CHILD-CONTEXT INTERACTIONS: TEMPERAMENT AND THE DEVELOPMENT OF PEER GROUP STATUS AMONG PREVIOUSLY UNACQUAINTED CHILDREN

by

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in the Department

of

Psychology

We accept this dissertation as conforming
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ABSTRACT

Theoretical models from the temperament literature are used as a basis for testing hypothesized relationships between temperamental dispositions, peer interactions, and peer group status in the present short-term longitudinal study. Ninety-six 6 to 9 year old children (50 girls, 46 boys) were brought together in groups of eight to interact with previously unacquainted, same-sex peers of similar ages for five hours. Each child was then given a sociometric interview and asked to nominate his or her two most- and least-favorite peers in the playgroup. Measures of each child's emotionality, activity, sociability, and shyness (Buss & Plomin, 1984) were gathered from parents, observers previously unacquainted with the children, and the children themselves, to test predictions about the temperamental profiles of sociometrically rejected, neglected, average, and popular status children. A measure of body build (ponderal index) was also included. Behavioural observations were coded for each child over the course of the day to test hypothesized interactional patterns related to temperament and final peer group status. Data on I.Q., physical attractiveness and socioeconomic status were included to provide additional information on child and environmental variables, as well as to act as controls. Statistical

analyses reveal significant differences in patterns of temperaments, behavioural interactions, appearance, I.Q., and SES among children in different sociometric status groups. The presence of children in each group having similar, and different characteristics, also suggests several alternative combinations of characteristics that may lead to more or less favorable peer group status. Findings of this study confirm the hypothesis that temperament plays an important role in the development of peer group status. Results also support the notion that children simultaneously evoke and experience differential responses and environments based on their own characteristics of individuality. Complex interactions involving temperament, social context (observers vs. parents), sex, and peer group status also provide indirect evidence of the operation of child-environment transactions in development. Findings support both personological and contextual models of child-environment interactions. Preliminary data on the nature of self-perceived temperament of children of different peer group status are also provided.

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TABLE OF CONTENTS

List of Tables

Acknowledgements

I wish to thank all those whose assistance made this dissertation possible. I am grateful to the parents who allowed their children to participate in my study; to the delightful children, who made data collection enjoyable and entertaining; and to my conscientious and good-humoured research assistants: Lynn Vander Schilden, Cynthia Milton, Gordon, and Kit.

Thanks are also due to Pat Konkin who always made himself available for statistical consultation, and to Morag, Marianne, Gabrielle and Darlene in the General Office who have always been most helpful and patient.

Special thanks are due to my committee, who provided solid support and encouragement during one particularly difficult week, as well as to two of my closest and most loyal friends, Brenda Kosaka and Pam Knight.

I am particularly grateful to my advisor, Dr. G. A. Milton, who has been an unfailing source of wisdom, creativity, humour, and friendship during my graduate career. It has been a great privilege to be his student.

I wish to heartily thank my parents, who, by their example, continue to be a source of strength and inspiration to me.

Finally, I must thank my husband, Derek Underwood, who's love, patience, and wicked sense of humour have kept me going all these years, and it is to him that I would like to dedicate this research.

REVIEW OF THE LITERATURE

Introduction

The search for variables that might lead to a child's being accepted or rejected by peers dates back at least as far as 1934 when Moreno developed the first sociometric interview to assess peer relations among children. Interest in the potential correlates of various types of peer group status has accelerated rapidly in recent years for several reasons, including: a) an increasing awareness of the crucial role peers play in adaptive social development (see Hartup, 1983 for a review); b) the evidence linking poor peer relations in childhood with maladaptive outcomes in adolescence and adulthood (see Parker & Asher, 1987 for a review); and c) a theoretical shift from a primary focus on family-child relations to a broader view encompassing additional socialization influences and contexts (Bronfenbrenner, 1977; 1986) including the peer group (Asher, 1983).

A review of this literature on peer group status indicates that the potentially evocative aspects of a child's temperamental predispositions have been largely ignored. Furthermore, little attention has been paid to the often critical role of social-environmental influences and child-context relations in interpreting differences in children's peer group status. An additional shortcoming of this literature is its largely atheoretical base.

It is argued in this dissertation that many of the currently unrelated or inconsistent findings in the literature on peer group status can be drawn together to form a more cohesive picture when they are considered in relation to the concept of underlying predispositions or temperaments. Similarly, theoretical and practical issues currently being debated in the area of temperament (see Lerner & Lerner, 1986; and Plomin & Dunn, 1986, for current collections of essays), may provide the theoretical foundation needed to foster a more comprehensive and sophisticated understanding of the complexity of a child's interactions with, and acceptance by, his or her peers.

Although current temperament theorists espouse somewhat different approaches to conceptualization and definition, they all seek to acknowledge individual differences in acting upon and reacting to the environment (Super & Harkness, 1986). A basic premise is that differences among children evoke different treatment by significant others which, in turn, influences the child's development. This view of a child as an active participant in his or her development (e.g. Bell, 1968; Galambos & Lerner, 1987; Scarr & McCartney, 1983; Thomas, Chess, & Birch, 1968), as well as the current move away from the study of average or normative development towards the description and explanation of individual differences, has led to a recognition of the relevance of the child's inherent characteristics, which include physical

attractiveness, body build, and temperamental dispositions (Lerner & Lerner, 1983; Scarr & McCartney, 1983; Thomas et al., 1968).

Although the importance of physical appearance and body build on sociometric status have been acknowledged in the literature, the concept of temperament has not. Similarly, although the literature addressing temperament within parent-child or family contexts is steadily increasing, relatively little research has been directed towards understanding the impact of temperament on children's interactions with peers, and no research to date has focused on the relationship between a child's temperament and his or her status in the peer group.

Overview

Relevant theory and research in both areas of peer group status and temperament are reviewed as a prelude to the merging of aspects of these areas in the current study. The review of research on peer group status includes studies of the behavioural and nonbehavioural characteristics hypothesized to be correlates of peer group status, and the results of related intervention research. Possible methodological sources of the inconsistent results reported are discussed, including features of the techniques used to measure social preference choices, the amalgamation of diverse subgroups of popular and unpopular children in the same analyses, and the lack of attention paid to contextual

factors. Current classification schemes and longitudinal studies of the stability of peer group status are also examined.

In conclusion, theory and research related to the temperament literature are discussed, attention being drawn finally to parallels between the child characteristics and behaviours associated with various subgroups of children identified in the peer group status literature and current temperament research.

Peer Group Status

Definition

Terms used to refer to the way in which a child is viewed by his or her peers are plentiful and confusing, and include popularity, peer acceptance, peer group status, sociometric status, as well as more specific categories of neglected and rejected.

The plethora of terms can be traced to the variety of techniques used to measure social relations within a group. The term "sociometric status" is derived from the most widely used method of collecting data about interpersonal choices, the sociometric interview. Children are asked to name a given number of liked-most peers and, in some instances, liked-least peers as well. If children are only asked to give positive nominations, the resulting classification scheme is unidimensional, with children receiving more or fewer positive nominations, and reported as being more or

less "popular". The inclusion of negative nominations allows differentiation of children into more specific categories of peer status, including popular (many liked-most (LM) nominations and few liked-least (LL) nominations), "neglected" (few nominations of any valence) and "rejected" (many LL nominations and few, if any, LM ones). To add to the confusion, many researchers have also used teacher ratings and other methods of peer assessment, and then used some of the same terms, as well as different ones, to refer to slightly different concepts.

In the interests of clarity and parsimony, "peer group status" will be used here to refer collectively to all of the above, that is, the standing of a child in his or her group of peers, no matter which method was used to collect the interpersonal choice data. Where specific terms are used in the literature review they refer to the terms used by the researchers cited.

Behavioural Correlates of Peer Group Status

Numerous studies have addressed the question of how qualitative aspects of children's behaviour as observed in natural settings are related to peer group status. The Hartup, Glazer, and Charlesworth (1967) study is undoubtedly the most often cited in this area. These investigators reported that among pre-schoolers, popularity was highly correlated with the rate of dispensing "positive reinforcement", defined as attention, approval, affection,

accceptance, and submission. Similarly, Putallez and Gottman (1981) found popular elementary school children to "agree" more than their less popular peers when they were observed in dyadic interactions. Masters and Furman (1981), however, found that high peer group status was more directly related to overall rates of receiving and dispensing "neutral acts", such as general conversation, associative play and imitation than it was to specifically positive behaviours. Conversely, Vaughn and Waters (1981) reported that popular preschoolers were involved in many aggressive and competitive encounters as well as prosocial interactions, a finding consistent with Olweus' (1978), who discovered that even though elementary school age boys identified as "bullies" were aggressive, they also had relatively high peer group status. These results point out that correlates of high peer group status are not necessarily limited to the realm of prosocial behaviour.

Results of a study by Markell and Asher (1984) also suggest that children with low peer group status are not necessarily aversive or antisocial. These researchers found that the interactions of unpopular third and fourth grade children were generally agreeable rather than bossy (defined as inappropriate and aversive attempts to influence another's behaviour).

Finally, some studies have found no significant relationships between peer group status and observed behaviours (Clifford, 1963), and others have found

relationships between peer group status and very few of the behaviours observed (e.g. Gottman, Gonso & Rasmusson, 1975). Gottman et al. (1975) did find, however, that more popular children received significantly more positive reinforcement from peers than children with few friends, but the tendency for these children to distribute more positive reinforcement to peers was not significant. The ways in which these children evoked positive reactions from other children were not detected.

Overall, despite the considerable research addressed to this area, the relationships between positive and negative behaviours and peer group status remain inconsistent. This may be the reason the variance accounted for by observations of a variety of behaviours tends to be modest.

Social Skills

Many researchers who already assume that popular and unpopular children behave differently, explain these differences in terms of social skills. Currently, the most widespread explanation of low peer group status is that these children lack the social or social-cognitive skills that would allow them to elicit positive responses from others (Beirman, 1986). Social skills training programs with unpopular children are therefore proliferating (see Foster, De Lawyer, & Guevremont, 1985, for a detailed review). Some researchers have chosen conversational skills (Beirman & Furman, 1984; Ladd, 1981), and game playing skills (Oden &

Asher, 1977), whereas others have included a variety of aspects thought to relate to the cognitive components of social skills such as social perception, nonverbal skills, dealing with stress, and problem-solving skills (Tiffen & Spence, 1986).

Studies which have examined the target children's interactions after such programs have produced mixed results. Improvements in peer group status following social skills training have been reported in some studies (Oden & Asher, 1977; Ladd, 1981), but not in others (LaGreca & Santogrossi, 1980; Tiffen & Spence, 1986). Furthermore, when positive gains in peer group status have been found, they have not always been correlated with the behavioural skills trained (Oden & Asher, 1978). These conflicting results are not surprising as the results of research examining the hypothesized social-cognitive correlates of popularity (from which many of the target behaviours are presumably selected) are also inconsistent. Although results of some studies have indicated that differences in peer group status are associated with cognitive developmental variables such as egocentrism (Deutch, 1974) or empathy (Marcus, 1980), for example, others have found no such relationships (e.g. Goldman et al., 1980; Krantz, 1982).

Nonbehavioural Correlates of Peer Group Status

In addition to these studies examining links between peer group status and various behaviours and social skills, other

investigators have studied possible nonbehavioural correlates of peer group status.

Birth Order and Name

There is some evidence, for example, that later-born children receive more positive nomination choices from peers than first or middle-borns (Schacter, 1964; Miller & Maruyama, 1976). On the other hand, Deutch's (1981) finding that more popular children were either first or later born, as compared to second-born, indicates that the relationship between birth order and peer group status remains unclear.

From a different perspective, results of other studies also suggest that children with unusual names may have lower peer group status (McDavid & Harari, 1966). As current trends of giving children "unique" made-up names can result in entire classrooms of children with predominantly "unusual" names, however, this finding may not apply in current peer culture.

Socioeconomic Status

There are relatively few studies that look at the relationship between socioeconomic status and peer group status, largely because studies of peer group relations are almost invariably conducted within classrooms in schools whose enrollment is determined by neighborhood geography. Children attending any one school are therefore likely to be more rather than less homogenous on this variable.

Intelligence

Roff, Sells and Goldman (1972) found that children with higher peer group status were significantly brighter, with I.Q. differences from 12 to 20 points within each of four SES levels. Modest but significant correlations between achievement scores and sociometric status have also been reported (Asher, Hymel, & Renshaw, 1984).

Age

The findings on age are less clear-cut. Although some researchers have found significant positive associations between chronological age and peer group status (Connolly & Doyle, 1981; Galejs, Dhawan, & King, 1983; Goldman, Corsini, & DeUrioste, 1980), others have not (Drewry & Clark, 1984; Quay & Jarrett, 1984).

Physical Attractiveness and Body Build

Relationships between physical attractiveness and peer group status are more consistent than any of the variables reviewed to this point, although there are again discrepancies.

Significant positive correlations have been reported between physical attractiveness and higher peer group status among preschool children (e.g. Vaughn & Waters, 1983) and elementary school-age children (e.g. Dodge, 1983; Lerner & Lerner, 1977; Zakin, 1983). Vaughn and Waters found this association to be stronger for girls than boys, however, and Dion and Berscheid (1974) reported that although overall,

unattractive preschool-age children were less popular than their attractive peers, less attractive younger females were actually more popular than their more attractive age-mates. Within the older age-group in this cross-sectional study, however, older unattractive females were less popular.

In addition to this research on the relationships between overall physical attractiveness and peer group status, mesomorphic body builds, particularly among boys, have also been associated with higher peer group status, and more positive attributes have been associated with this physique (Staffieri, 1967).

Results of research designed to discover why appearance is so important indicate that widely held stereotypes are associated with different physical characteristics. From the age of three, for example, children show a preference for unknown attractive children as potential friends and a corresponding dislike of unattractive children (Dion, 1973), as well as an aversion to more endomorphic body builds (Lerner & Gellert, 1969).

Furthermore, preschool children are more likely to attribute friendliness and nonaggressiveness to attractive children than to unattractive children, and to attribute negative behaviours to unattractive children (Adams & Crane, 1980; Dion, 1973; Dion & Berscheid, 1974). Similar results have also been found among elementary school children (Langlois & Stephan, 1977).

Teachers and parents have also demonstrated more positive expectations when evaluating attractive unfamiliar and familiar children, including their own (see Hartup, 1983; Sorrel & Novak, 1983 for reviews).

In addition, more attractive children have been reported to score more favorably on measures of academic achievement, and overall adjustment (e.g. Lerner & Lerner, 1977), and to engage in lower rates of aggressive or highly active play (Styczynski & Langlois, 1977).

These data suggest that the relationships between physical attractiveness and various outcome measures are mediated by individual psychological variables (e.g. motivation, self-concept, self-esteem, expectations), which may be influenced by the reactions and feedback provided by others over the course of the child's life.

Dodge's (1983) finding that the significant correlation between physical attractiveness and peer group status in his study was no longer significant after behavioral interaction measures were covaried out is also consistent with this notion.

Results of these studies of physical attractiveness are consistent with the theoretical models of development provided by various researchers in areas of temperament (e.g. Thomas & Chess, 1977), and behaviour genetics (Scarr & McCartney, 1983). In these conceptualizations, inherent child characteristics (e.g. physical appearance, temperament)

influence the reactions others have to the child, which in turn affect the type of interactions the child experiences and the child's subsequent development. These theoretical positions will be discussed more fully in a later section.

Sources of Inconsistency in the Literature

This review of the literature indicates that the factors primarily responsible for a child's peer group status have yet to be consistently identified, although physical attractiveness is undoubtedly an asset. There may be several reasons for the lack of consensus in most of this literature. Three areas in particular seem to be implicated: 1) features of the widely used sociometric methodology; 2) the differential representation of subgroups of both popular and unpopular children across samples; and 3) situational and environmental variables.

Cohort differences between samples that are studied under different historical-cultural conditions are also likely to make comparison between some studies difficult, as are differences in the populations being sampled.

Sociometric Methodology

Sociometric techniques, when used appropriately, are thought to be a valid and reliable method of assessing a child's status in his or her peer group (Asher & Hymel, 1981). It is now widely agreed, however, that peer nomination techniques (as compared to peer-rating or paired-comparison methods) are not particularly reliable with

preschool children (Hymel, 1983). This may be because of the instability thought to characterize early childhood friendships, although Gershman and Hayes (1983) have recently refuted this assumption.

