to our own research experiences.

The development and evaluation of hypotheses regarding the various stages of the rejection/acceptance process would probably benefit from the adoption of a systems perspective. Systems theory gives a means to conceptualize the complex interrelatedness of interpersonal phenomena (e.g. Sameroff, 1983), for example the interrelatedness between the behavior of the rejected child and the processes that occur at the level of the group. The focus of many studies, both in terms of causes, consequences, and intervention paradigms, has been on the individual child. Contrasting with the individually centered view on social status is the thought that group dynamics may require that someone be rejected and serve as a scapegoat, not so much because of personal attributes or behavior, but more because the group needs a target for negative affect (Coie, 1990). However, in most research about group differences a prevailing view is that both individual and group factors, like composition and norms of the group, determine social status (e.g., Boivin, Dodge, & Coie, 1995; Putallaz and Wasserman, 1989; Schmuck, 1962, 1966, 1971; Wright, Giammarino, & Parad, 1986). Rejection is a social process, including both the rejected child and the rejecting group of peers (e.g., Price & Dodge, 1989). Group-related issues need to be further explored in the research about peer rejection. In a historical perspective it is interesting to note that these issues were focused already in the beginnings of sociometry by one of the most important pioneers, Moreno (1934, 1953).

A systems perspective implicitly presupposes that greater attention should be devoted to temporal issues in the study of children's peer and friendship relations. In the purpose of achieving a broader understanding of the subject, one may test specific process-oriented hypotheses about the antecedents and effects of sociometric status differences. Two examples are the hypotheses put forward in Coie's (1990) process-model about the development of rejection and the propositions of Rubin et al. (1990) about two possible developmental passways or precursors to social rejection. Furthermore, there may be age-related differences in the causes of rejection as a function of developmental changes in the social demands of peer interaction (Dodge & Feldman, 1990; Feldman & Dodge, 1987; Furman & Bierman, 1983, 1984), and future

research needs to address the question of how the causes and correlates of popularity change with age.

Another research need is the examination of what factors are involved in a positive change in status and development for rejected children. This question has been dealt with primarily in terms of formal intervention, mostly in the form of social skills training. Complementing this research direction by considering cognitive, emotional and motivational factors as determinants of peer functioning may help to clarify the limited effectiveness of social skills training programs (Hymel, Wagner, & Butler, 1990; Mize & Ladd, 1990; Price & Dodge, 1989; Underwood, 1997) and allow for the expansion of intervention beyond a simple social skills model (cf. Coie & Krehbiel, 1984). One interesting and promising example is intervention programs aimed at changing the negative and helplessness oriented expectations of rejected children in their contacts with peers. In a study about rejected children's acceptance by unfamiliar peers, Rabiner and Coie (1989) induced a positive expectancy before the rejected children joined the unfamiliar peers and then assessed whether this influenced entry behavior and the opinions of the new peers (compared with not induced rejected children). The results indicated that rejected children can make better impressions on peers when expecting interpersonal success and also behave more competently (this last effect was found only for girls). Another promising intervention effort is to reframe the social situation (Watzlawick, Weakland, & Fisch, 1974) from one of aggressive confrontation and defence of honor to one of being in control of aggressive impulses and behavior (Coie & Koeppl, 1990).

But much change to the better seems to occur naturally for at least some children and it is important to know what factors are involved. For example, what is the role of self-monitoring, and of peers and adults in positive status change? This needs to be examined more closely, differentiating, for example, between the influences of peer friendships outside the status group and the influences of positive relations to one or a few important adults. A single friendship relation may be the important factor that differentiates between a relatively good adjustment and a more negative development. Temporal and process-oriented issues in the influences of beneficial social relations on adjustment should also be considered.

Here we have mainly discussed rejected children and not differentiated between rejected boys and rejected girls, but, needless to say, clarifications of gender differences ought to be a necessary part of future research.

In short, we need more detailed information about the origins and consequences of peer rejection; for example the socialization processes that contribute to peer rejection and the influence of peer rejection on maladaptive development in relation to other causal factors. Both of these lines of inquiry require longitudinal designs. Understanding origins and consequences of peer rejection will help us to avoid or modify its negative effects.

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Study I

LATER SCHOOL ADJUSTMENT AND HEALTH OF CHILDREN WITH STABLE SOCIOMETRIC PEER STATUS

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Abstract

The school adjustment and health of 12-year-old boys and girls (N=90), who at age 10 and 11 were sociometrically rejected, popular, or of average popularity in their school class, were examined. Self-reports, reports from teachers and parents, standardized achievement tests, and school health cards were used as follow-up instruments when subjects reached age 12. Rejected children of both sexes experienced their school situation as more negative and felt less comfortable at school than other children. Rejected girls also had more negative teacher relations. Teachers preferred rejected children less and considered them to be more troublesome than other children. Peer rejection appeared to be related to poorer academic performance, especially in girls. Mental health problems and physical health problems were more frequent in rejected children, especially in boys. In conclusion, although there are gender differences, peer rejection seems to be associated with later school and health problems for both boys and girls.

A substantial amount of research has documented that peer relations in childhood are important determinants of social development and adjustment, and that being rejected by peers places children at risk of a wide range of subsequent adjustment difficulties (e.g., Coie, Terry, Lenox, & Lochman, 1995; Coie, Terry, Lenox, Lochman, & Hyman, 1998; Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Jalongo, Vaden-Kiernan, & Kellam, 1998; Kupersmidt, Coie, & Dodge, 1990; Ollendick, Weist, Borden, & Greene, 1992; Parker & Asher, 1987; Roff, Sells, & Golden, 1972). In contrast, positive peer reputation or status in childhood seems to be a predictor of good future adjustment (e.g., the above studies; Morison & Masten, 1991). The sociometric research paradigm (Hallinan, 1981), which implies using some sociometric assessment technique for measuring friendship formation, social status, or social adjustment, has been central to much of the peer status risk research. Classroom sociometry (i.e., social status among classmates, often same-sex), has been the preferred criterion variable. This criterion has been chosen because schools are important contexts for socialization, where children spend a great deal of time in classrooms and school playgrounds with same-age or near-age peers. Berndt and Ladd (1989) claim 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).

In acknowledging the importance of the school context as a social arena for children, it could be assumed that negative class peer relations might be accompanied by, or later followed by, other social and psychological disturbances in school. There has been some research in this field over the years, including both external adjustment factors such as social relations and academic functioning, and internal adjustment factors such as psychological well-being and mental health.

For the majority of children, the most important adult in elementary school is their class teacher and one might easily envisage that the prejudices, evaluations, and reactions of the class teacher are of importance for children's adjustment. There is some cross-sectional evidence that teachers' responses to low status children are more negative than their responses to high status children (Lippitt & Gold, 1959) and that teachers rate rejected children as being disruptive, irritable, aggressive, domineering, dishonest, and selfish (Carlson, Lahey, & Neeper, 1984). These research results indicate that the relationship between rejected children and their teacher might be far from satisfactory, but more research is needed to support such a conclusion.

Other signs of good or bad school adjustment pertain to how comfortable the child feels when at school and how the child experiences the school situation. In general, rejected children have been found to feel uncomfortable, showing signs of loneliness and social dissatisfaction (e.g., Asher & Wheeler, 1985; Boivin, Poulin, & Vitaro, 1994; Crick and Ladd, 1993). However, these findings are cross-sectional and pertain to general well-being. Thus, they only give indirect support to an assumption that rejected children feel more uncomfortable at school and have a more negative view of the school and their school situation over time compared to other, more popular, children.

Earlier cross-sectional and longitudinal research has demonstrated that peer rejection is associated with both concurrent and subsequent academic disabilities and difficulties (e.g., Green, Vosk, Forehand, & Beck, 1981; Hatzicristou & Hopf, 1996; Jalongo et al., 1998; Ollendick et al., 1992; Vandell & Hembree, 1994). Whilst summarizing results from several studies, Newcomb, Bukowski, and Pattee (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. Thus, it seems reasonable to expect that rejected children might experience intellectual difficulties in the future while popular children have higher levels of academic skills.