In addition to these potential difficulties with studies involving preschool-age children's peer nominations, confusion may also arise from the comparison of studies that use different sociometric measures. The sociometric nomination procedure can involve either liked-most choices alone, or both liked-most and liked-least choices. Two additional sociometric measures recommended as reliable alternatives to the nomination procedure (Hymel, 1983) are the rating-scale (e.g. Goldman et al., 1981), and paired-comparison (e.g. Vaughn & Langlois, 1983) techniques. Each of these three sociometric procedures varies considerably across a number of dimensions (e.g. task instruction, number and type of playmate choice requested, scoring criteria). Generalizations about these measures can therefore be misleading without consideration of the specific method employed (Hymel, 1983).

Heterogeneity of Subject Population

Research on peer group status has been almost entirely correlational. Sociometric interviews are usually administered concurrently with various tests, observations or ratings, and then the two sets of measures are correlated. In the sociometric nomination procedure, researchers can

either ask children solely for liked-most nominations or liked-most and liked-least. Those researchers soliciting only liked-most nominations create an unidimensional scheme, with children receiving either more or fewer, positive nominations. This type of dichotomous classification (i.e. popular versus unpopular) may confound behavioural differences in the unpopular group between those who are actively rejected (i.e. many negative nominations and few positive ones) and those that are socially neglected or ignored (few positive or negative nominations). The heterogeneity of some "unpopular" groups may well be responsible for spuriously low correlations between popularity and various behavioural and nonbehavioural characteristics in such studies. Although the distinction between neglected and rejected children is not new (e.g. Dunnington, 1957), it has not been utilized adequately until recently, and many researchers still fail to make this distinction (e.g. Markell & Asher, 1984).

Contextual Variability

Samples in the peer group status literature vary widely in terms of group composition variables such as group size, and the mix of ages and sex. They also differ in terms of physical setting. There is considerable evidence to attest to the influence of the environment in peer interactions and peer group status. Hallinan (1981), for example, showed that the teacher's structuring of a classroom (open-plan or

traditional) had a significant impact on the number of children of different sociometric status. Open classrooms decreased the number of socially isolated and very popular children, for example, and generally promoted a more uniform distribution of popularity.

There is also evidence of sex biases in sociometric choices, with most positive nominations going to same-sex peers and negative nominations going to opposite sex peers (Asher & Hymel, 1981), and a tendency for older classmates to receive more positive nominations. Other related studies indicate that the occurrence of certain types of behaviour, such as aggression (Furman, Rahe, & Hartup, 1979) is higher in groups of same-age children than in groups of different ages.

Presence of Pre-Existing Social Networks

An additional set of potentially critical confounds involves the degree to which the children under study are familiar with one another. With the exception of two studies (Coie & Kupersmidt, 1983; Dodge, 1983), virtually all research has tried to identify antecedents of peer group status measured in already established groups of familiar peers. Thus it has been impossible to determine whether peer group status has been a result of the behaviors or skills under study, or of past interactional histories, peer reputation, or low frequency events not observed. Coie and Kupersmidt (1983) and Dodge (1983) conducted short-term

longitudinal studies in which previously unfamiliar boys were observed from their first interactions until social status had been established. In this way these authors have contributed greatly to the area by controlling for many of the confounds mentioned above. These studies will be discussed in more detail in later sections.

Classification Research

A major advance in the field has been the shift away from simply identifying children as popular or unpopular to grouping them into more precise categories based on different combinations of positive, and negative, nominations from peers.

Since Dunnington (1957) first identified three groups of children (high, low, and middle status) in her work, several classification schemes have been proposed. Methods have been developed that include both children's social preference (derived by subtracting liked-least nominations from liked-most nominations) and social impact (calculated by adding liked-least and liked-most nominations) scores (Peery, 1979). More recently, researchers have included popular, average, rejected, neglected and controversial (many positive and negative nominations) groups, selected most frequently on the basis of sociometric nominations (e.g. Dodge et al., 1983).

Peery (1979) identified four sociometric categories: popular (high social impact and positive social preference); amiable (low social impact, positive social preference);

isolated (low social impact and negative social preference); and rejected (high social impact and negative social preference). In an extension of this system, Coie, Dodge, and Coppotelli (1982) used nomination procedures to place children into one of five sociometric groups - popular, average, rejected, neglected, or controversial. Both systems have met with criticism. Newcomb and Bukowski (1984) reported that Peery's system provided unstable classifications in their sample of elementary school children, and was inefficient in terms of classifiying children into groups with distinct role profiles. Although Newcomb and Bukowski (1982) also found little support for Coie et al.'s (1982) proposed "controversial" group, Dodge (1983) did identify three such children in his sample.

Hobson-Underwood (1985) developed a scheme for identifying groups of popular and unpopular preschool children based on teacher ratings. Because a number of variables hypothesized to be correlates of popularity were included, it was possible to compile profiles of children in each group. Age, sex, and situational variables such as length of stay at preschool were also noted. Cluster analyses rather than peer nominations identified six subgroups of popular and unpopular preschoolers: popular, neglected, rejected, as well as three groups with profiles indicating predominantly prosocial or assertive styles of interacting with peers.

Profiles of subgroups

Research on the characteristics of children in various subgroups has increased recently, and there seems to be considerable agreement on how children who differ in status also differ in social behaviour as well as on some non-behavioural characteristics. There are also, however, numerous perplexing inconsistencies and findings that have yet to be explained.

Rejected children. Rejected children are usually identified in sociometric literature by having few, if any, positive nominations, and many negative ones. The identification and description of these children has become the focus of an increasing amount of research, as they have come to be viewed as a group "at risk" for later adjustment problems (Asher & Dodge, 1986; Gottman, 1977). Hobson-Underwood (1985) found that teachers rated rejected preschool children as very active and disagreeable. They interacted fairly frequently with other children, but were socially unskilled and aversive to their peers. Similarly, rejected children in Grades three to six were described by peers and teachers as more aggressive, disruptive, and inattentive and less prosocial than others (Cantrell & Prinz, 1985). These findings are consistent with studies that have found rejection scores to be correlated with negative peer interaction (Gottman, 1977; Hartup et al., 1967; Masters & Furman, 1981), low scores on tasks of emotion attribution

(Goldman et al., 1980; Peery, 1979) and referential communication (Goldman et al., 1980) and active, disruptive behaviour (Coie et al., 1982).

Similarly, in naturalistic and analogue settings involving boys only, rejected boys exhibited task inappropriate behaviour (Coie & Kupersmidt, 1983), antisocial, aggressive behaviour, hostile verbalizations, excluding of peers, hitting of peers, and less social conversation (Dodge, 1983). Dodge (1983) also noted that these boys were less attractive than any of the others in the study.

There is thus a consistent theme common to these studies that some rejected children are more likely than their peers to behave in an aggressive and aversive fashion. Coie and Kupersmidt (1983) provide evidence that rejected boys may continue to have similar difficulties with peers in totally new situations. These authors concluded that there is "something about these children that produces a similar impact across totally distinct social settings "(p.1412), in contrast to the neglected group.

Additional evidence from Dodge's (1983) study showed that although the proportion of positive responses to neglected boys decreased over time, the proportion of positive responses to the rejected group was low right from the beginning, suggesting that these boys made a fairly immediate negative impression on the group. Another unexplained

finding of interest was the apparent contradiction between the behavioural data and peer observations in Coie and Kupersmidt's (1983) investigation. Whereas boys in both the familiar and unfamiliar groups voted rejected boys as the ones most likely to start fights, boys of average popularity were observed to display physically aversive behaviour equally as often. These unexplained findings may possibly be related to the working of negative stereotypes based on the physical appearance or behavioural style of these children.

Neglected children. Neglected children, who receive few positive or negative nominations from others, have been labeled as shy by peers (Coie, Dodge, and Copotelli, 1982), observed to display less aggression (Coie & Dodge, 1983), and to engage in significantly more solitary play than average children (Dodge, 1983). They have also been rated by teachers as less assertive and less socially interactive (Hobson-Underwood, 1985). Similarly, Coie and Kupersmidt (1983) found neglected boys in their observational study were the least interactive and least talkative. They rarely behaved aversively, and reacted to the aversive behaviour of others by either withdrawing from the scene or ignoring the aversive act.

Dodge (1983) found observational evidence to suggest that neglected children were somewhat socially inept, and teacher ratings in Hobson-Underwood's study indicated that these children were viewed as less communicatively skillful or

socially perceptive than more popular peers. The neglected children in Hobson-Underwood's (1985) study, however, were also younger, and had attended preschool for a shorter length of time than their peers. They were also considered less attractive. Thus situational and stimulus variables were also thought to contribute to their status.

Cantrell and Prinz (1985), however, found that neither peer nor teacher assessments of elementary school children distinguished between sociometrically "neglected" children and their accepted classmates. They concluded that "the social skills problems of the neglected children may be subtle if in fact these problems exist at all" (p.88). These results raise the possibility of the presence of subgroups of children within the neglected classification, including some children who are socially unskilled and potentially at risk for later peer relations, and others who are not.

Cantrell and Prinz's (1985) conclusions are consistent with Coie and Dodge's (1983) finding that neglected children (grades three and five) in their study tended to move toward more positive social status with the passage of time and without intervention, and suggest that these children are not necessarily at risk for later difficulties. This is also consistent with Hobson-Underwood's finding that neglected children were relatively young as compared to their more popular peers, in that they could perhaps be expected to become more socially skilled and interactive over time.

Popular children. Popular children are generally characterized as friendly and socially skilled, more intelligent, and often more attractive than their less popular peers (see Hartup, 1983 for a review). These children are often more likely to be "cooperative" (Ladd, 1983), and to "support peers and cooperate" (Coie & Dodge, 1983). They have also been characterized as "leaders" (Coie et al., 1982; Dodge, 1983) and rated as assertive and socially active (Coie & Kupersmidt, 1983; Hobson-Underwood, 1985). Hobson-Underwood (1985) also found that these children had been at their preschools longer than all but one of the five other groups of children in her study.

The short-term longitudinal studies of Dodge (1983) and Coie and Kupersmidt (1983), provide additional data on popular boys (there were no female subjects in these studies). Dodge (1983) found that popular boys behaved very similarly to those of average status, with a nonsignificant tendency towards more cooperative play. They actually approached peers less frequently but were approached most, and received significantly more positive responses than average status boys did. Furthermore, even when popular boys engaged in aggressive play, exclusion of peers, or object possession during these playgroups, peers responded more favorably to them than to other children who performed the same behaviours. Dodge (1983) hypothesized that for some reason these boys quickly acquired a positive reputation, so

that they were able to engage in aversive behaviours without suffering negative consequences.

Coie and Kupersmidt (1983) compared groups of unfamiliar and familiar boys in their study. Peer assessments suggested that popular boys were not necessarily viewed as leaders, and were seen as being shy as often as neglected children. An additional finding of interest was that popular boys talked more among unfamiliar peers and less among familiar peers than average status boys did.

In Coie and Kupersmidt's (1983) study, there were only four boys per group as compared to eight in Dodge's (1983) study. Nevertheless, taken together the findings of these investigations suggest that children who attain high status with their peers tend to be more friendly and outgoing and also seem to evoke generally positive reactions from others. They are not necessarily always assertive or prosocial, however, and it seems logical to suggest that, while they may have an underlying predisposition towards outgoing, friendly, assertive interactions, their actual interaction in any group will depend somewhat upon the social ecology.

Stability of Peer Group Status

The most extensive study of the longitudinal course of peer group status is that of Roff et al. (1972), who followed large samples of children from grades three to six. The correlation for third to each of fourth, fifth, and sixth grades for "liked most" scores were .52, .47, and .42.

"Liked least" scores for the same intervals were .38, .35, and .34.

More recently, several investigators have examined the stability of sociometric classifications from grades three and five to grades eight and ten (Coie & Dodge, 1983), and from grade five to grade seven (Newcomb & Bukowski, 1984).

Taken together, these studies provide evidence that sociometric status is moderately stable over time as children move through school with somewhat different classmates.

Newcomb and Bukowski (1984) found low stability for all groups except rejected children, who showed slightly higher short-term stability. The finding of no differences between peer assessments of those rejected children whose status remained the same, and those whose status changed favorably after moving to junior high school, suggests that features of the new social environments may have played an important role in the development and maintenance of rejected status. Normal developmental changes must also be considered.

Coie and Dodge (1983) found that the classification of 36% of popular children remained stable over one year, 25% of neglected, and 45% of rejected children. These percentages were lower over the following four years.

As the children in these studies often had many of the same classmates, however, their social environments remained relatively stable. This may have played a part in the maintenance of status (Blyth, 1983) through such factors as

social reputation (Asher, 1983) and interactional histories among the children.

On the other hand, there is also striking evidence that social status does generalize over contexts. Coie and Kupersmidt (1983) collected data on the sociometric status of children in their regular classrooms. These boys were then put together in groups with new peers they had never met before. Within three one hour play sessions, their sociometric status in the ad hoc playgroups and their original sociometric status in their school classrooms were significantly correlated (.74; $p < .01$).

Summary

The results of this large body of research literature provide some evidence that a child's peer group status is most likely to be determined by recurrent interchanges over time between child characteristics and the child's social environments.

Research on specific child characteristics, such as physical attractiveness and body build, for example, do indicate that these stimulus variables are important to the way in which a child is viewed and responded to by peers. Similarly, there are well-designed studies that demonstrate that behavioural interactional style is a cause of status rather than a consequence (Coie & Kupersmidt, 1983; Dodge, 1983). The evidence that rejected and neglected children differ in the stability of their peer group status over time

also suggests that some children are more likely to have the same negative impact on all environments. Considerable evidence has also been cited to attest to the influence of social-environmental factors.

Theoretical Considerations

The question of stability of peer group status over time and settings is based upon a more fundamental issue of whether peer group status is viewed as a characteristic of the individual child independent of the environment in which he or she finds herself, or whether it is a relational concept that results from the interaction of child characteristics and social-environmental influences. In the former view (espoused by most researchers in this area), changes in peer group status are attributed largely to methodological difficulties or measurement error (e.g. Newcomb & Bukowski, 1984). Those who view peer group status as a relational construct are more likely to recognize that a child's status is multiply determined by numerous interacting factors including child characteristics, contextual factors, and developmental considerations.

Theoretical models that apply directly to child-context interactions in development are not available in the literature on peer group status. Although some research has been based on Piaget's cognitive developmental formulations, particularly regarding egocentrism (Piaget, 1926), and some observational studies have stemmed from reinforcement theory

(Hartup et al., 1967; Masters & Furman, 1981), most of the research has lacked any theoretical foundation.

Dodge, Pettit, McClaskey, and Brown (1986) recently proposed a theoretical framework of social competence (which is usually indexed by peer group status and therefore relevant to this discussion) based on an information-processing model. They suggested that a child's social behaviour is a function of the child's processing a set of social environmental cues including the encoding of social cues, mental representation of these cues, accessing of potential behavioural responses, evaluation and selection of an optimal response, and enactment of the chosen response. According to this social information processing model, these are thought to represent actual processes that occur in the brain during a social encounter. Dodge et al.'s model is based on the hypothesis that the weak relations typically found between social and cognitive skills (see previous section) occur because multiple processes are involved in behavioural responding, and measures of a single process will account for only part of the variance in behaviour.

These "processes" described by Dodge and his colleagues can be redefined slightly to resemble the processes typically assessed in a comprehensive neuropsychological evaluation (e.g. attention, sensation, perception, short- and long-term memory, verbal and motor expressive functions). These processes doubtlessly are involved in the difficulties of

some subtypes of "rejected" children who have been identified as having learning disabilities (e.g. Johnston, Pelham, & Murphy, 1985). As these processes function efficiently in a neurologically intact child, however, it is not clear how such a model will contribute to the understanding of social competence in nonclinical populations. Although cognitive variables are essential to social interactions, there are also other processes involved in peer relationships.

Relevant theoretical and practical issues in the temperament literature, which represents the main focus of developmentalists who study the normal range of behavioural variability outside the domain of cognition (Plomin, 1983) are now outlined.

Temperament

In this section the concept of temperament is defined, followed by a discussion of the relevant issues, and concluding with specific focus on the two approaches considered to be most pertinent to the present study.

Central Issues and General Definition

The study of temperament is currently the subject of heated debate (Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde, & McCall, 1987; Lerner & Lerner, 1986; Plomin & Dunn, 1986). Central issues include those of definition, measurement, heritability, and stability, as well as the dimensions of characteristics that should be included under the rubric of temperament (Buss & Plomin, 1984; Goldsmith &

Campos, 1982; Lerner & Lerner, 1983; Plomin, 1983; Rothbart & Derryberry, 1981; Strelau, 1983). Although it is true that these "questions of definition and method hamper attempts to make sense of the existing literature" (Crockenberg, 1986, p.55) and, after a bad day, "one could argue that the whole affair is an idiographic, idiosyncratic hodgepodge" (Plomin, 1983, p.3), the concept of temperament is increasingly recognized to have considerable scientific and clinical utility (Plomin, 1983; Berger, 1985).

There have been three major approaches to temperament as outlined by Buss and Plomin (1986): 1) the "pediatric approach" of Thomas and Chess which was initiated in 1956 in the form of The New York Longitudinal Study (NYLS); 2) the "personality tradition" of Buss and Plomin; and 3) research emphasizing individual differences in arousal among infants (e.g. Goldmith & Campos, 1982; Kagan et al., 1986; Rothbart & Derryberry, 1981).

McCall has recently integrated common aspects of all the major theorists in the following synthesizing definition:

> "Temperament consists of relatively consistent, basic dispositions inherent in the person that underlie and modulate the expression of activity, reactivity, emotionality, and sociability. Major elements of temperament are present early in life, and those elements are likely to be strongly influenced by biological factors. As development proceeds, the

expression of temperament increasingly becomes more influenced by experience and context." (Goldsmith et al., 1987, p.522).

The perspectives of Thomas and Chess (1977; 1981; 1986) and Buss and Plomin (1984; 1986) are of most relevance to the current study for several reasons. These researchers seek to examine the influence of temperamental dimensions on social interactions and development not only in infancy, but also during childhood and adulthood. They also take into account both the child's temperament and social environment, and overall provide two of the more comprehensive approaches to the study of temperament.

Thomas and Chess

Thomas and Chess's perspective has been the impetus for the modern era of temperament research. These researchers define temperament as a general term referring to the "how" of behaviour. It differs from ability (what/how well something is done) or motivation (why something is done). Although they acknowledge a genetic component (e.g. Thomas & Chess, 1977; Goldsmith et al., 1987), it is not part of their definition, and they tend to downplay genetic origins and focus on a strong interactionist view.

Temperament comprises those behavioural attributes that show some overall degree of consistency at any one time over various situations and which do not reflect motivation or ability. It refers to the behavioural style of the

individual (Thomas & Chess, 1981), and the key significance of this behavioural style is its impact on the social context.

Thomas, Chess, and their colleagues began the New York Longitudinal Study (NYLS) in 1956 to test their view that individual differences in temperament could be identified systematically from early infancy onward, and that these temperamental characteristics play an active role in the continuously evolving organism-environment process. They followed 133 subjects from three months of age to adulthood. Assessment techniques included parent and teacher interviews, home and school observations, and standardized cognitive tests. The NYLS also included longitudinal temperament data from two additional samples, including 97 working-class Puerto-Rican subjects.

These researchers developed the following nine temperament categories on the basis of protocol analysis of 22 parental interviews: activity level, rhythmicity (regularity) of biological functioning, approach or withdrawal to new stimuli, adaptability to new or altered situations, threshold of responsiveness (or the intensity level of stimulation required to evoke a discernible response), intensity of reaction, quality of mood, distractibility, and attention span and persistence.

They also identified clinically three constellations of temperaments that appeared to have special functional

significance and designated them as "easy", "difficult", and "slow-to-warm-up".

The "easy" child is characterized by "...regularity, positive approach responses to new stimuli, high adaptability to change, and mild or moderate mood which is preponderantly positive..."

The "difficult" child, at the other extreme, is characterized by "...irregularity in biological function, negative withdrawal responses to new stimuli, non-adaptability to change and intense mood expressions which are frequently negative."

The "slow-to-warm-up" child is marked by "...a combination of negative responses of mild intensity to new stimuli with slow adaptability after repeated contact. In contrast to the difficult children, these youngsters are characterized by mild intensity of reactions, whether positive or negative, and by less tendency to show irregularity of biological functions." (Thomas & Chess, 1977, pp 22-23)

Interaction of Child and Environment

Thomas and Chess's strong interactionist view emphasizes that behavioural attributes have no independent existence apart from the relationships in which they are involved. Children are viewed as active participants in their own development, and this activity must be considered within the context of reciprocal relationships with other child-

characteristics and in their interaction with environmental opportunities, demands, and expectations (Thomas & Chess, 1985).

These researchers evoke a "goodness-of-fit" model to explain adaptive and maladaptive developmental outcomes in their longitudinal study. Qualitative studies of the developmental courses of individual subjects revealed no one single pattern of person-environment interactions that could be applied as a general rule for predicting the developmental course of all their subjects, although they did find that children with a "difficult" temperament were at higher risk for later psychosocial problems. For each subject, positive or negative outcomes in development were determined by whether there was a goodness (consonance) or poorness (dissonance) of fit between the environmental properties, expectations, and demands on the one hand, and the temperament and other characteristics of the subject on the other (Thomas & Chess, 1986). Thus, if environmental demands and expectations were consonant with the child's behavioural and nonbehavioural characteristics, a "goodness-of-fit" was likely to exist and favorable psychological functioning resulted. If environmental demands were dissonant with the child's capacities, abilities, motivations, and temperament, however, there was a poorness of fit with resulting unfavorable psychological functioning (Thomas & Chess, 1981). This concept obviously requires simultaneous consideration of

characteristics of the environment, the child, and the interaction between the two. An example cited by these authors involves a boy who had a particularly difficult temperament from infancy to five years. He did not develop a behaviour disorder, however, largely because of optimal parenting strategies (the father had an "easy" temperament and delighted in his son's "lusty" characteristics), as well as stable family, school, and social environments.

Buss and Plomin

A second major force in the temperament literature comes from the personality tradition of Buss and Plomin (1984; 1986), who define temperament as "inherited personality traits present in early childhood" (Buss & Plomin, 1986, p.68). These researchers identify emotionality, activity, and sociability (EAS) as the essential basis of individuality (Buss & Plomin, 1984).

The evidence these authors cite in support of their theory includes: 1) behavioural genetic research during the last decade that supports their contention that the traits they have chosen are heritable; 2) evidence to show that these three traits can be seen in animals other than humans and in older children and adults as well as infants; and 3) low intercorrelations among the temperaments and reasonable factorial unity within each temperament (Buss & Plomin, 1984).

Emotionality

In Buss and Plomin's (1984) formulation emotionality consists of feelings, expression and arousal, with arousal being the crucial component in terms of inherited individual differences. Distress, or the tendency to become upset easily and intensely, is viewed as primordial emotionality, which differentiates during the first year of life into fear and anger. This dimension varies from lack of reaction to out of control emotional reactions (e.g. crying, tantrums).

Activity

Activity level consists of tempo and vigor, and ranges from lethargy to extremely energetic behaviour.

Sociability and Shyness

Sociability is the " preference for being with others rather than being alone" (Buss & Plomin, in Goldsmith et al., 1987, p.510). Highly sociable people are particularly gratified by the intrinsically social rewards of the presence of others, attention, sharing of activities, responsivity, and stimulation.

Shyness. According to these authors (Buss & Plomin, 1984), sociability and shyness are often viewed as opposite ends of the same continuum. They can, however, be defined independently. "Shyness refers to one's behaviour when with people who are casual acquaintances or strangers: inhibited and awkward, with feelings of tension and distress and a tendency to escape from social interaction." (p.77)

Correlations between sociability and shyness among college students of -.30 suggests that although sociable people tend not to be shy, and shy people tend not to be sociable, there are obviously sociable people who are also shy as well as some unsociable people who are not.

The low magnitude of the above correlation leads Buss and Plomin (1984) to suggest that shyness should be regarded as a separate trait. However they further suggest that sociability is a more generic tendency and should be regarded as the temperament, and shyness, which refers only to social behaviour with strangers or casual acquaintances, as a derivative (particularly as it also correlates .50 with fearfulness, a component of emotionality).

Interaction of the Child and the Environment

Buss and Plomin (1984) suggest that these temperaments interact with the environment in terms of selecting and affecting social environments, as well as modifying the impact of the environment. Each of the temperaments can be divided into two extreme ends and the middle. They hypothesize that individuals in the middle ranges of these temperamental dimensions are likely to be influenced by the environment, whereas those at the extremes are most likely to set out to change the environment or search for a different one. Thus a child of average sociability might accept the presence of a peer and not demand much responsivity. A highly sociable child, however, would not find the mere

presence of peers sufficiently rewarding, and a child of low sociability would find extreme responsivity too arousing (Buss & Plomin, 1984).

The most important aspects of the social environment are clearly the individuals who are interacting. Buss and Plomin (1984) describe the ways in which people can affect their environment - by initiating behaviour or reacting to the social stimuli presented by others. A sociable child will tend to push toward greater responsivity, starting conversations and suggesting games that increase social interaction, for example, whereas a low sociable child might initiate little, but not intrude either.

Sociability and emotionality are most relevant in terms of reacting to the behaviour of others, although activity would also seem important in terms of its impact on others in the social environment. Children low on sociability withdraw from the intrusiveness of those who seek increased social contact, and, according to Buss and Plomin, prefer playing with others who keep their distance and who do not require much responsiveness. Likewise, children low in emotionality tend to diffuse explosive or threatening social situations by their lack of reactivity. Those high in emotionality may either become insecure or anxious in novel social contexts, or tend towards being easily angered.

By way of these temperaments, these researchers propose that people come to shape the behaviour of those around them,

thereby influencing the social environment. If a child tends to become angry easily, for example, peers might try to avoid things that annoy that child. Conversely, they might choose to deliberately elicit emotional outbursts to provoke the child.

In addition to selecting or affecting the environment, children can also modify the environment. For example, Buss and Plomin (1984) hypothesize that children with low emotionality are less affected by a tempestuous, or otherwise stressful home environment because their temperament modifies the impact. Highly emotional children, on the other hand, intensify the impact of the environment rather than moderating it and, one would suppose, exacerbate a difficult familial climate.

These authors also describe how "matches" and "mismatches" between a child's temperament and the social environment can lead to adaptive or maladaptive outcomes. Similar to the goodness-of-fit concept in Thomas and Chess's formulation, they focus on the consonance or disonance that results from the interaction of the child's temperament with that of its parents. They describe various combinations of high and low emotionality, sociability, and activity, and conclude that matches are best for activity and sociability, with the only bad match occurring when both parent and child are emotional.

Comparison of the Two Positions

The perspectives of Thomas and Chess and Buss and Plomin converge on many issues. They agree that there is a genetic basis underlying temperament and that it is relatively stable as compared to other aspects of behaviour, although Buss and Plomin (1984) are much more definite than Thomas and Chess about stating their position on this issue of biological influence. Both sets of theorists also consider temperament to be basically a personological construct, although they differ in emphasis. Thomas and Chess acknowledge that it is a personological construct but "not a fixed immutable entity", and use the "goodness-of-fit" concept to explain the developmental dynamics of the process of psychological development. Buss and Plomin define temperament as a set of personality traits, which is also a personological position. They do not view temperament as "fixed" either, stating that, "as with intelligence and body build, the biological origin of temperaments does not render them fixed for life. They are expected to vary under the effects of developmental events and environmental forces." (Goldsmith et al., 1987; p. 514). They also use the concept of matches and mismatches to explain interactions between person and environment.

The two positions differ in that Buss and Plomin (1984) put more emphasis on the role of individuals as causal agents than do Thomas and Chess. Although Buss and Plomin acknowledge the environment as a causal agent in person-

environment interactions, they suggest that the environment "has received more attention than the evidence warrants" (Goldsmith et al., 1987, p. 218). Although they take into account the temperaments of others in the child's environment in terms of "matches" and "mismatches", Buss and Plomin do not address the issue of expectational demands of others.

Proponents of both views also agree that temperament is a component of personality. They differ, however, in terms of the boundaries between temperament and personality (Goldsmith et al., 1987).

Elaborations of the "Goodness-of-Fit" Model

Lerner and Lerner (1983) have elaborated on Thomas and Chess's (1977) "goodness-of-fit" concept and specify: 1) three ways in which children may act as agents in their own development; and 2) the three forms that contextual demands may take.

Children are thought to influence the environment in the following ways:

a) by constituting a distinct stimulus to others through features of physical and behavioural individuality, ie. facial attractiveness, body build and temperament;

b) through the child's developing cognitive abilities as processors of their environment; and

c) by way of the child's behavioural agency, or developing ability to shape and/or select environments.

Because this "goodness-of-fit" model attempts to account for the specific content of feedback a child will receive as a result of the impact of his or her individual characteristics on the social context, Lerner and Lerner (1983) have outlined the forms that the demands of a social setting might take:

> "1. Attitudes, values, or stereotypes held by others in the context regarding the person's attributes (either his/her physical or behavioural characteristics).
>
> 2. The attributes (usually behavioural) of others in the context with whom the person must coordinate, or fit, his or her attributes (also, in theis case, usually behavioural) for adaptive interactions to exist.
>
> 3. The physical characteristics of the setting ..." (p.207)

The child's individuality in differentially meeting these environmental "presses" provides the basis for the feedback the child gets from others in the environment. This concept describes the status of the relations between the child and his or her setting at only one point in time. When Schneirla's (1957) notion of circular process between child and context is also taken into account, however, the goodness or poorness of fit at any one time has implications for the future history of feedback and of developmental outcomes.

Empirical Tests of the "Goodness-of-Fit" Model

Although the concept of "goodness-of-fit" has been discussed at length, particularly by the Lerners, there is not yet much empirical support for this model.

Some of the examples supporting the model are found in Thomas and Chess's NYLS samples. For example, high motor activity among children was found to lead to problems in a Puerto Rican sample of the NYLS, but not in the main white middle-class sample. This finding was attributed to the small amount of living space and safe play areas in the Puerto Rican sample, as compared to the space available for the middle class children. The poorness of fit between the temperamental attribute of activity level and the physical environmental demand was thus hypothesized to account for the difference between the samples.

In a cross-cultural study, Super and Harkness (1981) suggested that babies of Kokwet families in Kenya that were arrhythmic and rated as having low adaptability had no difficulty fitting in with the way of life of the Kokwet. A poorness of fit resulted with babies with the same temperamental attributes in the highly scheduled Boston sample, however.

Although these results are very convincing instances of "fit", it can be argued that they all involved cultural, group averaged differences in expectations and general way of life.

Results of tests of this model as it pertains to an individual's adaptation within his or her own culture have not been so promising. Virtually all of the relevant research has been conducted by the Lerners and their colleagues (J. Lerner, 1983; 1984; Lerner & Lerner, 1983; Lerner, Lerner, & Zabski, 1985; Lerner, Lerner, Windle, Hooker, Lenerz, & East, 1986; Lerner, Palermo, Spiro, & Nesselroade, 1982; Windle & R. Lerner, 1984; Windle, Hooker, Lenerz, East, Lerner, & Lerner, 1986), and with the exception of Windle and Lerner's (1984) study, has focused on the first contextual demand as outlined in their model, i.e. the match between a child's temperament and the expectations or preferences of others in certain contexts with regard to the child's temperament.

In every study these authors have found more evidence to support a personological model. That is, child characteristics alone have provided more information about outcome variables than information about the child in conjunction with the context.

In view of the pervasive and well-documented stereotypes our culture has with regard to physical appearance, these results perhaps reflect similar culture-specific attitudes or ideals regarding temperamental dispositions that can be expected to remain fairly homogenous across contexts.