Problematic peer relations have also been related to non-specified and specified emotional and mental health problems later in life. Cowen et al. (1973) and Roff et al. (1972) reported that peer rejection in early elementary school was predictive of psychopathology in adolescence and early adulthood. More recently, DeRosier, Kupersmidt, and Patterson (1994) found that chronic and proximal experiences of peer rejection were associated with elevated externalizing behavioral problems and teacher-rated internalizing behavior problems later on. Thus, it might be presumed that rejected children will exhibit more disturbances in these life areas over time than other children do, but in view of the seriousness of mental health disorders, further examinations are justified.

The above discussed aspects of school adjustment and health of peer rejected children need further research. The present study aimed to contribute by examining later academic, social, and psychological adjustment in school of stably rejected children. Children of average and of high popularity were used as control groups in accordance

with most other sociometric risk studies. The adjustment factors that were investigated included the teacher relation, the child's school well-being and liking of the school, academic achievement, and physical and mental health. The general hypothesis was that rejected children develop more adjustment problems in the examined aspects of their life situation than children with better peer status do. In accordance with earlier research about the beneficial effects of good peer relations, a further hypothesis was that popular children develop fewer problems.

Some methodological concerns and refinements of potential importance were incorporated into this study as described below.

Ollendick et al. (1992) emphasized that psychometrically sound measures of the construct of sociometric status and its stability over time are prerequisites for the utility of social status as a predictive tool. One might expect a group of stably rejected children, whose rejection is a persistent social experience, to be at greater long-term risk of disturbances in their adjustment than a temporarily rejected group (e.g., Kupersmidt et al., 1990). This has been documented in a growing body of research (e.g., Bierman & Wargo, 1995; Burks, Dodge, & Price, 1995; DeRosier et al., 1994; Parke et al., 1997; Vitaro, Tremblay, Gagnon, & Boivin, 1992). In order to acquire a stable rejected group, as well as stable average and popular groups, the selection of the popularity groups for this study was based on sociometric measures from two occasions within an interval of one year.

Besides stability in group membership, it was also important to obtain homogeneous status groups that are clinically meaningful, and which can be clearly discriminated in terms of behavior. As smaller more extreme groups will generally be more behaviorally homogeneous (Terry and Coie, 1991) a conservative criterion was used, which minimized the proportion of identified children.

As there might be differences in the development and adjustment of boys and girls (French, 1990; Ladd, 1983), the samples in the present study were differentiated according to sex to enable possible differential diagnoses for boys and girls. Furthermore, when examining children with peer problems it seems advantageous to use same-sex sociometric scores, since inclusion of opposite-sex scores might lead to the selection of children who are fairly well accepted by what is most likely their primary membership group, same-sex peers (Asher and Hymel, 1981).

Finally, the information that has been collected for this study comes from multiple sources (i.e., self-reports, teachers, parents, and school health cards). Different instruments and information sources complement each other and make, at least partly, unique contributions to the field of knowledge (Coie & Dodge, 1988; Vitaro et al., 1992). The instruments included in a multi-method assessment approach might also validate each other to some extent.

Method

Participants

Background. Participants for this study were selected from the Swedish large-scale longitudinal research program entitled Individual Development and Adaptation, the IDA-program, which was initiated by David Magnusson over thirty years ago (Magnusson, 1988). The principal population of the program consisted of a cohort of all

children (about 1,000 boys and girls) in a rather large and country-representative community of about 100,000 inhabitants in the middle of Sweden. The cohort has been followed from age 10 onward with continuous data collections, in close cooperation with parents, pupils, teachers, the local education authorities, the school medical service, and the National Board of Education.

Sociometric measures and procedure. The selection of the peer status groups for this study was made from sociometric tests given to all children in the IDA research program during two consecutive years; at age 10 at the end of grade 3 and at age 11 at the end of grade 4 (Magnusson, 1988).

A number of methods and classification procedures have been used in sociometric research for operationalizing peer status, and to differentiate between rejected and neglected children, as well as between popular and controversial children (e.g., Terry & Coie, 1991). The preferred selection instruments for this study were a rank-ordering measure combined with positive nomination measures.

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 rank position that differs from every other peer. This is a crucial difference from the more commonly used rating-scale measure, where a child can give as many or as few extreme ratings he wishes to his peers (Asher, 1985; Asher & Dodge, 1986). Furthermore, unlike the negative nominations measure (Coie, Dodge, & Coppotelli, 1982; Newcomb & Bukowski, 1983), the rank-ordering measure does not ask for a specific number of disliked children.

The children were 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 smaller classroom, where there would not be room for everyone. This is equal to asking the children to hypothetically exclude some classmates from the class. The rank-ordering scale was normalized and the scores standardized for each class and sex. This transformation makes comparisons between different classes with different number of same-sex pupils in them possible and it also emphasizes extreme values. The score for each child is the mean of the sum of her/his standardized scores. This last calculation enables heterogeneous school classes, where there is a clear hierarchy of peer likes and dislikes, to be represented in the sample. More homogeneous classes, with no extreme status positions (i.e., more even scores for different children), were not represented, which was in accordance with the purpose of focusing on children with extreme peer status positions.

The positive nominations involved same-sex class rosters from which children were asked to nominate the three same-sex classmates, whom they liked to play with most at school and also the three same-sex classmates, whom they liked to play with most during leisure time. The score for each child was the sum of the number of choices he or she received from classmates of the same sex in the two nominations.

The rank-ordering measure and a positive nomination measure were given to the children of the IDA research program at age 10 (at the end of grade 3). The instruments were group-administered by the class teachers in the classrooms.

At age 11 (at the end of grade 4) a positive nomination measure was given to the IDA children. Research has shown that rejected and popular groups exhibit high temporal sociometric stability, while the members of other extreme sociometric groups (i.e., neglected and controversial status groups) often change their status in a positive

direction (e.g., Bukowski & Newcomb, 1984; Coie & Dodge, 1983; Ollendick, Greene, Francis, & Baum, 1991). This suggests that adding the positive nominations in grade 4 as a single criterion to the criteria measures in grade 3 establishes the desired stability of the rejected and popular status groups, as well as of the middle group of children with average popularity. Thus, it was considered sufficiently valid to only use one criterion at age 11.

The positive nominations measure at age 11 was the same instrument used at age 10, except that it only involved peer preferences for play at school and, thus, excluded play during leisure time. The age 11 criterion measure was altered because a relatively high correlation (about .85 for both sexes) between play at school-time and at leisure-time at age 10 was found. This instrument was also group-administered by the class teachers.

Selection of social status groups. As a first step, the boys and girls with the lowest social status, the rejected children, were selected. The numerical selection criteria were very strong to obtain as homogeneous status groups as possible. In the rank-ordering measure, a value lower than -0.5 for the mean of the standardized scores (about 15 % of the boys and girls had a value below -0.5) was the limit for identifying rejected children. For the positive nominations, the probability theory with a deviation-from-chance-expectancy-model of receiving particular scores (Bronfenbrenner, 1945; Newcomb & Bukowski, 1983) was used to select the groups. A maximum of one choice in either the grade 3 positive nominations or in the grade 4 positive nominations was used to select rejected children. According to the combined selection criteria of the rank-ordering and the positive nominations, 15 boys and 14 girls were defined as rejected. The deviation of allowing for two choices instead of one choice for one girl on the positive nomination measures was accepted to make the female rejected group of equal-size to the male rejected group. A control showed that this girl compensated for the slightly higher value in the positive nominations by having one of the lowest values on the rank-ordering criterion.