Windle et al. (1986) have been critical of some of the design and statistical procedures they themselves have used

to test the model, and have recently turned to the literature on genotype-environment correlations (e.g. Plomin, De Fries, & Loehlin, 1977; Scarr & McCartney, 1983) to assist them in conceptualizing the development of a person-environment "fit". Windle et al. (1986) suggest that a more fruitful approach to the assessment of child-context relations and the processes by which children come to "fit" with a particular context would be the longitudinal study of children from the time they enter a new context to the time when a "fit" is evident. Such methodology has already been discussed in relation to behavioural interactions with previously unacquainted peers in the Coie and Kupersmidt (1983) and Dodge (1983) studies. The final sociometric status of the child can be viewed as the index of "fit" the child has achieved in that context.

Parallels Between Results in the Peer Group Status and Temperament Literature

There is much evidence to suggest that there are many potential links between the work of researchers of peer group status and those studying temperament. Three striking parallels are those between children identified by peer sociometric nominations as rejected, neglected, and popular, and Thomas and Chess's "difficult", "slow-to-warm-up", and "easy" children.

Rejected/Difficult Children

Rejected children, who have been characterized as active, antisocial, and aggressive, and "at risk" for later problems are reminiscent of Thomas and Chess's "difficult child". The most difficult circumstances for such children are generally those that demand socialization and alteration in spontaneous responses and patterns of behaviour in order to conform with family, school, or peers (Thomas & Chess, 1977).

Using Buss and Plomin's three temperamental traits, rejected children would be identified by their high emotionality and high activity. Generally, emotional children become more distressed than others when confronted with stress and react with higher levels of emotional arousal. Buss and Plomin argue that some additional variables may "tilt" a child's emotionality towards fear or anger. They suggest that a child high in activity is more likely to take vigorous action in response to threat and therefore manifest more anger than fear. Highly emotional children tend to have more intense and frequent emotional reactions, by definition, and therefore have more behaviour that needs to be controlled. Thomas and Chess's "difficult temperament" correlates .45 with emotionality (Buss & Plomin, 1984).

Other studies also demonstrate links between temperamental predispositions and patterns of behaviour characterizing children of rejected status. Shantz (1986),

for example, studied the relationships of conflict, aggression, and peer status in boys and girls in grades one and two. Results suggested that participation in conflict was more directly related to peer rejection than was the actual amount of physical aggression used to resolve conflicts. Children who frequently engaged in conflicts with peers, however, also used a higher percentage of physical aggression in resolving these disputes. Shantz (1986) hypothesized that some underlying personality disposition may have predisposed the child to resist the influence attempts of peers as well as to use force to resolve the conflict.

This hypothesis is consistent with the results of a recent 15 year longitudinal study in which children who were disruptive and who failed to "modulate" their behaviour as early as kindergarten were more likely to exhibit later antisocial and delinquent behaviour (Spivack, Marcus, & Swift, 1986). Such behaviour, as well as being similar to that of the rejected child discussed above, led Spivack et al. (1986) to speculate about similarities between the behavioural style of these children and that of Thomas and Chess's "difficult" child.

Neglected/Slow-to-Warm-Up Children

Descriptions of "neglected" children (who receive few nominations of any valence from peers) who tend to be shy and spend little time interacting with peers are reminiscent of the "slow to warm up" constellation described by Thomas and

Chess (1977; 1986). Such a child is characterized by mild intensity of reaction, and, if given the chance to re-experience new situations (e.g. a new peer group) over time and without pressure, will eventually become quietly and positively involved. Alternatively, in terms of Buss and Plomin's (1984) three emotional dimensions, such a child might be seen as being fairly low on all three of the dimensions of sociability, emotionality, and activity, and moderately high on shyness. These authors speculate that because unsociable children are less rewarded by social incentives they find social contacts less enjoyable:

> "Having fewer social contacts they do not fully develop their social skills and therefore feel insecure and inadequate. Thus the weaker motivation of unsociable children might lead to shyness through underdeveloped social skills and lack of opportunity to habituate to strange social contexts [because they are less rewarding]". (p. 79)

Popular/Easy Children

Popular children, as noted in the section on peer group status, tend to be friendly, outgoing, and cooperative. There is evidence to suggest that they are also more socially skilled and higher achievers. This description is similar to that of an "easy" child. Children with this temperamental constellation adapt easily to new school situations and are able to tolerate most frustration with little difficulty.

The characteristics of a popular child are also consistent with temperamental dimensions proposed by Buss and Plomin (1984). An "easy" child, for example, is described by Buss and Plomin (1984) as being low in emotionality, and high in sociability. A tendency to respond warmly is correlated with this need to be with other people, as is the likelihood of the development of good social skills.

> "Other things equal, sociable children tend to smile more, to be more responsive to others, to attend to others more, and to share activities more... that is, they furnish the very social rewards that they find so reinforcing" (p.72).

In addition to Buss and Plomin's suggestion that the trait of sociability may facilitate the acquisition of good social skills, there is also evidence to suggest that a substantial component of the variability of children's performance on cognitive developmental tests also overlaps with indices of the temperamental concept of sociability. It has been hypothesized that sociable children may actually be brighter because they elicit more stimulation from the environment. Alternatively it may be because more sociable children perform better for an unfamiliar examiner (Lamb, 1982).

Additional Links Between Temperament and Peer Interactions

There are numerous additional studies that link temperaments to characteristics relevent to peer relations.

Sociability, as well as being linked to social skills (Buss & Plomin, 1983) and higher school achievement (Lamb, 1982), for example, has also been studied in relation to prosocial helping behaviours (Stanhope, Bell, & Parker-Cohen, 1987). Results have indicated that a child's general sociability may directly predict the child's tendency to behave prosocially in a given situation.

Emotionality has also been studied in relation to prosocial behaviour and social cognition. Denham (1986) found that pre-school children who displayed predominantly negative emotions showed varying deficits in social-cognitive or prosocial areas.

Brody, Stoneman, and Burke (1987) reported that both emotionality and activity were positively correlated with the amount of antagonism between school-age siblings, and Buss, Block, and Block (1980) found that three to seven year old children with high levels of activity were more likely to assert themselves and take advantage of peers, whereas less active children appeared more shy, obedient and compliant.

Finally, Hinde, Stevenson-Hinde, and Tamplin (1982), found that young children who were rated as shy by their parents interacted less with peers when they started preschool, and initiated fewer interactions with adults.

In conclusion, there seems to be considerable evidence of relationships between temperamental dimensions and behavioural interactions with peers. As outlined in the

previous section, there is also compelling evidence that a child's interactional style contributes significantly to peer group status.

Thus temperamental attributes have been linked to social behaviour, social behaviour has been linked to peer group status, and it is argued here that the next logical step is to complete the circle by looking at relationships between temperament and peer group status, as in the present study.

The Current Study: Overview and Hypotheses

The present short-term longitudinal study employed theoretical models currently being used in the temperament research as a basis for testing hypothesized relationships between temperamental dispositions, peer interactions, and peer group status.

Contextual factors usually ignored in research on peer relations and peer group status, including aspects of group composition (age, sex, group size), physical setting (space and resources available), and interactional histories of the children involved, were controlled to avoid unnecessary confounds.

Children were recruited from a subject pool involved in a previous study on peer group status (Hobson-Underwood, 1985) as well as from the local community. Groups of eight previously unacquainted same-sex children were brought together to play with minimal direct supervision for four

hours, and then shown a movie and given sociometric interviews.

Temperament measures were gathered from three data sources: 1) parents, 2) observers who watched the children all day, and 3) children's self-ratings.

Behavioural observations were recorded for each of the three 40-minute periods of free play. Each child was observed for 72 ten second periods throughout the day.

Attractiveness data were collected from 16 raters who ranked attractiveness from full-length pictures of each child. The raters were equally divided by sex and half were adults and half were children (7 to 12 years of age).

Data on body build, birth order, family structure, socioeconomic status (SES), and intelligence estimates (IQ), were also collected.

Hypotheses

1. Measures of temperament (emotionality, activity, sociability, and shyness) will predict a significant amount of variance in peer group status over and above that predicted by I.Q., physical attractiveness, age, and socioeconomic status.

2. Profiles of children in popular, neglected, and rejected sociometric classifications will differ on the key temperamental dimensions as follows:

	popular	rejected	neglected
Emotionality	low	high	low
Activity	high	high	low
Sociability	high	high	low
Shyness	low	low	high

3. Findings from the literature will be replicated in that, popular children will also be more attractive and intelligent than the other groups and rejected children will be least attractive.

4. Behavioural observations made in three segments will show how children with differing behavioural styles (temperaments) come to "fit" (as indexed by final status) with their group of peers over the course of the day:

a) Popular children will demonstrate their high sociability, low shyness and low emotionality by engaging in more positive social interactions (cooperative play, social conversation) starting soon after they first meet the unfamiliar children in their group and continuing in a similar fashion until the end of the day.

b) The behaviour of neglected children will be consistent with their less sociable and active, and more shy temperamental predispositions in that they will spend more time engaged in non-interactive forms of play (solitary and

parallel play; watching), particularly in the beginning of the day. Although overall they will engage in less active interaction than the others, they will "warm up" over the course of the day and engage in more interactive play by the end of the third session.

c) The behaviour of rejected children will reflect their high activity, emotionality, and sociability. They will engage actively with other children from early on in the day, but this activity will include aversive, aggressive behaviour and negative reactions. They will, over the three sessions, spend more time engaged in non-interactive behaviour as their peers come to reject them.

METHOD

Subjects

The subjects were ninety-six children between the ages of six and nine years of age. The parents of preschoolers who had been subjects in a study in 1984 (Hobson-Underwood, 1985) were sent letters outlining the present project. Ninety of the original 135 children were located, and of these, 40 were able to participate (23 girls, 17 boys). An additional 50 subjects were recruited by placing advertisements in recreation centres and local stores, as well as via children participating in the study who were encouraged to inform any of their friends who might be interested (See Appendix A for examples of letters and advertisements).

The final sample consisted of 50 females and 46 males of predominantly white middle-class backgrounds, although there was some heterogeneity of socioeconomic status. There were three oriental children and one half-oriental child. Most of the children came from nuclear families, with 25% coming from single parent families (16 females and 8 males) and 13% from newly blended families (8 females and 4 males).

Research Assistants

Four female observers and one male interviewer assisted with data collection. All had had considerable experience with children. A 32 year old mother of two observed with me for every group. Three other females, two recent high school graduates and a retired nurse, shared the third position of

reliability rater. An older Ph.D. psychologist with extensive personal and professional experience with children conducted individual interviews with each child at the end of each playgroup.

All assistants were unaware of research hypotheses.

Measures

Temperament Measures

Parental Measures

There is no consensus measurement of temperament (McCall, 1986). Parental ratings have been most widely employed, however, and although there continues to be considerable controversy over this data source, it now seems fairly well accepted that "subjective influences (of parents) are apparently not overwhelming" (Bates, 1986, p.6), and that there is reasonably good concordance of parental ratings or interviews with direct observations (Maziade, Boutin, Cote, & Thivierge, 1986). There is enough evidence now to conclude that temperament measures do show significant, although not substantial concurrent validity. Buss and Plomin's EAS Temperament Survey for Children: Parental Ratings (Buss & Plomin, 1984) was given to each parent in order for them to rate their child on emotionality, activity level, shyness and sociability. The sociability scale devoid of shyness items is experimental. The other items are taken from the Colorado Childhood Temperament Inventory (Rowe & Plomin, 1977). The psychometric properties of the CCTI are adequate for research

purposes, and are comparable to other measures of temperament (see Hubert, Wachs, Peters-Martin, & Gandour, 1982). The scores for each temperamental dimension are added and divided by 5 (number of items per scale) to get one score for each temperamental dimension. Appendix B contains examples of the parent rating scales, consents, and data sheets.

Rater Measures

Two observers who had observed the children all day (but not known them previously) completed Buss and Plomin's (1984) experimental teacher-rating version of the EAS Temperament Survey for Children. All materials for observers are found in Appendix C.

Children's Self-rated Measures

Time 1. Using a new approach designed for this study, each child was shown four 5-point rating scales representing the EAS temperamental dimensions of emotionality, activity, sociability, and shyness. Pictorial cues at each end of the scale and in the middle depicted children of indeterminate sex who were meant to represent a child of, for example, high, low and medium emotionality. For each picture, a description was given of what a child at each point of the scale might be like. Contributions to the descriptions, as well as answers to questions about the scales were elicited from each child to determine whether the child understood the scale or not. The child was then asked to indicate where he/she fell on the line for each dimension (See Appendix D

for examples of illustrated temperament scales and details of interviews).

Time 2. At the end of the day, each child was again presented with the four temperament scales that they had seen during the initial pre-playgroup interview, and asked to go through them again. They were reviewed as thoroughly as necessary (some children had just seen them the previous week while up to six weeks had elapsed for others) and then the child was asked again to rate him/herself on the four scales in order to get some measure of test-retest reliability (reported in Analysis and Results section).

Ponderal Index (PI)

Body build has long been associated with various temperamental dispositions (Kretschmer, 1925; Sheldon, 1942; Walker, 1962). The body build of each child was calculated using the ponderal index (dividing the cubed root of the child's weight into her or his height, from Walker, 1962) to get a more precise measure of physique that that provided by a fat-to-thin rating scale. The higher the PI, the more ectomorphic the body build, and the lower the PI, the more endomorphic.

Intellectual Ability

Each child was given the WISC-R (Wechsler Intelligence Scale for Children - Revised) subtests of Similarities and Block Design to get some measure of verbal and nonverbal reasoning abilities. Taken together, these two subtests show

a fairly high correlation with the Full Scale I.Q. (r = .86; Silverstein, 1978), and were used to estimate intellectual ability.

Socioeconomic Status

On the basis of the address given for each child, house prices as assessed by the B.C. Assessment Authority were used as an estimate of SES.

Physical Attractiveness

A standardized photograph was taken of each child. All children were photographed in front of the same background and in the same pose (hands by their sides, no smiling and looking at a point on the wall to the left of the photographer). Two 35 mm. cameras as well as a Polaroid Instamatic were used to ensure that all pictures would be ready by the day of the group in which the child was assigned.

After all playgroups had been conducted, each of four men, four women, four girls and four boys (all blind to research hypotheses) were recruited to rank the pictures of the children on attractiveness. If any of the adult or child-judges knew any of the children in the photographs, those photographs were excluded.

Instructions were as follows:

"I'm going to show you some pictures of girls and then of boys. If you think you know any of them let me know and we'll leave those out. I'm going to ask

you to rank these children according to how attractive or good-looking you think the child is (current words to represent this were elicited from children - usually "cute" was used). Choose on the basis of appearance alone. Try NOT to think about how much you'd like the child or whether they might be friendly or interesting."

The photographs were presented in groups of seven or eight according to the original groupings of children and judges were asked to rank order them from most attractive to least attractive.

Sociometric Status

As noted in the literature review, most previous studies have used measures of peer group status that have confounded groups of low and high status children. In the current study, positive and negative sociometric nomination measures were solicited in order to distinguish among these subgroups, as well as to retain the distinctive features of children's individual choices.

Each child was presented with a picture board with pictures of the children in the group on it. The interviewer elicited which two children the child liked most and which two the child liked least. (See Appendix E for details of this session.) Numbers rather than names were used to help reassure the child of the confidentiality of the interview. Although there has been debate about ethical issues involved

in the procedure of eliciting negative choices, Hayvren and Hymel (1984) observed peer interaction in the weeks before and after such testing, as well as during the ten minutes immediately following the interview, and did not find that sociometric testing adversely influenced children's peer interactions. There is no evidence to date to support the claim that the administration of negative nominations is harmful (Asher & Dodge, 1986). Furthermore, the design of this study was such that the children were unlikely to meet again after the playgroup ended.

Selection of Status Groups

Liked most (LM) and liked least (LL) nominations were calculated for each child as the sum of all sociometric nominations received from peers, and these two scores were used to select children for social status groups (Dodge, 1983).

1) Rejected status children were chosen on the basis of social preference scores (LM - LL) of -3 or lower.

2) Neglected children were identified on the basis of social impact scores (LM + LL) of two or less.

3) Popular status children were identified as those whose social preference score (LM - LL) were at least 3.

4) The remaining children were classified as average.

Procedure

Table 1 presents the sequence of events.