For the school class matching procedure, the boys and girls that were the most popular (who scored over the cutoff point of $+0.5$ for the rank-ordering and who received more than 10 grade 3 nominations and more than five grade 4 nominations, or came closest to the cutoff points in the classes in question) and those of average popularity (who scored neither high nor low in any of the criteria) were selected from the same classes as the rejected boys and girls. Many children in each class met the criteria for average popularity, which made it necessary to select the average group through a sampling procedure. Some adjustments were made to make that group similar to the rejected group in terms of socioeconomic status (i.e., near equal distribution between groups over three socioeconomic levels) and intelligence scores in DIA-differential intelligence analysis (Härnquist, 1961) (i.e., a check was made that there were no significant differences between group mean values). As each group consisted of 15 participants, there was a total number of 45 participants for each sex.

Much of the regression effect was eliminated by using this selection procedure with its time interval of one year (Nesselroade, Stigler, & Baltes, 1980; Newcomb & Bukowski, 1984), which reduced the problem of instability in the assignment of children into the sociometric groups. Furthermore, the sociometric stability of the groups was deliberately strengthened by the choice of time interval. When changing 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 introduces some significant changes, such as a new teacher, a new classroom, and sometimes another school building. As these potentially influencing factors were included in the time span, their effect on the sociometric groups was eliminated, which contributes to stability, and increases the validity of the results of the study.

Outcome Measures

The data collection in grade 5. In grade 5 different aspects of the life situation, particularly in school and at home, were examined in an intensive study specially designed for the present sample (Magnusson, 1988). Relevant aspects of the information were selected in order to examine school adjustment. Interviews with parents, teachers, and the children themselves, standardized achievement tests (in grade 6), and medical examinations, which were noted on the school health card, were used. The professional interviewers were well acquainted with the interview forms, the scales, and what data was needed (through, for example, training interviews), but were unaware of the social status groups and the purposes of the study.

The interviews with the father and mother. These interviews were made independently of each other and aimed to collect information about the adjustment of the child at home, at school, during leisure time, and with peers. The interviews were semi-structured, and the interviewer completed a form directly after every interview.

The interview with the teacher. This interview aim to collect information about the adjustment of the child in the class and in school, the teacher's own appreciation of the child and also, although to a lesser degree, the teacher's judgment of the parents and the home situation of the child. The interviews with the teachers were more structured than the interviews with the parents, as the information concerned the pupils and their parents rather than the teachers themselves. For example, the interview form was used and filled in during the interview.

The self-report interview. This interview was semi-structured with a form that the interviewer filled in. As help, the child was given pictures illustrating different social situations that are relevant for children of this age (for example a group of school children with one child outside of the group). These pictures were connected to the interview questions and used directly and openly in the questioning. Interview scales, categories, and subcategories were constructed to measure different aspects of the child's social life, such as relations to class peers, to other peers, and to the teacher and the child's experience of the school situation in general.

Medical examination. The school doctor conducted a medical examination concerning physical status that was supplemented information from earlier examinations (from the child's health card in the school). The information included height, weight, diseases, general physical status, physical or mental disorders, different school problems, and special examinations (as, for example, by the school psychologist) or special arrangements in or outside school.

Academic achievement. Scores from standardized achievement tests in Swedish and mathematics, developed by the National Board of Education, were used to measure academic achievement. These achievement tests were given nationwide in grade 6. Thus, scores from these tests are fully comparable over classes and schools.

The variables constructed from the outcome measures are described below.

Variables and Grouping of Variables

Items that cover the same specific issue were put together in a group to make it easier to study that particular aspect and to get a more comprehensive account of the results. The grouping of the items was based on the intentions previously mentioned, as well as the meanings behind the initial construction of the instruments, to cover certain life areas of the participants. Thus, the items (with scale information) were grouped as follows:

Teachers' attitudes towards the participating children (from the teacher interview). The two selected variables were:

- The teachers' preference ranking of those three boys and/or girls in her class that participated in the study (1 = prefer most; 3 = prefer least).
- The teachers' judgment of how troublesome the children are on a five-graded scale from no trouble at all (= 1) to very troublesome (= 5).

Participants' school experience (from the self-report interview). Relational and behavioral variables, pertaining to the contact between the participants and their teachers and the participants' general school situation, were used. All variables had a nine-graded scale with negative to positive end-points (in brackets). The five variables were:

- General teacher relation (1 = very good; 9 = very bad)
- Aggressiveness from the teacher towards the child (1 = never; 9 = always)
- Criticism from the teacher towards the child (1 = never; 9 = always)
- Difficulties and conflicts between the teacher and the child (1 = never; 9 = always)
- The child's general school situation (1 = very positive; 9 = very negative)

Participants' school well-being (from the interviews with the fathers and mothers). Both parents were asked how much their child liked being at school at the present time and how it was earlier. These variables had scales with nine grades from very much likes/liked being at school (= 1) to very much dislikes/disliked being at school (= 9).

Participants' academic achievement (from standardized achievement tests in grade 6). Scores from the tests in Swedish and mathematics (on a scale from 0 to 100).

Mental and physical health of the participants. The two included variables pertain to mental and physical health problems or deficiencies that were noted on the health cards of the participants. All participants that had such records were counted as having health problems, independently of the content or length of the note.

Results

Teachers' Attitudes Towards the Participating Boys and Girls

School adjustment means and standard deviations for each peer status group and corresponding univariate F values are depicted in Table 1 for boys and Table 2 for girls. The top section of the two tables accounts for teachers' attitudes towards the subjects. The ANOVA-tests yielded highly significant peer status group effects for both sexes, in both variables. Post hoc tests revealed that the teachers preferred the rejected boys and girls less and found them to be more troublesome compared to both the average and

popular children. One teacher made the following comment about a rejected boy: "Untrustworthy, you do not know where you have him".

The girls in the popular group were the most positively evaluated by the teacher, although they differed significantly from average girls only in the preference rank-ordering. Teachers used words like straightforward, honest, kind, friendly, helpful, positive, and cheerful to describe these girls. There were small differences between popular and average groups for boys.

Participants' Experiences of Their School Situation

The second section of Table 1 presents results pertaining to how the participating boys experienced their teacher relation and school situation. Inspection of the univariate *F* values reveals that only one of the five included variables yielded a marginally significant peer status effect ($p < .1$), namely for the overall relation with the teacher. Post hoc analysis showed that rejected boys experienced their teacher relation as significantly more negative than popular boys. A similar, but nonsignificant status group difference was found for general school situation.

Table 1
Means (Standard Deviations) and F Values for the School Adjustment Measures for Boys in the Three Peer Status Groups

Measure	Status group			<i>F</i> (<i>df</i>)
	Rejected	Average	Popular	
Teacher Evaluations:				
Preference rank-ordering	2.47 _a (.64)	1.87 _b (.74)	1.60 _b (.74)	7.39** (2,42)
Trouble with the child	4.00 _a (1.07)	2.60 _b (1.40)	2.67 _b (1.50)	6.24** (2,42)
The Child's Self-Report:				
General T relation	4.67 _a (1.84)	3.80 _{ab} (1.78)	3.07 _b (2.02)	2.86(*) (2,42)
Aggressiveness from T	4.13 (1.88)	4.00 (2.20)	3.87 (2.26)	ns. (2,42)
Criticism from T	3.80 (1.57)	3.93 (1.44)	3.67 (1.63)	ns. (2,42)
Difficulties/conflict with T	2.20 (1.57)	2.20 (1.57)	2.00 (1.41)	ns. (2,41)
General school situation	4.87 (1.81)	4.20 (1.82)	3.53 (1.46)	ns. (2,42)
Mother's Report:				
Present school well-being	4.77 _a (2.31)	3.00 _b (1.31)	2.47 _b (1.46)	7.18** (2,40)
Earlier school well-being	4.62 _a (2.06)	3.27 _{ab} (1.49)	2.87 _b (1.73)	4.72* (2,40)
Father's Report:				
Present school well-being	4.55 _a (1.69)	2.09 _b (1.22)	2.13 _b (1.36)	14.91*** (2,34)
Earlier school well-being	4.45 _a (1.69)	2.64 _b (1.21)	2.33 _b (1.68)	6.14** (2,34)

Note. T = teacher. Means in the same row sharing the same subscript are not significantly different according to Duncan post hoc analyses ($p < .05$).

(*) $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$

Table 2
Means (Standard Deviations) and F Values for the School Adjustment Measures for Girls in the Three Peer Status Groups

Measure	Status group			F(df)
	Rejected	Average	Popular	
Teacher Evaluations:				
Preference rank-ordering	2.73 _a (.59)	1.93 _b (.59)	1.20 _c (.41)	16.86*** (2,42)
Trouble with the child	3.40 _a (1.30)	1.93 _b (1.28)	1.33 _b (1.05)	12.32*** (2,42)
The Child's Self-Report:				
General T relation	4.50 _a (1.60)	3.60 _{ab} (1.59)	2.40 _b (1.72)	6.07** (2,41)
Aggressiveness from T	3.57 _a (1.74)	1.73 _b (1.03)	1.87 _b (1.41)	5.43** (2,41)
Criticism from T	4.14 _a (1.56)	3.47 _a (1.81)	2.20 _b (1.42)	5.77** (2,41)
Difficulties/conflict with T	2.29 (1.07)	1.60 (1.35)	1.43 (.85)	ns. (2,40)
General school situation	4.93 _a (2.23)	3.13 _b (1.55)	2.33 _b (1.50)	11.27*** (2,41)
Mother's Report:				
Present school well-being	3.20 _a (1.32)	2.00 _b (1.07)	1.77 _b (.83)	6.02** (2,40)
Earlier school well-being	3.47 _a (1.30)	2.27 _b (1.39)	1.69 _b (.75)	11.05*** (2,40)
Father's Report:				
Present school well-being	3.09 _a (1.22)	2.00 _{ab} (1.41)	1.53 _b (.64)	7.11** (2,36)
Earlier school well-being	3.18 _a (1.17)	2.46 _{ab} (1.61)	1.47 _b (.52)	6.42** (2,36)

Note. T = teacher. Means in the same row sharing the same subscript are not significantly different according to Duncan post hoc analyses ($p < .05$).

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

The second section of Table 2 reveals that the peer status group effects for girls, as assessed by ANOVAs, were highly significant in four of the five variables. According to the post hoc analysis, rejected girls exhibited the least favorable adjustment in these four variables. That is, rejected girls were more discontent with their general school situation and perceived the teacher as more aggressive towards them than did both average and popular girls. In addition, rejected girls, when compared to popular girls, judged their general teacher relations as worse and felt more criticized by their teacher. During an interview with one rejected girl, she commented that she does not get on well in her class and thinks that the situation is extremely bad. This gives an idea of the quality of the negative school experiences for rejected girls.

Popular girls had the most favorable adjustment, experiencing better general teacher relations and general school situation, and less aggressiveness from the teacher than rejected girls and, furthermore, they felt less criticized by their teacher than did both rejected and average children. In short, "very favorably disposed towards school" (comment from one interview).

Although no significant group effect was found for the fifth variable pertaining to difficulties and conflicts with the teacher, the pattern was the same as in the other four variables with the rejected girls having conflicts with their teacher more often and the popular girls less often.

School Well-Being

The school well-being of the participating boys and girls according to their parents are shown in the two lowest sections of Table 1 and Table 2. For both boys and girls and for all variables, ANOVAs gave significant or highly significant group effects. Post hoc comparisons revealed that rejected children disliked the school to a higher degree than other children. This was reported for both boys and girls and for the present time, as well as the past school situation. For all measures, the differences were significant when compared to popular children and for a majority of measures when compared to average children. The differences between average and popular groups were considerably smaller and not significant for any measure, although popular children, especially popular girls, stand out as most content with school both now and in the past.

As an illustration of the negative school well-being of rejected children, it is worthwhile to mention a few comments that parents made during the interviews. Some of the parents of rejected children expressed serious concerns about their child's school situation. One mother mentioned how difficult it is for her boy to get to school every morning, and another mother said that her boy shows adjustment problems in school and that he does not get along well with the teacher and the class peers.

Academic Achievement

Table 3 displays the results for boys and girls on the standardized achievement tests in Swedish and mathematics given in grade 6. Inspection of the table reveals highly significant univariate F-ratios for girls in both variables. Post hoc analyses showed that rejected girls performed less well on the two achievement tests than did popular and average girls, while the differences between the latter two groups did not reach significance. The status group effects for boys reached significance for the test in mathematics and near significance for the test in Swedish. Post hoc analyses revealed that rejected boys performed less well than popular boys on the test in mathematics and that popular boys performed better than average boys on the test in Swedish. No other post hoc comparisons for boys reached significance.

Table 3
Means (Standard Deviations) and F Values for the Standardized Achievement Tests for Boys and Girls in the Three Peer Status Groups

Tests	Status group			F(df)
	Rejected	Average	Popular	
Boys' scores:				
Test, Swedish	54.62 _{ab} (13.06)	49.00 _a (12.59)	61.29 _b (15.50)	2.83(*) (2,38)
Test, mathematics	34.50 _a (14.13)	42.71 _{ab} (12.83)	49.07 _b (17.62)	4.57* (2,40)
Girls' scores:				
Test, Swedish	50.80 _a (14.61)	65.50 _b (15.66)	74.31 _b (11.03)	6.35** (2,32)
Test, mathematics	33.73 _a (7.43)	49.33 _b (12.94)	56.08 _b (14.18)	13.72*** (2,33)

Note. Means in the same row sharing the same subscript are not significantly different according to Duncan post hoc analyses ($p < .05$).

(*) $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$

Mental and Physical Health

Table 4 presents the number of boys and girls in the peer status groups that were noted for mental and physical health problems on the school health cards. For boys, the results were rather clear-cut with only rejected boys having records of mental or physical deficiencies. A Pearson chi square test revealed significant differences between observed and expected values for both mental health problems ($\chi^2(2, N = 45) = 11.06$, $p < .01$) and physical health problems ($\chi^2(2, N = 45) = 6.43$, $p < .05$).

Although more rejected girls were noted for mental and physical health problems compared to other girls, as seen in Table 4, there were no significant differences according to the Pearson chi square test.

The expected frequencies in some cells in the chi square tables were very small (about 1) and, therefore, the results from the chi square test should be viewed with some caution.

Table 4

Number of Participating Boys and Girls in the Peer Status Groups Noted for Mental and Physical Health Problems on the School Health Cards

Health	Status group					
	Boys			Girls		
	Rejected	Average	Popular	Rejected	Average	Popular
Mental	5			2		
Physical	3			4	2	1

Note. $N = 15$ for all peer status groups.

Discussion

According to parent reports, rejected children of both sexes felt less comfortable at school than both average and popular children. This seemed to have been going on for some time. The self-report interview revealed that rejected boys and girls judged their overall relationship with the teacher as bad. Furthermore, rejected girls, but not rejected boys, reported being subjected to criticism and aggressiveness from their teacher. There were also difficulties and conflicts between them and their teacher, although they did not significantly differ from other girls. Rejected girls, and to some extent also rejected boys, were discontent with their general school situation.