Table 1 Sequence of Events in Procedure

Pilot playgroup

Observer training

Individual interviews with child and parent:

1) parent rates childs temperament

2) child rates own temperament

3) subtests of WISC-R given

4) photograph taken

Playgroup:

1) First 40-minute play period in playroom. Each child in turn is filmed and behavioural interactions are coded for 1 minute in every 10 minute period.

3) Thirty minute break outside (no data collection).

4) Second 40-minute play period in playroom (see 3 above)

5) 30 - 45 minute break outside (no data collection).

6) Third 40-minute play period in playroom (see 3 above)

7) Scavenger hunt and nature walk (no data collection).

During last hour of playgroup (interviews and movie):

1) Raters complete temperament scales for each child

1) child rates own temperament for a second time

2) child chooses 2 liked-most and 2 liked-least peers

Sixteen judges later rank-order photographs on attractiveness

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Pilot Playgroup

Before any groups were organized, a pilot group of six 3 to 5 year olds were left to play in an interaction laboratory in order to decide which method of filming was best. A SONY VIDEOCAM hand held movie camera provided the best option in terms of flexibility of movement. During this pilot, each child was filmed for ten seconds in turn over the course of thirty minutes.

Testing and Interviews

Each subject was seen individually with one of his/her parents for a 25 to 45 minute period before the beginning of the playgroups. At this time the following measures were collected: Parent temperament ratings, the child's first set of self-rating of the same temperamental dimensions, estimates of intellectual ability, and standardized photographs.

The parent and child were both told what was going to take place - that the parent was going to fill out a form, and the child was going to outline his or her favorite toys and games, look at some pictures and answer some questions about him/herself, and do a puzzle and a test.

The parent was then asked for details concerning address, birthdate and birth order of the child, and family structure. They were asked to fill out consent forms, and then invited to ask any questions they had about any of the procedures.

The parent was taken to a desk in the hall behind the

testing room so that they could observe their child and I through the one-way mirror after completing the EAS Temperament Survey if they wished.

While the parent was completing the rating scales, each child was first asked what his/her favorite toys and games were in order to establish rapport and lend credibility to the initial rationale for the project.

Observer Training

The two initial observers were first given a sheet outlining the behaviour categories that were to be noted and explanations and examples of each (adapted from Ladd, 1983). Codes that would be used (e.g. "w*tching" - W) were also listed (see Appendix C). The observers were required to learn these codes before the first training session.

Training consisted of observing a tape of the pilot group, as well as a second tape of a children's birthday party, and identifying the correct behavioural category in each 10-second interval. An audiotape was made that marked each 10-second interval with a tone. Both observers were encouraged to say which code they felt was appropriate. Disagreements were discussed and the tapes reviewed again until agreement was reached. This was done over a period of three one and a half hour periods.

Training for the second and third observers consisted of a) learning the codes and categories as above; b) one hour (or more) of viewing tapes of actual playgroups and trying to

code the behaviours as above; and c) practicing coding during an actual group. The two original observers were also present, and their codes were used for data.

Each observer was also given a copy of Buss & Plomin's (1984) temperament scale (EAS Temperament Survey for Children: Teacher Ratings) to review before the playgroups started.

For each group, the observers were requested to code behaviours, note who played with whom, and to "get to know" each child as well as possible in the alotted time (through careful observation rather than direct contact) in preparation for rating temperament and noting overall impressions for each child at the end of each group.

Playgroups and Final Interviews

Playgroup Composition

In order to control for factors known to affect social preference choices, children were assigned to one of 13 same-sex playgroups (8 in each group). The children in any one group were of similar age (6.0 to 7.5 or 7.6 to 9) and were presumed not to know any of the other children in the group on the basis of preliminary screening. Children from the same daycare or school were put in different groups. Within these restrictions of age, sex, and acquaintanceship, assignment to groups was as random as possible.

Children nonetheless did know others on occasion, from sources other than preschool or school (Brownies, Y-camp,

neighborhood). This was noted in each of five cases. A fourth group of "older girls" was conducted to replace the third one, in which several girls recognized each other. After viewing videotapes of this group and examining the distribution of sociometric choices, however, it was decided that the data from this group could be included after all, with sociometric nominations from previously acquainted children excluded from analyses. This accounts for the odd number of groups.

Duration of Playgroups

The main purpose of the playgroups was to allow these children to interact with new peers until a social structure emerged. Both Dodge (1983) and Coie and Kupersmidt (1983) conducted short-term longitudinal studies of eight and six one-hour playgroups respectively. Coie and Kupersmidt (1983) found high correlations between peer group status in the playgroup and peer group status in the boys' regular classrooms after only three hours. As well as providing evidence of the ecological validity of such a playgroup setting, this finding suggests that social structure becomes established fairly quickly. Playgroups in the present study were five hours long, with the last hour including the movie and individual interviews. The actual time children spent together is comparable to that in the abovementioned studies as both had "group leaders" structuring the first 20 to 30 minutes of each hour by engaging the children in a task,

unlike the current study in which the children were free to do as they wished after a five minute introduction.

One day-long playgroup instead of the same amount of time spread out over a period of weeks had the additional advantages of: a) being more attractive to parents and children who were usually involved in summer vacations, children's camps, computer lessons, etc. during the busy summer months; and b) obviating the problem of subject attrition.

Pre-playgroup Procedures

Full-length photographs of the eight children in any one group were attached to a piece of black cardboard 24 by 16 inches in two rows of four. They were placed in alphabetical order of their last names. Under each picture a label was attached with the child's number (1 through 8) and first name.

The two observers were asked to come half an hour before each group assembled in order to learn to recognize each child by studying the pictures and names on the board and filling names and numbers of each child in each of three data sheets (one for each observation period). At this time, the same age-appropriate toys were brought out of boxes and placed in the same order around the room for each group (see Appendix F for a list of the toys and games used).

Children who had to be dropped off early were asked to read or draw on their own, and if there was more than one

child they were kept apart until the others came.

All parents were asked to drop off their children at 9:30 a.m. with a bag lunch and outdoor clothing. Each child was given a name tag. One of the two observers and I went to the prearranged location to meet the children as they were dropped off. In instances where three or four came at once, the assistant took them ahead to the playroom. As soon as any children began interacting the third assistant was instructed to film all that was going on by "panning" the children in a general way.

Outline of Playgroups

After a brief introduction, the children were left alone to play with the toys and games in the interaction lab for three 40-minute periods. During each of these three periods, one observer coded behaviour categories for 20 minutes while the second followed the target child with a hand-held video camera. Both were behind a one-way mirror. They switched roles for the second twenty minutes. A third observer (reliability rater) coded with each of the two observers for 50% of the observations. This third observer was in the room with the children for the rest of the time.

The three sessions inside were broken up by three breaks outside of 30 to 40 minutes each, during which time the children were given snacks or lunch and left to play. No coding or videotaping was done at these times. During the last outside break they were taken on a scavenger hunt on the

university grounds before being shown an hour-long movie. The two assistants completed temperament ratings at this time, and the children were taken to a nearby room one by one for individual interviews.

Playgroups

Once all the children were assembled in the room I spent a few minutes explaining that before the end of the day they were to have tried out all the toys and games and that any questions or problems were to be directed to the assistant who would be in the room. (By this time the children had invariably started playing with toys.)

First period. During the first 40 minute period in the interaction lab, behavioural observations and simultaneous video-taping with the SONY VIDEOCAM were conducted from behind the one-way-mirror using a time-sampling procedure. Target children were observed in six consecutive 10-second intervals each (one minute), in the predetermined order according to their last names. The target child's behaviour was coded into one of eleven categories for each 10 second period (using an audiotape made to indicate each 10 second interval). Each time a child's behaviour was coded into one of the interactive categories, the observer also recorded the numbers identifying the children who were involved in the same interaction or activity.

The picture board with the photographs, first names, and numbers was visible for easy reference. For each session I

first observed and coded the behaviour of each child for one minute each while Assistant 1 videotaped, followed by a two-second break. The same procedure was followed a second time. I coded the first two "sets" of behavioral observations while Assistant 1 filmed, and then a switch was made for the second two sets, with the assistant observing and coding behaviours and me videotaping.

At the same time, the second assistant sat unobtrusively in the room with the children to supervise and assist with any difficulties. She was instructed not to initiate any interaction with a child unless it was necessary to reprimand a child for doing something dangerous (shooting missiles into a peer's face) or damaging equipment (poking at microphones, throwing toys at 1-way mirror). The children quickly came to ignore her presence and she was asked to note down any interactions of interest that might be missed from behind the one-way mirror.

The second assistant left the playroom for approximately 15-20 minutes each session to do two consecutive sets of reliability coding with each observer (unless she was obviously needed in the playroom at that time). Thus reliability was checked approximately 50 per cent of the time, with a minumum of 30 per cent on two occasions.

After the first 40 minute period the children were all taken outside and given snacks and drinks. "Outside games" were also available (2 plastic bats, balls, 2 plastic tennis

raquets, 2 large skipping ropes and several small ones, a large inflatable ball). During this 30 minute break, the two assistants noted any pairs or groups that had developed outside as well as anything else of interest, particularly incidents that might affect how a child was received by others (e.g. spending whole time holding an assistant's hand, throwing grass in a peer's face, etc.)

Second period. A second set of four sets of 8 minutes of observation and a two-minute break was conducted as above.

The children were then taken outside for approximately 40 minutes for lunch and outside games. Assistants joined in games if they wished and again merely observed who was with whom and noted any incidents in a general way.

Third period. A final set of 4 sets of observations was conducted. The children were then taken on a scavenger hunt and nature walk by the two assistants. They were asked to collect various items (a crow's feather, a blade of grass from the middle of the quadrant, a student's signature, etc.) for the scavenger hunt and then taken to several ponds around the university where tadpoles and various insects could be seen.

Meanwhile, toys were put away, and the interviewer collected the picture-board, a weighing machine, a measuring tape, and assorted prizes. When the children returned from the scavenger hunt it was explained that one by one they were to be taken to another room for a few minutes, asked a few

questions about what had gone on during the day, and then allowed to choose two little prizes (Mickey Mouse number puzzles, rings, miniature pinball games, flying saucer balloons, little notepads). It was also stressed that they were not to tell anyone about what happened in the interview - that it was a secret.

A given group of children was then introduced to the interviewer, who returned to his "office" across the hall. During the showing of a film (Walt Disney's "Rock & Pop" - Disney characters dancing to pop songs, or "The best of Mickey Mouse Classics") each child went for his or her individual interview next door. These videos were chosen as they were both made up of short cartoons or songs. In this way no child missed much and all were more willing to be interrupted than if it had been a feature film.

During this last hour the two assistants who had been with the children all day completed Buss and Plomin's (1984) EAS Temperament Survey for Children: Teacher Ratings for each child on the basis of their acquaintance with them. The assistants completed these rating scales while the children were in front of them. They were also asked to write a short physical description of each child at the top of the child's rating sheet to minimize chances of mixups such as rating child A while thinking of child B.

Both assistants also wrote a one to two sentence "summary" of their overall impression of each child.

Individual Interviews

Each child was taken from the "movie room" to an adjacent office and reintroduced to the interviewer. He first asked them what they had done during the day and what their two favorite games had been (to help establish rapport as well maintain consistency with the reasons given to children for their participation). At this time height and weight were measured in order to calculate a ponderal index (body build). The children were asked to rate themselves on the four temperamental dimensions for a second time, and then given sociometric interviews (See Appendix E). Finally, they chose prizes and returned to the "movie room".

ANALYSIS AND RESULTS

Preliminary Analyses

Descriptive Statistics

Playgroups

Although assignment of subjects to groups was as random as possible (within the restrictions imposed by design requirements of having same-sex, unacquainted children of similar ages together), inspection of means and variances suggests that there are differences among some of the female groups in terms of heterogeneity on temperament variables. One group is homogeneously higher (i.e. higher mean and lower standard deviation) than the others on sociability, and another less active and sociable than the others. Means and variances within the male groups appear comparable. SES is positively skewed for the girls (1.996), and less so for the boys (.848). A list of all the variables and abbreviations is found in Appendix G.

Ponderal Index (PI)

In this particular sample there was one somewhat endomorphic child. Therefore a lower PI reflects a more mesomorphic or average build in this particular study, rather than an endomorphic one. A high PI reflects a more ectomorphic build.

Sex Differences

Means and standard deviations for each variable for each sex are found in Appendix H.

Results of a multivariate analysis of variance (SPSSX MANOVA) with sex and family structure (single parent, nuclear, or blended) as between-subjects factors and all temperament measures as dependent variables indicate that parents rated boys as significantly more emotional than girls (univariate F (2,90) = 5.1, p <.03; boys' mean = 30.00; girls' mean = 25.5).

In the playgroup setting, boys were significantly more active, (F(2,90) = 6.0, p <.02; boys' mean = 43.00; girls' mean = 37.10), and less shy (F (2,90) = 4.0, p <.05; boys' mean = 18.00, girls' mean = 23.80).

There are no significant sex differences on any of the non-temperament variables.

Family Structure

Although multivariate F's were not significant, the univariate F approaches significance for parental ratings of sociability (F (2,90) = 2.6, p <.08). Thus there appears to be a trend in this data set for children from nuclear families to be more sociable (mean = 38) than others, particularly those from blended families (mean = 32.5).

Family structure by sex interactions. Again, although the multivariate F was not significant, the univariate F for rater measures of activity level (F (2,90) = 4.0, p <.02)

suggests a trend for girls from single-parent families (mean activity = 43.6) to be more active with peers than other girls (nuclear mean = 39.9; blended mean = 27.7). Boys from blended families (mean = 45.0), on the other hand, were more active in the playgroups than the others (single parent mean = 42.3; nuclear family mean = 41.6).

Combining Scores to Create Pooled Measures

Rater and child self-ratings of temperament, as well as rankings of attractiveness were averaged to provide more stable and less biased estimates of these variables (Rushton, Brainerd, & Pressley, 1983).

Combined Raters on Temperament

All raters rated each child on Buss & Plomin's (1984) 20-question experimental teacher-rating version of the EAS. Correlations between Rater 1 and Rater 2 (one of 3 raters) range between .50 (sociability) and .77 (shyness) for the boys and girls combined, with the exception of one very low correlation between the main rater and one of the assistants on emotionality (-.05). In view of the high agreement between the main rater and each of the other two raters on this temperamental dimension (.71, .72), the second rater's emotionality scores were dropped for the 30 children she rated, and the first rater's emotionality scores were used exclusively.

The ratings of Raters 1 and 2 were averaged to create the following rater-score for each temperament for each child: EmotRTRS, ActRTRS, SocRTRS, ShyRTRS.

Rater scores for both boys and girls are negatively skewed for sociability (boys, -1.5; girls, -1.32). Ratings of shyness are positively skewed among the boys (1.26) but not the girls. The range is more restricted for emotionality for girls (10 - 36) than boys (10 - 50).

Combined Self-ratings (Time 1 and Time 2) of Temperament

Data were collected from each child using the experimental pictorial temperament rating scale designed for this study (Appendix D).

With the exception of shyness among girls, correlations between the first self-assessment and the second are moderately high and statistically significant ($p < .01$) for each of the four temperaments for each sex as follows: emotionality (girls, $r = .36$; boys, $r = .62$); activity (girls, $r = .42$; boys, $r = .57$); sociability (girls, $r = .73$; boys, $r = .66$) and shyness (girls, $r = .26$, $p < .07$; boys, $r = .37$). Thus self-perceptions of sociability were most consistent between the two self-assessments.

The correlations between Time 1 and Time 2 are higher for the other three temperaments for the boys subsample than the girls. This is particularly the case with emotionality.

The two self-assessments for each temperament were averaged to create one self-rating for each temperament: EmotCHILD, ActCHILD, SocCHILD, ShyCHILD.

Combined Judges on Attractiveness

Each child was given an attractiveness rank relative to their same-sex peers in the playgroup by each of four women, four men, four girls and four boys who were not acquainted with any of the children.

Nonparametric correlations (Spearman r) of the rankings between pairs of the four women are all significant ($p < .001$) and range from .31 to .65. Those among the men are also significant ($p < .001$), with correlations ranging from .53 to .65. Correlations involving one of the four girls, and two of the four boys are low and nonsignificant. These three judges were dropped from further analyses. Correlations among the remaining girls are significant ($p < .05$), but lower (.23 to .49) than those of the women, as are those of the boys ($p < .01$; .28, .30). The rankings of eight adults, three of the girls and two of the boys were averaged to create one attractiveness ranking per child: ATTrank.