There seem to be good reasons to worry about the discontent and low well-being in school of rejected children, as expressed by their parents and themselves in the present study, and to take measures to prevent and ameliorate such a situation. One might, otherwise, easily envisage a situation where rejected children in higher grades find school unbearable to such an extent that they might even drop out of school. In fact, several studies have confirmed that peer rejection, especially for boys, leads to school dropout later on (e.g., Kupersmidt et al., 1990; Ollendick et al., 1992). Furthermore, according to unpublished findings from the IDA research program, a follow-up in grade 8 and 9 of the boys participating in the present study showed a significantly higher

school dropout rate for rejected boys (5 boys or 33 %) compared to popular and average boys (one boy in each group or 7 % which equals the dropout rate for the male population of the program). Almost no girls dropped out of school.

The findings of the present study show that teachers had a lower preference for rejected children and found them more troublesome compared to children in the other two popularity groups. This is consistent with the findings of Carlson et al. (1984) that teachers find rejected children disruptive, irritable, aggressive, domineering, dishonest, and selfish. Peer rejection seems to occur alongside distortions in the contact between the teacher and the child.

Evaluations and reactions of important adults, such as teachers, have been shown to be of importance for children's peer preferences and perceptions in relation to rejected children. For example, White and Kistner (1992) found that negative teacher feedback concerning the behavior of peer rejected children resulted in lower social preference and more negative moral judgments and descriptions from peers. Thus, one may predict that the negative evaluations and attitudes of teachers found in the present study might contribute in preserving and even reinforcing the outsider position of rejected children among their peers. White and Kistner argue for the inclusion of teacher feedback in empirical evaluations of treatment for rejected children, which seems like a well-grounded recommendation. As part of the treatment, it appears equally justified to include procedures aimed at changing the attitudes and evaluations of teachers towards rejected children in a more positive and/or understanding direction.

The academic performance of rejected girls, as measured by standardized tests in Swedish and mathematics, was short of the standards of girls from the other peer status groups. The academic results of rejected boys were more mixed. They performed less well in mathematics than other boys, especially than popular boys, but in Swedish they did not have the lowest scores and did not differ significantly from the other male groups. While many studies have found similar academic and intellectual outcomes for both sexes, some longitudinal findings have indicated that there are gender differences in later academic adjustment in the same direction as reported in the present study. For example, Ialongo et al. (1998) found that peer rejection appeared to be linked to poorer future academic achievement for girls, but not for boys. The contrasting results of different studies as to whether there are gender differences in future academic achievement of rejected children, highlight the need for further research.

The finding that the academic achievement of popular children of both sexes was of superior standard compared to the other groups indicates that high peer popularity is as much linked to high academic standards as peer rejection is to low academic standards.

Although our primary interest pertains to future consequences of peer rejection, the causal chain between peer status and academic achievement is unclear and probably goes in both directions. Several interactional and behavioural factors have been considered as important determinants of social status and some interest has also been given to academic skills (Coleman, 1980; Eitzen, 1975; Green et al., 1980; McMichael, 1980; Wentzel, 1991; Wentzel & Asher, 1995; Yellott et al., 1969). Academic achievement may provide a reputation and competence that affects popularity in a positive direction, while deficits in academic ability may have negative consequences for popularity. This would indicate a possible treatment direction focusing on promoting the academic work of rejected children, as improved academic performance may also

increase their peer popularity. There is some empirical support that such a treatment approach might be successful (e.g., Coie and Krehbiel, 1984).

According to the school health cards, only rejected children had psychiatric problems and more rejected children had physical problems than other children. These findings were most obvious for boys, for whom the group differences for both psychiatric and physical health were significant. The findings that rejected children seem to be a risk group for mental health problems is in line with the above mentioned findings of earlier research (Cowen et al., 1973; DeRosier et al., 1994; Roff et al., 1972). As for the physical problems, it is possible that they are, to some extent, signs of underlying psychological problems and/or indirect ways of seeking help in an unbearable social situation by turning to the school health care. While no earlier research has answered this, there is some evidence that poor peer relations are linked to later problems with physical health (Miller & Ingham, 1976). It seems wise for school health professionals to be observant for signs of difficulties in the peer contacts of their young patients, especially if there are no other diagnostic explanations. In a wider perspective, there is a need to see school children and their health problems in the contextual and systemic frame of the school and the social life there.

As for gender differences, rejected girls experienced more teacher-related conflicts, criticism, and aggressiveness, than rejected boys, while teachers reported having trouble with both rejected boys and girls. Thus, one might speculate that rejected girls have a higher vulnerability or sensitivity than rejected boys, or that rejected boys might try to conceal or deny some negative facts pertaining to their relations to the teacher. As was also pointed out above, there seems to be a need for further research to examine possible gender differences among rejected children.

While the rejected group stands out significantly from the popular group, and in many measures also from the average group, the differences between the average and the popular group were only significant for three items, although most measures were in the 'right' direction. Thus, there seems to be an important distinction or barrier between rejected children and other children: Rejected children seem to have adjustment problems, while both popular and average children seem to function and adjust rather well in school.

In conclusion, the present study demonstrates that rejected children of both sexes seem to have general problems in their future school adjustment and relations with their teacher, as well as mental and physical health problems. In essence, our results indicate that rejected children are a risk group for school and health problems. Furthermore, the general impression from the findings of the present study is that peer social preference might be more important for the future adjustment of girls than of boys.

The most unique aspect of the study is its longitudinal perspective, as it shows that the school and health problems of the rejected children seem to arise or continue over one or a couple of years after the initial peer rejection. Considering this, it appears even more urgent to intervene at an early stage into the class peer status system to put an end to such an adverse developmental path for peer rejected children. Such interventions or treatment programs might include working with the group processes in the class and to help rejected children improve their social competence (e.g., Bierman, 1986; Bullock, 1991, 1992; Coie & Koeppl, 1990).

One limitation of the present investigation is the relatively small peer group sizes, which implies reduced power of the statistical analyses. However, this limitation may be

unavoidable when examining children with extreme and relatively homogeneous peer difficulties.

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Study II

SCHOOL ADJUSTMENT IN ADOLESCENCE FOR PREVIOUSLY REJECTED, AVERAGE, AND POPULAR CHILDREN

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Abstract

Background. Earlier research shows that peer rejected children are at risk of a wide range of subsequent adjustment difficulties in different social contexts, as, for example, in school.

Aims. This study investigated the academic performance and school adjustment in adolescence of children with different peer status in middle childhood.

Sample. Age 15 boys and girls (N=90), who at age 10 and 11 were sociometrically rejected, popular, or of average popularity in their school class.

Methods. School marks, intelligence scales, and self-reports were used as adjustment measures. School dropout rate for boys was also included.

Results. 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. There were some slight indications that rejected girls (but not rejected boys) had negative attitudes towards school and schoolwork, and that popular girls had positive school attitudes. The school dropout rate of rejected boys was much higher than that of other boys.

Conclusions. The results show that the rejected children are a risk group for school problems also over a long period of time. Considering the important developmental aspects of the adolescence years, there appear to be good reasons, therefore, to worry about the future adulthood adjustment of peer rejected children.

A substantial amount of research has documented that peer relations in childhood are important determinants of social development and adjustment and that being rejected by peers places children at risk of a wide range of subsequent adjustment difficulties (e.g., Bagwell, Newcomb, & Bukowski, 1998; Coie, Terry, Lenox, & Lochman, 1995; Coie, Terry, Lenox, Lochman, & Hyman, 1998; Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Ialongo, Vaden-Kiernan, & Kellam, 1998; Kupersmidt, Coie, & Dodge, 1990; Ollendick, Weist, Borden, & Greene, 1992; Parker & Asher, 1987; Roff, Sells, & Golden, 1972). By contrast, positive peer reputation or status in childhood seems to be a predictor of good future adjustment (e.g., the above studies; Morison & Masten, 1991). The sociometric research paradigm (Hallinan, 1981), which

implies using some sociometric assessment techniques for measuring friendship formation, social status, or social adjustment, has been central to much of the peer status risk research. Classroom sociometry has been the preferred criterion variable, which is due to the fact that schools are important contexts for socialisation and children spend a great deal of time in classrooms and school playgrounds with same-age or near-age peers. Berndt and Ladd (1989) claim 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).

In the present study, the importance of the school context as a social arena for children was acknowledged, not only by using classroom sociometry as a social status criterion, but also in concentrating on the future school adjustment. The aim was to examine and shed light on the academic performance and school adjustment in adolescence of children who in middle childhood had been of rejected, average, or popular peer status in school.

In our choice of time periods we are mainly in agreement with Sullivan (1953) and a common supposition and practice in peer rejection research that it is peer rejection during middle childhood and preadolescence that is presumed to lead to later disorder in adolescence and early adulthood (Coie, 1990; Parker & Asher, 1987). Sullivan argued that preadolescent and early adolescent relationships are important resources and buffers against the stresses of adolescent life transitions that sometimes trigger disordered reactions. As a corollary, one might put up as an overarching hypothesis of this study that rejected children, among other disordered reactions, will show different signs of school maladjustment in adolescence.

Earlier cross-sectional and longitudinal research has demonstrated that peer rejection is associated with both concurrent and subsequent academic disabilities and difficulties and below-average intelligence (e.g., Bagwell et al., 1998; Coie, Lochman, Terry, & Hyman, 1992; Czeschlik & Rost, 1995; Green, Vosk, Forehand, & Beck, 1981; Hatzicristou & Hopf, 1996; Ialongo et al., 1998; Ollendick, Greene, Francis, & Baum, 1991; Ollendick et al., 1992; Vandell & Hembree, 1994; Wentzel & Asher, 1995). Whilst summarising results from several studies, Newcomb, Bukowski, and Pattee (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 in the peer status research, athletic competence has also been recognised as a correlate to popularity which supports the common notion that athletic prowess and popularity go together, especially in adolescence and for males (e.g., Coie, Dodge, & Kupersmidt, 1990; Bagwell et al., 1998; Coleman, 1980; Eitzen, 1975). From the findings of earlier research and as part of our overarching hypothesis, it seemed justified to expect athletic and intellectual difficulties in adolescence for our rejected participants as well as higher levels of academic skills for the popular participants.

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? Self-report data pertaining to these questions were included in this study to assess possible differences among the peer status groups. These subjective school experiences have not received much attention in earlier sociometric research. One might assume that if rejected children have problems with their school adjustment in adolescence, this will be mirrored in their experiences and attitudes towards school.

An important adjustment factor that indicates grave school discomfort and distress and, in addition, is bound to affect future adjustment in a negative way, is premature school dropout. The dropout problem has been addressed in some follow-up studies about the future consequences of being peer rejected. The findings show that peer rejection is predictively associated with later school dropout (e.g., Cowen et al., 1973; Janes et al., 1979; Kupersmidt et al., 1990; Ollendick et al., 1992; Parker & Asher, 1987; Roff et al., 1972). It must be pointed out that dropout from school is predominantly a boys' problem and therefore seems most suited to differentiate between male participants. For example in the large-scale longitudinal project IDA from which our participants were selected, about 7% of the boys were early school dropouts as against 1% of the girls (Magnusson, 1988). We have included data for boys about premature school dropout and, in line with earlier research, our hypothesis was that rejected boys will show a higher dropout rate than other boys.

Some methodological concerns and refinements of potential importance were incorporated into the present study as described below.

Ollendick et al. (1992) emphasised that psychometrically sound measures of the construct of sociometric status and its stability over time are prerequisites for the utility of social status as a predictive tool. One might expect a group of stably rejected children, whose rejection is a persistent social experience, to be at greater long-term risk of disturbances in their adjustment than a temporarily rejected group (e.g., Kupersmidt et al., 1990). This has been documented in a growing body of research (e.g., Bierman & Wargo, 1995; Burks, Dodge, & Price, 1995; DeRosier, Kupersmidt, & Patterson, 1994; Parke et al., 1997; Vitaro, Tremblay, Gagnon, & Boivin, 1992). In order to acquire a stable rejected group, as well as stable average and popular groups, the selection of the popularity groups for this study was based on sociometric measures from two occasions within an interval of one year.

Besides stability in group membership, it was also important to obtain homogeneous status groups that are clinically meaningful, and which can be clearly discriminated in terms of behaviour. As smaller more extreme groups will generally be more behaviourally homogeneous and more readily discriminable and distinctive (Terry and Coie, 1991) a conservative criterion was used, which minimised the proportion of identified children. At the same time, smaller status groups will have less membership stability over time, as shown for example by Terry and Coie, who concluded that there is a trade-off between stability and discriminability. In the present study the incongruity between stability and homogeneity was to a great extent dissolved by the procedure of selecting the peer status groups from sociometric measures at two occasions.

As there might be differences in the development and adjustment of boys and girls (French, 1990; Ladd, 1983), the samples in the present study were differentiated according to sex to enable differential diagnoses for boys and girls. Furthermore, when examining children with peer problems it seems advantageous to use same-sex sociometric scores, since inclusion of opposite-sex scores might lead to the selection of children who are fairly well accepted by what is most likely their primary membership group, same-sex peers (Asher and Hymel, 1981).

In sum, the central issue of the present study pertains to the adolescent school adjustment of children who differed in peer status in middle childhood. The study focused on rejected, popular, and average boys and girls and examined different aspects

of their future adolescent school adjustment. The question at issue has been approached by using a longitudinal approach, with a prospective design and analysis.

Method

Participants

Background. Participants for this study were selected from the Swedish large-scale longitudinal research program entitled Individual Development and Adaptation, the IDA-program, which was initiated by David Magnusson over thirty years ago (Magnusson, 1988). The principal population of the program consisted of a cohort of all children (about 1,000 boys and girls) in a rather large and country-representative community of about 100,000 inhabitants in the middle of Sweden. The cohort has been followed from age 10 onward with continuous data collections, in close cooperation with parents, pupils, teachers, the local education authorities, the school medical service, and the National Board of Education.

Sociometric measures and procedure. The selection of the peer status groups for this study was made from sociometric tests given to all children in the IDA research program during two consecutive years; at age 10 at the end of grade 3 and at age 11 at the end of grade 4 (Magnusson, 1988).

A number of methods and classification procedures have been used in sociometric research for operationalising peer status, and to differentiate between rejected and neglected children, as well as between popular and controversial children (e.g., Terry & Coie, 1991). The preferred selection instruments for this study were a rank-ordering measure combined with positive nomination measures.

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 rank position that differs from every other peer. This is a crucial difference from the more commonly used rating-scale measure, where a child can give as many or as few extreme ratings he wishes to his peers (Asher, 1985; Asher & Dodge, 1986). Furthermore, unlike the negative nominations measure (Coie, Dodge, & Coppotelli, 1982; Newcomb & Bukowski, 1983), the rank-ordering measure does not ask for a specific number of disliked children.

The children were 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 smaller classroom, where there would not be room for everyone. This is equal to asking the children to hypothetically exclude some classmates from the class. The rank-ordering scale was normalised and the scores standardised for each class and sex. This transformation makes comparisons between different classes with different number of same-sex pupils in them possible and it also emphasises extreme values. The score for each child is the mean of the sum of her/his standardised scores. This last calculation enables heterogeneous school classes, where there is a clear hierarchy of peer likes and dislikes, to be represented in the sample. More homogeneous classes, with no extreme status positions (i.e., more even scores for different children), were not represented, which was in accordance with the purpose of focusing on children with extreme peer status positions.

The positive nominations involved same-sex class rosters from which children were asked to nominate the three same-sex classmates, whom they liked to play with most at school and also the three same-sex classmates, whom they liked to play with most during leisure time. The score for each child was the sum of the number of choices he or she received from classmates of the same sex in the two nominations.

The rank-ordering measure and a positive nomination measure were given to the children of the IDA research program at age 10 (at the end of grade 3). The instruments were group-administered by the class teachers in the classrooms.