Interrelations of Temperament Measures

The pattern of correlations among parents and raters for each temperament is generally higher among the girls than among the boys.

Girls

For the girls, correlations are low to moderately high for activity (Act), sociability (Soc), and shyness (Shy) between a) parents and raters (Act, $r = .38$, $p < .01$; Soc, $r = .42$, $p < .001$; Shy, $r = .48$, $p < .000$), b) girls and parents (Act, $r = .38$, $p < .006$; Soc, $r = .34$, $p < .02$; Shy, $r = .24$, $p < .07$); and c) girls and raters (Act, $r = .31$, $p < .03$; Soc, $r = .32$, $p < .01$; Shy, $r = .25$, $p < .07$). Correlations involving emotionality are low and nonsignificant.

Boys

For boys, there is significant agreement between parent and rater measures of shyness only ($r = .33$, $p < .02$). Correlations are low to moderate between parental ratings and boys' self-ratings of sociability (.31, $p < .03$) and shyness (.25, $p < .09$).

Correlations between boys and raters are positive but nonsignificant for activity (.13), shyness (.19), and sociability (.05), and negative and approaching significance for emotionality (-.26, $p < .06$).

Correlations among temperaments for each data source

There are moderate negative correlations between sociability and shyness for both sexes and for both parents and raters. Parental correlations are higher for boys ($r = -.46$, $p < .01$) than for girls ($r = -.24$; ns).

In the analog peer setting, however, correlations between shyness and sociability for both sexes suggest that raters

viewed these traits as opposite ends of the same continuum (-.91, $p < .01$).

Additional correlations of note include moderately high and significant ($p < .01$) correlations between parental ratings of activity level and sociability (girls, $r = .48$; boys, $r = .38$), as well as a significant negative correlation between activity and shyness for the girls sample only (-.37; boys $r = -.13$).

This pattern is amplified in the rater correlations, with those between activity level and sociability high and significant ($p < .01$) for both sexes (girls, $r = .83$; boys, $r = .88$), and those between activity and shyness high and significant (negative) for both sexes (girls, $r = -.84$; boys, $r = -.85$).

Self-ratings of activity and sociability are significantly correlated among girls ($r = .37$; $p < .01$) but not boys ($r = .03$). All other correlations are low and nonsignificant, although consistently higher among girls than boys.

Multivariate Analyses

The original hypotheses concern differences among groups of rejected, neglected, and popular children on various dimensions. Examination of the sociometric method of classifying children into these groups, however, reveals conceptual and practical difficulties with this technique.

The same criteria are not used to define the different categories. Popular and rejected categories are calculated on the basis of the child having more or fewer nominations of either a) positive or b) negative valence, for example, whereas the neglected category results from having two (or fewer) nominations of either valence. Thus two different children, one having a low but negative impact, and one having a low but positive impact, are both classified as neglected.

A more important issue is that a child's sociometric status can change from either rejected or popular to average, or from neglected to either rejected or popular, with the addition or subtraction of just one nomination. This is particularly the case in the present study and Dodge's (1983). Thus, although such a classification scheme is necessary for the differentiation between rejected and neglected children, it may also be particularly sensitive to chance variability.

In view of these concerns and the additional statistical difficulties resulting from the small numbers of cases in some of the sociometric status groups, canonical analyses were performed on the original data (the liked-most and liked least scores) before transformations were undertaken to classify children into sociometric groups for subsequent analyses.

Canonical Correlation Analyses

Canonical correlation analysis, the most general of the multivariate dependency statistical techniques, analyzes the relationships between two sets of variables. Pairs of linear combinations of variables (canonical variates) are generated, one linear combination from each of the two sets. The first pair maximizes the correlation between a linear combination of the first set and a linear combination of the second set. The second pair (if calculated) maximizes the correlation between the two canonical variates after the variance due to the first pair of canonical variates has been removed. A more detailed description of canonical correlation is provided by Tabachnick and Fidell (1983).

Description of the Two Sets of Variables

Three sets of canonical correlation analyses were performed in order to analyze the relationships between the set of predictor variables and the two sociometric nomination variables for the combined sample of 96 children, and the girls and boys separately.

The predictor variables include age, IQ, SES, rankings of attractiveness within the child's playgroup (ATTrank), body build (PI), parental ratings on the EAS temperament survey (EmotEAS, ActEAS, SocEAS, ShyEAS), rater measures of temperament (EmotRTRS, ActRTRS, ShyRTRS), and child self-ratings of temperament (EmotCHILD, ActCHILD, SocCHILD, ShyCHILD). SocRTRS was excluded from analyses because of the

high negative correlation between SocRTRS and ShyRTRS reported above.

The nomination variables are liked-most nominations (LMnoms) and liked-least nominations (LLnoms). These nomination variables are correlated -.48 in the pooled sample, -.61 among girls, and -.36 among boys.

Girls and Boys Combined

The first canonical correlation is .61 (adjusted R =.52), representing 37% overlapping variance between the first pair of canonical variates ($p < .002$). The second is .46 (adjusted R =.36; 22% of variance; $p < .15$); total shared variance, including both pairs of canonical variates = .59.

Analyses of the two pairs of canonical variates that accompany the canonical correlations for the combined girls and boys appear in Table 2. This table contains correlations between the variables and the canonical variates, within-set variance accounted for by the canonical variates (percent of variance), redundancies, and canonical correlations.

Examination of the correlations of the predictor variables with the first canonical variate indicate that those most important are, in order of magnitude: ATTrank, SocCHILD, SES, ShyCHILD, EmotRTRS, EmotCHILD, and IQ. Both nomination variables are relevant to the canonical variate, particularly LLnoms.

Table 2

Results of analyses of pairs of canonical variates that accompany significant canonical correlations for girls and boys combined

Predictor Variables	First canonical variate Corr	Second canonical variate Corr	
SES	-.41	-.04	
IQ	-.30	-.19	
AGE	-.16	.15	
ATTrank	.63	-.07	
PI	.11	-.41	
EmotRTRS	.38	-.14	
ActRTRS	.10	.70	
ShyRTRS	-.09	-.68	
EmotEAS	.05	-.25	
ActEAS	.08	.08	
SocEAS	.06	.21	
ShyEAS	.13	-.20	
EmotCHILD	-.35	-.04	
ActCHILD	.18	.09	
SocCHILD	.45	.01	
ShyCHILD	-.39	-.22	
PV	.09	.09	Total=.18
Redundancy	.03	.05	Total=.08
Nomination Variables			
LMnoms	-.50	.86	
LLnoms	.99	.03	
PV	.63	.37	Total=1.0
Redundancy	.23	.31	Total=.54
Canonical R	.61	.46	

Note. Corr = correlations of variables with canonical variate; PV = percent of variance variate extracts from its own set of variables; Redundancy = variance variate extracts from variables in opposing set.

Taken as a pair, the canonical variates indicate that the children from lower socioeconomic backgrounds (-.41) who were also less attractive (.63) and more emotional (.38) as compared to other children in the same group, and who perceived themselves as sociable (.45) but not particularly emotional (-.35) nor shy (-.39) also tended to receive more liked-least nominations (.99) from peers, and fewer liked-most nominations (-.50).

The second canonical variate in the predictor set is composed of ActRTRS, ShyRTRS, PI, and EmotEAS, while the corresponding canonical variate from the nomination set consists of LMnoms (.86; LLnoms .03).

Taken as a pair, these variates suggest that children who were rated as less shy (-.68), more sociable, and more active (.70) by raters in the playgroup setting, and less emotional (-.25) as rated by parents, and who also had more mesomorphic physiques (-.41), tended to have more liked-most nominations (.86).

Girls

The first canonical correlation is .70 (adjusted R = .55; 49% of variance; p <.04); the second is .65 (42% of variance; p <.14). The combined R^2 with both pairs of variates = .91. Table 3 shows results of the analyses of the two pairs of canonical variates that accompany the canonical correlations.

Table 3

Results of analyses of pairs of canonical variates that accompany significant canonical correlations for girls

Predictor Variables	First canonical variate Corr	Second canonical variate Corr	
SES	-.33	.01	
IQ	-.43	.20	
AGE	-.17	-.18	
ATTrank	.32	.42	
PI	-.18	.28	
EmotRTRS	-.02	.31	
ActRTRS	.28	-.47	
ShyRTRS	-.21	.39	
EmotEAS	-.22	.30	
ActEAS	.30	.12	
SocEAS	.22	.04	
ShyEAS	.08	.07	
EmotCHILD	-.53	-.21	
ActCHILD	.34	.20	
SocCHILD	.35	.12	
ShyCHILD	-.34	-.29	
PV	.09	.07	Total=.16
Redundancy	.04	.07	Total=.11
Nomination Variables			
LMnoms	-.04	-.99	
LLnoms	.81	.58	
PV	.33	.67	Total=1.0
Redundancy	.16	.44	Total=.54
Canonical R	.70	.65	

Note. Corr = correlations of variables with canonical variate; PV = percent of variance variate extracts from its own set of variables; Redundancy = variance variate extracts from variables in opposing set.

The correlations between the variables and the first canonical variate in the predictor set suggest that EmotCHILD, IQ, SocCHILD, ActCHILD, ShyCHILD, SES, ATTrank and ActEAS are most salient to this dimension. Only LLnoms are relevant to the first variate of the nomination variables.

The first pair of canonical variates indicates that the girls of lower SES (-.33), IQ (-.43), and attractiveness (.32) who were relatively active as seen by both parents (.30) and raters (.28), and who viewed themselves as less emotional (-.53) and shy (-.34), and more active (.34) and sociable (.35), also tended to be nominated as liked-least (.81) more often by peers.

The variables most relevant to the second canonical variate in the predictor set are ActRTRS, ATTrank, ShyRTRS, EmotRTRS, EmotEAS, ShyCHILD and Ponderal Index. The second canonical variate of the nomination variables is loaded most highly with LMnoms, although LLnoms are also relevant.

This pair of variates suggests that the more attractive girls (.42) of average body build (.28) who were perceived by raters as more active (-.47), less shy (.39), and less emotional (.31) than others in the playgroup setting; who were also judged to be less emotional by parents (.30), and who tended to view themselves as shy (-.29) tended to have more liked-most nominations (-.999) and fewer liked-least nominations (.58).

Boys

Table 4 contains results of analyses accompanying the one significant canonical correlation for the boys.

Table 4

Results of analyses of the pair of canonical variates that accompany the one significant canonical correlation for boys

	First canonical variate
Predictor Variables	Correlation
SES	-.43
IQ	-.26
AGE	-.02
ATTrank	.54
PI	.22
EmotRTRS	.44
ActRTRS	.21
ShyRTRS	-.20
EmotEAS	.10
ActEAS	-.19
SocEAS	-.12
ShyEAS	.11
EmotCHILD	-.05
ActCHILD	-.05
SocCHILD	.38
ShyCHILD	-.19
PV	.07
Redundancy	.09
Nomination Variables	
LMnoms	-.40
LLnoms	.99
PV	.58
Redundancy	.42
Canonical R	.82

Note. PV = percent of variance variate extracts from its own set of variables; Redundancy = variance variate extracts from variables in opposing set.

The first canonical correlation is .82 (adjusted R =.75), representing 67% of overlapping variance between the first pair of canonical variates ($p < .04$); the second is .48 (adjusted R =.24; 23% of variance; nonsignificant, p =.87). With both canonical correlations included, R^2=.90. Table 4 contains results of analyses accompanying the one significant canonical correlation.

The variables loading most highly on the canonical variate of the predictor variables, in order of magnitude, are ATTrank, EmotRTRS, SES and SocCHILD. Of the nomination variables, LLnoms loads most highly, although LMnoms is also relevant.

Taken as a pair, the canonical variates indicate that the boys of lower socioeconomic status (-.43) who were less attractive (.54), more emotional in the peer setting according to raters (.44), and who rated themselves as relatively high in sociability (.38), tended to receive more liked-least nominations (.997) and fewer liked-most nominations (-.40) from peers.

Increase in Canonical Correlations When Temperament Variables are Added to "Control" Variables

Additional canonical correlation analyses were done using only the four "control" variables of Age, SES, IQ, and physical attractiveness in order to test the effect of including the temperament variables. In this way the increase in shared variance provided by the temperament

variables and body build measure (PI) over and above that provided by the four control variables alone could be assessed.

The overall R for the boys and girls combined increases from .23 using the four control variables alone to .59 when the temperament variables (parent,rater,and self-ratings) and PI are included, $F(4,79) = 18.0$, $p < .001$.

For girls, the overall canonical correlation increases from .27 with the control variables alone to .91, $F(4,33)=53.3$, $p < .001$; and for boys the overall R increases from .34 with controls only to .90 with temperaments added, $F(4,29)=46.7$, $p < .001$.

Thus the addition of temperament measures from three sources as well as ponderal index adds significantly to the information provided by those variables already thought to affect the extent to which a child is liked or disliked by peers. This is particularly the case with the dimension associated with liked-most nominations.

Classification into Sociometric Status Groups

For the next set of analyses involving grouping variables, each child was classified into one of the four sociometric status groups (as outlined in the Method section) on the basis of the liked-most and liked-least nominations received from peers in the playgroup. Numbers in each are shown in Table 5.

Table 5

Numbers of girls and boys in each sociometric status group

Group	Girls	Boys	Total
Popular	8	5	13
Rejected	11	6	17
Neglected	8	8	16
Average	23	27	50
Total	50	46	96

Direct Discriminant Function Analyses

The major goal of discriminant function analysis is to predict group membership on the basis of chosen predictor variables. Discriminant functions are found in the same way as canonical variates in canonical correlation, and discriminant function analysis can be thought of as a special case of canonical correlation in which grouping variables are discrete, and predictor variables may be continuous or discrete. In discriminant function analysis, the first discriminant function maximally separates groups. Succeeding, orthogonal, discriminant functions become successively less powerful. Programs for this method (e.g. SPSSX DISCRIM) also provide a test for adequacy of classification. Thus in the present study it is possible to assess what proportion of children can be correctly classified into the sociometric groups on the basis of

temperament and non-temperament variables. A detailed description and explanation of discriminant function analysis can be found in Tabachnick and Fidell (1983).

Direct discriminant function analyses with prior probabilities of group membership specified were performed on the grouping variables of rejected, neglected, average, and popular, for the girls and boys combined and separately to see if group membership could be predicted on the basis of the hypothesized predictor variables.

Thus rejected children were predicted to be high on emotionality, activity, and sociability, and low on shyness; neglected children were expected to receive low ratings of emotionality, activity and sociability but higher ratings on shyness; and popular children were hypothesized to be low on emotionality and shyness, and relatively high on activity and sociability. Popular children were also expected to be more attractive and intelligent, and rejected children were predicted to be less attractive.

With regard to group means reported, all measurement scales range from 10 (low) to 50 (high), with the exception of attractiveness rankings, which range from 1 (most attractive in group) to 8 (least attractive in group).

Girls and Boys Combined

With all variables included, three discriminant functions were calculated, with a combined X^2 (48) = 63.81, $p < .062$. After removal of the first function, the remaining functions

were not significant. The first function accounted for 53.8% of the between-group variability.

The first discriminant function maximally separates popular from rejected children, with the other two groups falling in between. The loading matrix of correlations between predictor variables and discriminant functions suggests that the primary variables in distinguishing these two groups, in order of magnitude, are ATTrank (.48), EmotRTRS (.41), EmotCHILD (-.37), SocCHILD (.33), SES (-.29), and EmotEAS (.28).

Thus the popular children were viewed as less emotional than rejected children by both raters (popular mean = 12.92; rejected mean = 19.5) and parents (popular mean = 22.77; rejected mean = 30.00). The popular children were also ranked as more attractive within their groups than rejected children (popular mean = 3.6; rejected mean = 5.1), and viewed themselves as less sociable (mean = 28.7; rejected mean = 36.8) and more emotional (mean = 27.5; rejected mean = 21.5) than rejected children. They also tended to come from higher SES backgrounds (mean = 96.4; rejected mean = 74.1).