At age 11 (at the end of grade 4) a positive nomination measure was given to the IDA children. Research has shown that rejected and popular groups exhibit high temporal sociometric stability, while the members of other extreme sociometric groups (i.e., neglected and controversial status groups) often change their status in a positive direction (e.g., Bukowski & Newcomb, 1984; Coie & Dodge, 1983; Ollendick, Greene, Francis, & Baum, 1991). This suggests that adding the positive nominations in grade 4 as a single criterion to the criteria measures in grade 3 establishes the desired stability of the rejected and popular status groups, as well as of the middle group of children with average popularity. Thus, it was considered sufficiently valid to only use one criterion at age 11.

The positive nominations measure at age 11 was the same instrument used at age 10, except that it only involved peer preferences for play at school and, thus, excluded play during leisure time. The age 11 criterion measure was altered because a relatively high correlation (about .85 for both sexes) between play at school-time and at leisure-time at age 10 was found. This instrument was also group-administered by the class teachers.

Selection of social status groups. As a first step, the boys and girls with the lowest social status, the rejected children, were selected. The numerical selection criteria were very strong to obtain as homogeneous status groups as possible. In the rank-ordering measure, a value lower than -.5 for the mean of the sum of the standardised scores (about 15 % of the boys and girls had a value below -.5) was the limit for identifying rejected children. For the positive nominations, the probability theory with a deviation-from-chance-expectancy-model of receiving particular scores (Bronfenbrenner, 1945; Newcomb & Bukowski, 1983) was used to select the groups. A maximum of one choice in either the grade 3 positive nominations or in the grade 4 positive nominations was used to select rejected children. According to the combined selection criteria of the rank-ordering and the positive nominations, 15 boys and 14 girls were defined as rejected. The deviation of allowing for two choices instead of one choice for one girl on the positive nomination measures was accepted to make the female rejected group of equal-size to the male rejected group. A control showed that this girl compensated for the slightly higher value in the positive nominations by having one of the lowest values on the rank-ordering criterion.

For the school class matching procedure, the boys and girls that were the most popular (who scored over the cut-off point of +.5 for the rank-ordering and who received more than 10 grade 3 nominations and more than five grade 4 nominations, or came closest to the cut-off points in the classes in question) and those of average popularity (who scored neither high nor low in any of the criteria) were selected from the same classes as the rejected boys and girls. Many children in each class met the criteria for average popularity, which made it necessary to select the average group

through a sampling procedure. Some adjustments were made to make that group similar to the rejected group in terms of socio-economic status (i.e., near equal distribution between groups over three socio-economic levels) and intelligence scores in DIA-differential intelligence analysis (Härnquist, 1961) (i.e., a check was made that there were no significant differences between group mean values). As each group consisted of 15 participants, there was a total number of 45 participants for each sex.

Much of the regression effect was eliminated by using this selection procedure with its time interval of one year (Nesselroade, Stigler, & Baltes, 1980; Newcomb & Bukowski, 1984), which reduced the problem of instability in the assignment of children into the sociometric groups. Furthermore, the sociometric stability of the groups was deliberately strengthened by the choice of time interval. When changing 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 introduces some significant changes, such as a new teacher, a new classroom, and sometimes another school building. As these potentially influencing factors were included in the time span, their effect on the sociometric groups was eliminated, which contributes to stability, and increases the validity of the results of the study.

Outcome Measures

The data collection in grade 8 (mean age 15 years). One of the regular data collections for the whole population of the IDA research program (Magnusson, 1988) was carried out in grade 8. A fairly large battery of instruments was used to examine different aspects of the life and adjustment of the participants. The instruments and variables that were selected as relevant for this study are described below.

Intelligence and academic achievement. An intelligence test, WIT III (Westrin's Intelligence Scale, see Westrin, 1967) was group-administered to the whole population. The test measures verbal, logical-inductive, and spatial abilities, with the total score as a measure of general intelligence. The general intelligence value is represented by a stanine scale. Standardised achievement tests in Swedish (on a scale from 0 to 100), developed by the National Board of Education for nation-wide use, and marks in Swedish and physical training (on a scale from 1 to 5) were used to measure academic achievement.

Questionnaire about educational and vocational choices. This is a group-administered self-report instrument (constructed for the IDA research program) with questions about present and future educational choices, about future vocational choices, and about attitudes to school. The four questions about attitudes to school were included in this study to measure subjective school adjustment. These questions pertained to how the participants have liked going in school, if they considered the schoolwork as meaningful for their future career, if they have been doing their best in school, and for how long they can imagine going in school to get a job they like. The participants had to mark one alternative on a 5-point negative (=1) to positive (=5) scale with each alternative given its own verbal description.

Furthermore, data about *premature school dropout* (before finishing the obligatory 9th grade in elementary school) were collected for the boys (Magnusson, 1988).

Participant Attrition

There were some participants missing in the age 15 data collection due to the fact that they had moved from the area. Among girls there were 4 missing cases from the rejected group, 3 from the average group, and 2 from the popular group. Among boys there were 2 missing cases from the rejected group, and 2 from the average group, while the popular group was complete.

To make an analysis of the missing cases, the results from one of the sociometric selection variables, the rank-ordering measure given in grade 3, were scrutinised. Because of the characteristics of that scale, with its wider range of values, the participants in each popularity group differed somewhat from each other. In the two other selection criteria, positive nominations at age 10 and at age 11, the participants from the rejected groups as a rule received no nominations at all (only a few of them received one nomination), which means that there were very small differences between the group members.

The attrition analysis shows that the missing cases did not differ much on the rank-ordering scale from the mean value of the popularity group they belonged to and the results from t-tests were far from significant. For the principal groups of interest, the rejected groups of both sexes, there were very minor differences, indicating that the missing cases had a slightly lower mean value.

Results

Intelligence and Academic Achievement.

This variable area concerns scores on an intelligence test and a standardised achievement test in Swedish and marks in Swedish and physical training in grade 8. The means and standard deviations for each peer status group and corresponding univariate F values are depicted in the top section of Table 1 for boys and Table 2 for girls. Inspection of the tables reveals that the rejected children of both sexes had the lowest scores and marks, and the popular children the highest in all four variables.

As shown in the upper part of Table 1, the ANOVA-tests yielded significant peer status group effects for boys for marks in Swedish and physical training and almost significant effects for general intelligence. Post hoc analyses revealed that rejected boys had lower marks in Swedish and physical training and a lower general intelligence than popular children. No other post hoc comparisons for boys reached significance.

Inspection of the top section of Table 2 reveals that the peer status group effects for girls, as assessed by ANOVAs, were significant for the standardised achievement test and the marks in Swedish and near significant for general intelligence. According to post hoc analyses, rejected girls had lower marks in Swedish, lower scores on the standardised test in Swedish, and lower general intelligence compared to popular girls. In addition, popular girls had higher marks in Swedish than average children.

Table 1
Means (Standard Deviations) and F Values Associated with School Adjustment for Boys in the Three Peer Status Groups

Measure	Status group			F (df)
	Rejected	Average	Popular	
Academic ability:				
General intelligence	3.58 _a (1.88)	4.46 _{ab} (1.13)	5.27 _b (2.28)	2.75(*) (2,37)
Test in Swedish	40.90 (18.46)	52.70 (16.58)	52.83 (14.74)	ns. (2,29)
Marks in Swedish	2.15 _a (.90)	2.54 _{ab} (.88)	3.13 _b (.83)	4.55* (2,38)
Marks in physical training	2.54 _a (1.05)	3.08 _{ab} (.64)	3.73 _b (.96)	6.13** (2,38)
Attitudes towards school:				
Liked going in school	3.00 (1.28)	2.69 (1.11)	2.86 (.86)	ns. (2,36)
Schoolwork is meaningful	4.42 (.90)	3.69 (1.60)	4.20 (1.01)	ns. (2,37)
Doing one's best in school	3.00 (1.04)	3.00 (1.29)	3.47 (.74)	ns. (2,37)
Continue studies	3.10 (.74)	3.54 (.78)	3.33 (1.18)	ns. (2,35)

Note. Means in the same row sharing the same subscript are not significantly different according to Duncan post hoc analyses ($p < .05$).

(*) $p < .1$. * $p < .05$. ** $p < .01$

Table 2
Means (Standard Deviations) and F Values Associated with School Adjustment for Girls in the Three Peer Status Groups

Measure	Status group			F (df)
	Rejected	Average	Popular	
Academic ability:				
General intelligence	4.20 _a (1.55)	4.77 _{ab} (2.09)	5.75 _b (1.14)	2.49(*) (2,32)
Test in Swedish	45.09 _a (14.87)	54.54 _{ab} (15.09)	65.27 _b (11.77)	5.67** (2,32)
Marks in Swedish	3.00 _a (.77)	3.23 _a (1.01)	4.17 _b (.94)	5.31* (2,33)
Marks in physical training	3.00 (1.00)	3.46 (1.05)	3.83 (.72)	ns. (2,33)
Attitudes towards school:				
Liked going in school	3.70 (.82)	4.00 (.63)	4.00 (.89)	ns. (2,29)
Schoolwork is meaningful	4.00 (.82)	4.18 (.60)	4.55 (.52)	ns. (2,29)
Doing one's best in school	3.70 (1.16)	3.73 (.65)	4.00 (1.10)	ns. (2,37)
Continue studies	3.50 (.53)	3.18 (1.08)	3.80 (.92)	ns. (2,35)

Note. Means in the same row sharing the same subscript are not significantly different according to Duncan post hoc analyses ($p < .05$).

(*) $p < .1$. * $p < .05$. ** $p < .01$

Attitudes towards School.

This variable domain deals with the participants' attitudes towards school and the results are accounted for in the lower section of Table 1 and Table 2. Inspection of the univariate F values reveals that none of the four included variables yielded a significant

or marginally significant peer status effect, neither for boys nor for girls. For girls, there was, however, a slight tendency for the rejected participants to dislike going to school, to see schoolwork as less meaningful for their future, and to care less about doing their best in school; by contrast the popular participants tended to have the most positive attitudes towards school in all measured aspects, including a willingness to continue their education after obligatory school.

School Dropout

Data about premature school dropout of boys (before finishing the obligatory 9th grade) shows that as many as 5 rejected boys were dropouts (about 33 %), as against 1 from the other two popularity groups respectively (about 7%). A Pearson chi square test revealed significant group differences between observed and expected values ($\chi^2(2, N = 41) = 6.16, p < .05$)

Discussion

The academic performance in adolescence of rejected children of both sexes, as measured as scores on a test in Swedish and marks in Swedish and physical training, was short of the standards of other children. In most variables they differed significantly from popular children. Rejected children also scored significantly lower in intelligence measures compared to popular children.

From our results, it seems that high peer popularity is as much linked to high cognitive and physical academic standards as peer rejection is to low academic standards, which is in accordance with the hypothesis of this study. Although our primary interest pertains to future consequences of peer rejection, the causal chain between peer status and academic achievement is unclear and probably goes in both directions. Several interactional and behavioural factors have been considered as important determinants of social status and some interest has also been given to cognitive and athletic skills (Coleman, 1980; Eitzen, 1975; Green et al., 1980; McMichael, 1980; Wentzel, 1991; Wentzel & Asher, 1995; Yellott et al., 1969). Academic achievement may provide a reputation and competence that affects popularity in a positive direction, while deficits in academic ability may have negative consequences for popularity. This would indicate a possible treatment direction focusing on promoting the academic work of rejected children in both cognitive and athletic areas, as improved academic performance may also increase their peer popularity. There is some empirical support that such a treatment approach might be successful (e.g., Coie and Krehbiel, 1984).

While many studies have found similar academic and intellectual outcomes for both sexes, some longitudinal findings have indicated that there are gender differences in later academic adjustment (Coie et al., 1992; Jalongo et al., 1998). The findings of the present study are mainly in line with the studies that have found no gender differences in future academic adjustment.

Intelligence tests were also administered to the participants of this study in grade 3 (Magnusson, 1988) and the results coincide with the results in grade 8. The high status groups had the highest values in the intelligence measures also in grade 3 and for girls this result was significant both in relation to average status girls and rejected girls. As in

grade 8, the average status children had scores that fell between the extreme status groups. The similarity of the intelligence findings from grade 3 and grade 8 is not surprising as intelligence tests are supposed to measure a relatively constant human ability. Furthermore, this finding supports the supposition that cognitive abilities might influence peer popularity.

Neither boys' groups nor girls' groups differed significantly in their general attitudes towards school. However, one might discern some consistent, but slight tendencies for girls, which might serve as a startingpoint and hypothesis for further research efforts. Rejected girls might have disliked going to school, they might have seen the schoolwork as less meaningful for their future, and they might care less about doing their best in school. For popular girls it seems to be the other way around and they also seem to be prepared for a longer period of academic training after obligatory school. Thus, for girls the findings, although not significant, are in the expected direction and congruent with our findings pertaining to academic adjustment, while for boys this was not so. On average, boys had lower absolute values in these variables than girls and, thus, more negative attitudes towards school. One might speculate if boys in general have more negative attitudes towards the school than girls, perhaps as part of their gang culture, which might obscure any real differences between the peer status groups.

The finding that five rejected boys (i.e. 33 %) dropped out of school without finishing the last obligatory school year, as compared to one dropout from each of the other popularity groups, is an important indicator of maladjustment and gives further evidence of their exposed position in school. Furthermore, it is evident that many school dropouts are identifiable within the group of boys who already early in their school years had extremely low peer status (i.e., rejected children).

As we have pointed out above, dropout from school is predominantly a male problem and therefore this indicator has not been used for the girls. It is nevertheless worth mentioning that in the female groups the total attrition difference between grade 8 and grade 9 was only 2 girls (1 from the rejected group and 1 from the popular group). However, we do not know if they were school dropouts or absent for other reasons, for example moving out of the school district.

An examination of the 5 rejected dropout boys' position on the rank-ordering criterion variable from grade 3 shows that they had a lower average ranking than the rejected group as a whole. Three of the dropout boys had the lowest rank-ordering values of all rejected boys and another dropout boy had the fifth lowest value. Thus, the school dropouts seem to have had a lower peer status even compared to other rejected boys. Furthermore, the dropout boys were responsible for most of the occasional missing cases that occurred for the rejected boys in the different instruments that were used for the general data collection in grade 8. These occasional missing cases were also substantially more numerous than the occasional missing cases of the other male popularity groups (and also compared to the female groups). Thus, it seems that the school dropouts were more non-attendant in school than others already in grade 8, which indicates that it could be a phase in a negative social outcasting process resulting ultimately in their definitive dropout from school.

As we have seen, peer status is related to school factors, such as academic achievement, that in all probability are playing important roles for school adjustment. How important peer status is compared to other factors 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. For the rejected child, peer rejection combined with other negative school factors might jointly function to drive the individual into an outsider position and as an ostracising mechanism.

The general findings of the present study are to a high extent in accordance with the existing point of view in the research field and the results of other studies. Rejected children of both sexes seem to have problems in their school adjustment, which may reinforce and uphold their rejected status in an interactional causal chain. Perhaps the most unique aspect of this study is the long period of five years from when the status groups were selected until the follow-up in adolescence. In essential aspects our results show that the rejected children are a risk group also over such a long period of time. Considering the important developmental aspects of the adolescence years, as we have emphasised above, there appear to be good reasons, therefore, to worry about the future adulthood adjustment of peer rejected children.

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