Girls

Three discriminant functions were calculated for the girls, with a combined X^2 (48) = 65.57, $p < .047$. After removal of the first function, the remaining functions were not significant (X^2 (30) = 32.63, $p < .34$). The first function accounted for 55% of the between group variance.

The first discriminant function maximally separates neglected girls from popular girls, with the others falling much closer to the popular group. The primary variable distinguishing neglected girls from the rest is EmotEAS, although the loading of this variable on the discriminant function is not large (-.27). The neglected girls were judged to be more emotional (mean = 31.3) by their parents than popular girls were (mean = 20.3). Mean parental emotionality ratings of the other two groups fall in between (rejected mean = 27.8; average mean = 24.3).

Although the second function is nonsignificant ($p < .34$), it is reported here as the results are consistent with those of the canonical correlation analysis. This second function maximally separates rejected girls from popular girls on the basis of self-rated emotionality (-.51) and activity (.47), as well as attractiveness (.39). Rejected girls are less attractive (mean rank = 4.7; popular mean rank = 3.3) and view themselves as less emotional (mean = 21.8; popular mean = 29.7) and more active (mean = 38.6; popular mean = 29.1) than their popular peers.

Boys

The three discriminant functions calculated resulted in a combined X^2 (48) = 91.4, $p < .0002$. After removal of the first function there was still sufficient discriminating power to be interpreted, X^2 (30) = 40.4, $p < .097$. The two

discriminant functions accounted for 66.3% and 25.9% respectively, of the between-group variability.

The first discriminant function maximally separates rejected boys from neglected boys, with the other two groups falling much nearer to the neglected group. Examination of the loading matrix indicates that the variables most relevant to this function are EmotRTRS (-.26), SES (.25), and ATTrank (-.24), although loadings are low.

The rejected boys came from lower socioeconomic backgrounds (mean = 56) than their neglected peers (mean = 113), and were ranked as less attractive than neglected boys (rejected mean = 5.8; neglected mean = 4.1). They were also viewed by raters as more emotional in the playgroups (mean = 25.3; neglected mean = 13.3).

The second discriminant function maximally separates average from popular boys on the basis of ShyEAS (-.46).

Average boys were rated by parents as more shy than any of the others, particularly popular boys (average mean = 26.1; popular mean = 16.8; rejected mean = 21.00; neglected mean = 18.3).

Increase in Predictive Power When Temperament Variables are Added to Control Variables

Increase in correct classification rates. With prior probabilities of group membership specified, direct discriminant function analyses were performed with the four "control" variables on their own in order to compare the

percentage of children correctly classified by the "control" variables alone to the percentage correctly classified when temperament variables were also included.

McNemar's repeated-measures chi-square test for change was calculated for each of the pooled sample and boys and girls separately, with cases being tabulated as to whether they were correctly or incorrectly classified in each of the two analyses.

Correct classification improved significantly from 54.2% to 65.6% for combined girls and boys, X^2 (1) = 4.35 ($p < .05$); from 52% to 74% for the girls alone, X^2 (1) = 5.26 ($p < .05$); and from 65.2% to 95.7% for the boys alone, X^2 (1) = 12.7 ($p < .001$).

Thus temperament measures significantly increase the correct classification of children into sociometric status groups, particularly boys.

Increase in predictive power as measured by Rao's V.

Three hierarchical discriminant function analyses were also performed with AGE, IQ, SES, and ATTrank entered first as a block of covariates, followed by the temperament variables and PI on the second step.

The predictive power gained by adding the temperament variables on the second step was assessed by using Rao's V, a generalized distance measure recommended by Tabachnick and Fidell (1983) which is largest when there is greatest overall separation among groups.

For the pooled sample (df = 3,92) Rao's V increased from 23.1 ($p < .03$) after the four control variables were entered on the first step to 80.4 ($p < .002$) when the temperament variables and PI were included. For the girls (df = 3,46), Rao's V increased from 17.12 ($p < .15$) to 111.00 ($p < .0000$) after the addition of the temperament scores and PI, and for the boys (df = 3, 42), from 22.61 ($p < .03$) to 208.7 ($p < .0000$).

The temperament measures again appear to contribute substantially to the predictive power provided by nontemperament variables.

Summary of Canonical and Discriminant Function Analyses

The summary of the results of the canonical and discriminant function analyses in Tables 6, 6a and 6b indicates that for the combined sample of boys and girls, there were two distinct dimensions associated with being liked or disliked by more or fewer peers as indicated by the canonical correlation analyses and reflected in the results of the discriminant function analyses.

Although there were also two distinct dimensions of popularity among the girls, only one dimension associated with more liked-least nominations was found for the boys sample. Higher peer status among boys appeared to be more a function of the absence of the characteristics associated with low peer status than the presence of highly desireable characteristics.

Table 6

Summary of results of: 1) canonical correlations with LMnoms and LLnoms and 2) discriminant function analyses of sociometric groups for girls and boys combined

---

More Liked-least nominations:	More Liked-most nominations:
Lower SES, IQ; less attractive	More mesomorphic
RATERS: more emotional	RATERS: more sociable and active; less shy
	PARENTS: less emotional
SELF: less emotional, less shy more sociable	

POPULAR (P) <---> REJECTED (R) GROUPS DISCRIMINATED ON:

Emotionality: raters (P<R), parents (P<R), self (R<P)

physical attractiveness (R<P)

self-rated sociability (P<R)

Table 6a

Summary of results of: 1) canonical correlations with liked most and liked least nominations, and 2) discriminant function analyses of sociometric groups for girls

More Liked-least nominations:	More Liked-most nominations
Lower SES, IQ; less attractive	More attractive
	More mesomorphic
	RATERS: More active/sociable
	Less shy, emotional
PARENTS: More active	PARENTS: Less emotional
SELF: less emotional/shy	SELF: More shy
more active/sociable	

POPULAR (P) <---> NEGLECTED (N) GROUPS DISCRIMINATED ON:

Emotionality: parents (P<N)

Table 6b

Summary of results of: 1) canonical correlations with liked most and liked least nominations, and 2) discriminant function analyses of sociometric groups for boys

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More Liked-least nominations:	More Liked-most nominations
Lower SES; less attractive	Nothing significant
RATERS: more emotional	
SELF: more sociable	

REJECTED (R) <---> NEGLECTED, POPULAR, AVERAGE DISCRIMINATED ON:

SES (R< others)

Physical attractiveness (R< others)

Emotionality (R> others)

POPULAR (P) <---> AVERAGE (A) DISCRIMINATED ON:

Shyness (Parents: P<A)

Behavioural Observations

In addition to measures analyzed above, behavioural observations were coded for each child as they interacted in the playgroups over the course of the day. These observations were collected in order to test hypothesized differences in the ways children with different

characteristics come to achieve their final sociometric status.

Based on the earlier theoretical analysis (pp. 46 - 50), popular children were predicted to engage in high rates of positive interactions from the beginning to the end of the day. Neglected children were expected to "warm up" and engage in increasingly more interactions over the course of the day. The opposite pattern was expected for rejected children, who were predicted to begin interacting vigourously, but to engage in fewer positive interactions over the day as their negative behaviour resulted in increased rejection from peers.

Interrater Agreement

The percentages of agreement on the behavioural observations among the raters were 94% for girls and 92% for boys. Approximately half the disagreements involved noninteractive categories (watching, solitary play, parallel play, unoccupied). There were also several instances of timing difficulties, in that the codes were the same for both observers but one was one 10-second segment ahead. Where there were disagreements, the portion of the videotape was replayed and a third person was asked to decide on the code.

Overall Time Spent Engaging in Different Behaviours

Overall, the children spent 43.8% of their time engaged in cooperative play, 29% in solitary play, 10% watching the activities of others, 5.7% in social conversation not

connected to a cooperative activity, 4% in parallel play and 3.5% unoccupied.

The remaining time was spent engaged in relatively low frequency behaviours (less than .4% of the total time), including positive and negative interactions with the adult in the room, social approaches (both accepted and rejected by peers), negative verbal and physical activity, inappropriate behaviour, and "other", which usually involved trying to see the observers through the one-way mirror.

Among the girls, there were no observed negative interactions with the supervising adult and only one observed incident of each of a negative physical contact behavior (hitting, taking toy) and inappropriate behaviour.

Summing Frequency Scores to Create Pooled Variables

In order to answer the questions posed in this study, frequency scores for each of the 15 behavioural observations were summed for each of the three 40-minute sessions separately (28 frequency scores per session), providing one frequency score per category for each child for each of three sessions. The observations were summed to create new variables as follows:

1. NONIX (noninteractive behaviours) - unoccupied behaviour, watching, solitary and parallel play.
2. POSIX (positive interactions) - cooperative play, social conversation, and rough and tumble play. Five children (2 popular and 3 neglected) were almost 3 s.d.'s above or below

the group means in each session. No transformations were undertaken.

3. NEGIX (negative interactions) - negative verbal comments and physical contact behaviours, and reprimands from the supervising adult were all included in this category. Among the boys, 6 of the total 11 instances of negative physical contact and 7 of the 9 adult reprimands were traced to one rejected boy.

Each of the three variables included in this category were therefore dichotomized before being summed to create NEGIX. Thus each child was given a score of 1 if they engaged in any of the three negative categories in each session, or a score of 0 if they did not. In this way it was possible to retain information about the children involved in negative interactions without giving undue weight to the one boy who engaged in so many of them.

Analyses Testing A Priori Hypotheses

Hypotheses involve positive interactions (POSIX), noninteractive behaviors (NONIX), negative behaviors (NEGIX), and social approaches that were rejected by peers (SArej). As POSIX and NONIX correlate -.97 for each session, NONIX was not included in analyses.

Neither NEGIX (total frequency after transformation = 15) nor SArej (total frequency = 26) occurred with sufficient frequency to warrant inclusion in analyses. It is worth noting, however, that neglected children were not observed to

engage in any of the observed instances of NEGIX, and one incident involved a popular boy. All but one of the instances of NEGIX, then, were observed among children of average and rejected sociometric status. Similarly, popular children (n = 13) had the least number of social approaches rejected (SArej = 1) and rejected children (n = 17) had the most (SArej = 9).

The only variable included in analyses concerning the a priori hypotheses, is POSIX (positive interactions).

Correlations

For girls and boys combined and separately, there are low to moderate significant correlations between liked-most nominations and positive interactions in Session 1 (girls .27, $p < .03$; boys .37, $p < .005$; combined, .31, $p < .001$) and Session 3 (girls .28, $p < .03$; boys: .38, $p < .004$; combined: .30, $p < .01$).

There are no significant correlations between liked-least nominations and POSIX in any of the 3 sessions, nor between liked-most nominations and POSIX in session 2.

Specific Comparisons and Trend Analyses

A priori contrasts between popular, neglected, rejected and average groups were performed using SPSSX MANOVA. Unless otherwise stated, all univariate statistics reported follow a significant multivariate F.

Trend analyses tested the hypothesized differences among the patterns of frequencies of positive interactions over the

course of the day for the four status groups. As there were no significant sex x status x session interactions, boys and girls were combined in a repeated-measures MANOVA with status as the between-subjects factor, session as the within-subjects factor, and positive interactions (POSIX) as the dependent variable.

There are significant main effects for social status, $F(3, 92) = 3.4$, $p < .02$, and session, $F(1, 92) = 5.85$, $p < .02$, although the status x session interaction is not significant. The significant quadratic component indicates that the children engaged in significantly more positive interactions during the second of the three sessions than in either the first or third sessions.

Planned contrasts. Popular children engaged in significantly more positive interactions than either of the neglected, $F(1, 27) = 5.1$, $p < .03$, or rejected, $F(1, 28) = 7.3$, $p < .01$ children. Average status children also engaged in significantly more positive interactions than either of the unpopular groups (neglected, $F(1, 64) = 3.7$, $p < .058$; rejected, $F(1, 65) = 4.9$, $p < .03$). Univariate statistics approached significance for session effects.

The popular and average children maintained a relatively high level of positive interactions with peers across all three sessions. Although rejected and neglected children engaged in fewer positive interactions during the first and last session, they engaged in nearly as many positive

interactions as the others in the middle session. Group means and standard deviations are shown in Table 7.

Table 7

Mean frequencies and standard deviations of positive interactions in each of three sessions for Rejected, Neglected, Average, and Popular girls and boys combined

	Session					
	1		2		3	
Rejected	8.0	(6.8)	12.8	(7.1)	8.7	(7.0)
Neglected	9.5	(4.8)	12.3	(7.3)	8.4	(7.8)
Average	12.9	(6.7)	13.1	(7.5)	12.4	(7.7)
Popular	13.3	(6.4)	14.6	(7.7)	14.6	(7.6)

As the patterns of a) neglected and rejected and b) popular and average children are so similar, these groups were combined into two groups for a 2 x 3 (status x session) multivariate analysis of variance. Results indicate significant main effects for status, $F(1, 94)$, $p < .003$, and session, $F(1, 94)$, $p < .01$. The univariate test for a status x session interaction is also significant, $F(1, 94)$, $p < .05$, although the overall multivariate F is not ($p < .13$).

Additional Descriptive Statistics

Reciprocated Positive Nominations

In order to clarify the number of friends children in different sociometric groups might be expected to have, the

number of positive nominations that each child had reciprocated was tabulated.

Examination of positive sociometric nominations indicates that 67.7% of all the children had at least one positive choice reciprocated. Those who had no positive choices reciprocated included 82.4% of rejected children (10 girls; 4 boys), 50.00% of the neglected children (4 girls; 4 boys), and 24% of the average children (3 girls and 9 boys).

Of the eight popular girls, the three who had a lower social impact, as measured by liked-most nominations plus liked-least nominations had both positive nominations reciprocated, whereas the more visible girls only had one reciprocated preference score. The reverse pattern was observed among the boys. The three boys with the higher social impact had two reciprocated nominations and the two with lower social visibility only had one reciprocated.

Profiles of Sociometric Status Groups

On the basis of the behavioural observations, descriptive statistics, rater comments, and analyses performed on grouping variables, the relationship between sociometric status and the variables chosen as predictors can be summarized as follows. (See Table 8 for outline of characteristics of rejected, neglected, and popular children, and Appendix I for means and standard deviations for all groups on the predictor variables for each sex).

Table 8

Characteristics of Rejected, Neglected and Popular girls and boys combined and separately

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Rejected girls and boys

Lower SES, less attractive, thinner, parents rate as more emotional; child rates him(her)self as more sociable and less emotional.

Girls	Boys
	Younger, lower I.Q. mean
	Raters: most emotional
Raters: less active, more shy	more active, less shy
Parent: most shy	Parent: least sociable
Parent: more active	

Neglected girls and boys

Raters rate as less emotional, less active, and shyer than other groups; parents rate as less shy; thinner (after rejected group).

Girls	Boys
Youngest group, higher I.Q. mean	Older (with popular boys)
Parent: high emotionality	Parent: low emotionality
Parent: high activity, sociability	Parent: low shyness
Self: high emotionality,shyness	Self: high activity

Popular girls and boys

Higher SES, older, more attractive, mesomorphic in body build; raters and parents rate as least emotional; raters rate as least shy.

Girls	Boys
Raters: activity similar to average	Raters: highest activity
Parent: lowest sociability,activity	Parent: lowest shyness
	Self: lowest shyness/ sociability

Rejected Children

Rejected girls and boys came from lower SES families (with the exception of one girl), were less attractive, thinner, more emotional at home and in the playgroup, and viewed themselves as sociable and unemotional. Only 3 of the 17 rejected children received a reciprocated positive nomination (1 girl, 2 boys).

The mean frequencies of positive interactions engaged in by rejected children were similar to those observed for neglected children. Both groups were characterized by low frequencies in sessions 1 and 3 and a level of interactional activity comparable to the other groups in the middle session only.

Boys. Rejected boys were also the youngest group of boys. Next to popular boys they were also most active and least shy as judged by raters. In contrast to rater and self-ratings of sociability, parents viewed these boys as least sociable.

The six boys were quite homogeneous on several variables, including SES, physical attractiveness, parent-rated emotionality, shyness as rated by observers, and self-rated sociability.

They were more heterogenous on age, IQ,(range 85 - 140), parent-rated activity and emotionality as judged by raters. Heterogeneity on the temperament variables could be traced to two boys who had fairly low scores on emotionality and

activity, in contrast to the others who had high scores on these temperaments. These two boys were also least attractive of the rejected group.

In addition to the behavioural pattern outlined above, three of the rejected boys accounted for 40% of the total negative behaviours observed.

Rater comments of every rejected boy included either the descriptor "aggressive" or "rough".

Girls. Although differences between these girls and others on predictor variables were not significant in this sample, examination of means and variances suggests that certain variables important in discriminating rejected boys from their peers followed the same pattern among the rejected girls. These girls were thus viewed by their parents as more emotional than average or popular girls. They were also less attractive, and thinner. With the exception of one girl who came from a particularly high SES home, this group also had the lowest SES.

In contrast to the boys, however, rejected girls were viewed as more shy than any other group by both parents and raters. They were also least active, with neglected girls, in the playgroup, yet had higher parental activity ratings than either popular or average status girls.

These girls were more homogeneous on parent-rated emotionality than neglected or average girls, and most homogeneous on parent-rated shyness.

There were discrepancies within the group on ratings of sociability and shyness by both raters and parents, that were traced to three girls who were shyer and less sociable than the others.

Rater comments of the 11 girls provide additional interesting data to suggest that there may be several different pathways to a rejected status for girls.

Although three girls were somewhat similar to boys in that they were characterized as "a bit forceful" or " physically aggressive", for example, another five all gave a similar impression of being somewhat moody and negative, and disinclined to interact with others. Descriptions of these girls included the following: "a bit testy...complaining"; "disinterested"; "didn't bother/made little effort to approach others"; "didn't smile much"; "wary, sullen expression"; "sourpuss".

Three girls were each different: one talked to herself more than to anyone else; another was "childish and very young for age", and a third attended almost exclusively to the adults.

Neglected Children

Neglected boys and girls were judged by raters as similarly low in emotionality to popular children. They were thinner than all but the rejected group. Neglected children were viewed by raters as least active and most shy in the playgroups, although parents viewed them as least shy of all

groups. They were not observed to engage in any negative behaviours, and half of them (4 girls and 4 boys) had positive nominations reciprocated.

Boys. Neglected boys came from higher SES backgrounds than all but popular boys, and also had low parental shyness ratings. These boys tended to be older, to have low emotionality ratings by parents, and to rate themselves as highly active.

These boys were quite homogeneous on sociability as rated by parents and observer-rated emotionality. They were also the most homogeneous group on age.

Neglected boys were most heterogenous, however, on sociability, shyness and activity as rated in the playgroups. Examination of individual scores revealed that two boys had low scores on activity and sociability, and higher scores on shyness as compared to the other six neglected boys.

Rater comments create a picture of quiet, somewhat solitary and nondescript children: "an observer"; "didn't really make an impression"; quiet, uninvolved", "preferred playing alone"; "less energetic than others". Two were also characterized as "moody".

Girls. In contrast to neglected boys, who tended to be older and least emotional of all the groups as rated by parents, neglected girls had the lowest age mean and the highest emotionality mean. Neglected girls were also seen by parents as more active, more sociable, and less shy than any

other groups. They also had the highest mean I.Q. estimate (mean = 117.5; range 105 - 125).

Neglected girls were the most homogeneous group on several variables, including the intelligence estimate, parent-rated sociability and shyness. Self-ratings of activity, shyness and emotionality were also most homogeneous for this group.

Rater comments of neglected girls were similar to those of the boys: "non-descript"; "quiet, shy"; "a loner"," tended to watch"; "reserved"; "no very distinctive qualities"; "serious".

Popular Children

Popular children tended to be older, more attractive and mesomorphic in body build, and to come from higher SES backgrounds. They had the lowest emotionality ratings by both parents and raters, as well as low ratings of shyness in the playgroup. These temperament ratings were consistent with the high rates of positive interactions they engaged in from the time of meeting previously unaquainted peers to the end of the day. All popular children had at least one positive nominations reciprocated. Boys who were more socially visible (according to the total number of nominations received) and girls whow were less socially visible had both their friendship choices reciprocated.

Boys. Popular boys also had the lowest parental ratings of shyness, the highest activity ratings within the

playgroup, and the lowest self-ratings of shyness and sociability.

This group was distinguished from others by their marked homogeneity on a number of variables, and the consistency between parental and rater judgements of their temperaments. These boys were most homogeneous on all four temperament variables as rated in the peer setting, sociability and shyness as rated by parents, measures of ponderal index, and intelligence. They were also quite homogeneous on parent-rated emotionality and activity.

In contrast to their less popular peers, these boys behaved similarly across settings in the form of low emotionality, low shyness, high activity level, and high sociability both at home and in the peer analog setting.

Rater comments add to this picture of popular boys, characterizing them as "happy, even-tempered", "secure, self-possessed"; "live wire";" bossy"; "talkative" "showoff": "attractive"; "friendly"; "full of energy", "kind."

Girls. Popular girls, with those of average status, had higher activity ratings in the playgroup than the less popular groups. They had the lowest parental ratings for sociability, and, in particular, activity level.

Popular girls were particularly homogeneous on emotionality as rated by parents. They were also the most homogeneous group on all four temperaments as rated in the playgroup, age, and ponderal index.

They were much more heterogenous as a group than popular boys on parental ratings of activity, sociability and shyness. Inspection of raw data indicate that the heterogeneity on these three variables could be traced to three girls who had similar profiles of low activity and sociability, and higher shyness than the rest of the popular girls. This pattern was also evident among the rater scores and behavioural observations.

Rater comments also mirrored these subgroups, with three characterized as "soft-spoken"," mild", "cooperative"; "attractive"; "will approach but never pushy"; "sweet smile".

Others were more like the popular boys: "bossy"; "attractive", outgoing"; "self-assured"; "happy, nice to everyone", "active", "talkative". In addition, one popular girl was shy and noninteractive indoors but "came out of her shell" on the three outside breaks.

To conclude, this summary of results suggests different as well as similar avenues to peer group status for each sex, as well as the presence of small, homogeneous subgroups within same-sex, same-status children.

DISCUSSION

Results of this study provide support for the main hypothesis that measures of temperament provide significant increases in information about the degree to which children are accepted or rejected by peers over that provided by SES, IQ, age, and physical attractiveness.

Specific predictions regarding the temperaments for children in rejected, neglected, and popular sociometric groups are supported more by rater measures of temperament than by parental ratings. Predictions regarding other child characteristics are also largely supported, and secondary hypotheses regarding observational measures receive partial support.

Additional findings of interest include preliminary data on the self-perception of temperament among children, the presence of sex differences overall and within sociometric status groups, and evidence of child-context interactions.

Rejected Children

Hypotheses concerning rejected children are supported for rejected boys, in particular, and their more highly emotional profile is consistent with the descriptions of a "difficult child" by Thomas and Chess (1977) and Buss and Plomin (1984).

Rejected children tended to be less attractive, more emotional, and come from lower income homes. Analyses by sex indicated that boys who came to be rejected were also viewed as sociable and active in the playgroups, as hypothesized,

and three rejected boys accounted for almost half of all negative behaviours observed for the whole sample. Rejected girls, on the other hand, were particularly shy in both home and peer settings, and, with the rest of the girls, engaged in no observed negative behaviors.

This finding may reflect, in part, the cultural tendency to socialize males towards "externalizing" and females towards "internalizing" patterns of behaviour, and is also consistent with data suggesting that developmental trajectories to competence are considerably different for girls than for boys (Vaughn, Block, & Block, 1988).

Furthermore, given the tendency for rejected children to be "at risk" for later psychosocial problems, it is reasonable to speculate that these results are also consistent with research linking teacher reports of undercontrol and disciplinary problems with later difficulties in psychosocial adaptation among boys but not among girls, and reports of being content with solitude with later difficulties among girls but not among boys (John, Mednick, & Schulsinger, 1982). This is also in accord with conclusions reached by Parker and Asher (1987) that shyness/withdrawal may be more of a developmental problem for girls than for boys.

Although a large body of research has addressed the risk status of rejected boys, and rejected children in general, none to date has examined the likelihood of future

madadaptive development among rejected girls alone (Parker & Asher, 1987). This should be given high priority in future research.

The low rates of positive interactions engaged in by both rejected girls and boys in the first session are contrary to hypotheses, as well as to the high sociability ratings of rejected boys. However, this finding is consistent with Dodge's (1983) results that indicate that rejected boys made a fairly negative impact from a very early stage, and is also consistent with the low sociability observed among rejected girls. The average level of interaction in the middle session followed by more noninteractive activity in the final session may reflect peer rejection after the children have become acquainted. Further research is needed to address these speculations.

Neglected children

Results are consistent with previous research reporting neglected children to engage in less interactive behaviour than other children (Dodge, 1983; Hobson-Underwood, 1985; Coie and Kupersmidt, 1983), and to be less attractive (Hobson-Underwood, 1985). The observation that neglected children engaged in no negative behaviours at all is also consistent with other research that has found them to be particularly non-aversive (Coie & Kupersmidt, 1983).

The pattern of rater judgements is consistent with hypotheses that neglected children are relatively shy,

unsociable, inactive and unemotional, although results were not statistically significant.

The finding that parents, in contrast, viewed these children as sociable and not shy, is reminiscent of results reported by Stevenson-Hinde and Hinde (1986), who found that the direction of the association between interactions and shyness in preschool children changed with context. Thus shy girls and boys interacted more with mothers at home and interacted less with peers at school than children who were not shy. Additional research involving both child-parent and child-peer contexts simultaneously is needed to clarify these relationships.

The hypothesized "warming-up" characteristic of Thomas and Chess's "slow-to-warm-up child", as reflected by a steady increase in positive interactions with others over the three sessions, was observed for the first two sessions only. The similarity of this pattern to that of rejected children may indicate that peers also begin to rebuff these children once they became acquainted with them. On the other hand, these relatively unsociable (with peers) children may have been unwillingly drawn into games with other more sociable children during the second session, with the lower level of interactional behaviour in the third session reflecting their preferred play activities. More finely coded observational schemes allowing the analyses of additional behavioural categories as well as sequential analyses are needed to

pinpoint the interactions that lead up to peer rebuffs and increases in noninteractive play.

Results also suggest sex differences within the neglected group in terms of age relative to other children and emotionality as rated by parents. An interesting finding of the current study, in addition to the higher emotionality of neglected girls, was their higher intelligence estimates. Further research is needed to replicate and extend these findings.

Popular Children

The temperamental profile characterizing popular children in this study as active and sociable with peers, and relatively unemotional supports hypotheses and is also consistent with Thomas and Chess's (1977; 1986) and Buss and Plomin's (1984) descriptions of an "easy" child.

Observations of their high level of positive interactions with previously unknown peers from the beginning to the end of the playgroups are consistent with these temperamental ratings, as well as findings reported by Dodge (1983), who found that popular boys behaved very similarly to those of average status, with a nonsignificant tendency towards more cooperative play. Popular children in this study, however, were not observed to engage in any negative behaviours, contrary to findings by Dodge (1983). This discrepancy in findings may reflect the much lower frequencies of any negative behaviours observed for children in the present

study as compared to Dodge's (1983). These lower overall frequencies may, in turn, be because of sample differences or features of the coding scheme. Alternatively, the setting of the present study (e.g. free play with attractive toys and minimal adult intervention) may have fostered a more relaxed and prosocial atmosphere than that of Dodge's (1983) study, which involved much more adult direction.

Findings that these children were more attractive, older, and more mesomorphic in body build are also consistent with previous research (e.g. Dodge, 1983; Goldman et al., 1983; Staffieri, 1967), although the finding of Roff et al. (1972) that popular children were more intelligent was not replicated.

The lower parental ratings of sociability and activity for popular girls were also contrary to hypotheses. Given the consensual validation provided by parents and the children themselves on sociability, popular children may actually have less of a need for the company of others. Given their highly sociable behaviour in the playgroups, it seems reasonable to speculate that popular children may be particularly adaptive and self-sufficient in that they are well able and happy to interact with others, but also enjoy more solitary pursuits. It is also interesting to compare these self-ratings with those of rejected children (and those with more liked-least nominations in general), who rated themselves as being highly sociable.

The lower parental ratings of activity among popular girls are also particularly interesting when compared with ratings on the same variable of different groups; in this case, the high parental activity ratings among popular boys, as well as girls with more liked-least nominations. It may be that boys are expected and encouraged to be more active, but girls are not. Results of research looking at interaction effects between a child's sex, activity level, and interactions with fathers are consistent with this notion. Buss (1981) found that higher activity levels were associated with positive interactions between fathers and boys but negative interactions between fathers and daughters. These parallels are speculative, but may again reflect the larger social context and the importance of cultural stereotypes.

The finding that popular boys with greater social visibility, as measured by overall number of nominations, had both positive nominations reciprocated, whereas the popular girls who were less socially visible also had both nominations reciprocated may again reflect the influence of different prescriptions for desireable behaviour for girls and boys.

Evocative Child Characteristics and Context: Theoretical Considerations

Results of the present study attest to the importance of child characteristics of individuality, as well as the larger

social context, in influencing peer interactions and the development of peer group status. These results are consistent with both personological and contextual theoretical positions.

Temperament, Ponderal Index, and Attractiveness

The finding that children with low peer group status tended to be more emotional, thinner, and less attractive, whereas more popular children tended to be less emotional, more sociable with peers, and more mesomorphic, has implications for concepts of child-environment "fit".

Although a "match" or "goodness-of-fit" between child characteristics and environment may be theoretically more relevant than child characteristics in isolation, in practice children with certain attributes may be more, or less, likely to optimally "fit" or "match" the expectations and behavioural characteristics of most social environments in our culture. As Buss and Plomin (1984) hypothesize, children who are less emotional will be more likely to adapt to even the most stressful environment because their low reactivity modifies it's impact, whereas more emotional children will tend to exacerbate stressful situations. This is consistent with research reviewed by Thomas, Chess, and Birch (1970) that suggests that infants with "easy" characteristics are less likely to suffer the ill effects of poor parenting, even when the parent is psychotic, as well as Thomas and Chess's (1977) conclusion that children with "difficult" temperaments

are more likely to experience later psychosocial difficulties.

There is also evidence to suggest that variability in physique may lead children with different body builds to experience the environment differently (Sheldon, 1942; Walker, 1962). Individual variablity in "physical energy, in bodily effectiveness for assertive or dominating behaviour, and in bodily sensitivity" (Walker, 1962, p. 50), for example, are also potentially important links between body-build, temperament, and behaviour.

The more mesomorphic builds of children with more liked-most nominations and the more ectomorphic physiques of lower status boys and girls in the present study, are consistent with some of these earlier findings. Mesomorphic nursery school children, for example, were rated by teachers as energetic, assertive, cheerful, and sociable, whereas ectomorphic girls were rated as "unsocial and not cheerful... somber, irritable, and of limited energy resources..." (Walker, 1962, p. 50).

These results bear close resemblance to temperament ratings and rater comments about popular children, most rejected girls, and some of the neglected ones.

In addition to these ways in which a child may experience and act upon the social environment differently, the finding that more attractive girls, in particular, received more positive nominations from peers is also consistent with the

research illustrating the stereotypes that operate in our culture with regard to a child's appearance. A small but significant positive correlation between solitary play and attractiveness rank (.21, $p < .05$) in the initial hour of the playgroups in the present study (but not in subsequent sessions) may also be in accord with the evidence suggesting that feedback from people in the child's social environment is consistent with the positive or negative stereotypes associated with different levels of attractiveness (Sorrell & Nowak, 1980).

More detailed analyses of the relationships between child characteristics and interactions with others from the point of first meeting over time (with special attention to the initial hour) are required to test this hypothesis as well as to provide further information on the processes involved in such interactions.

Taken together, these data can be explained by a personological model, in that knowledge of several of a child's characteristics of physical and behavioural individuality, without any knowledge of a specific social environment within a given culture, may be as successful in predicting the child's "fit" as any combination of the two. One may be able to predict that a highly emotional and unattractive child will generally be less accepted than a child who is very attractive and less emotional, for example, no matter what the social context is, because of culture-

specific stereotypes regarding behavioural and physical characteristics.

These results are also consistent with Scarr and McCartney's (1983) probablistic developmental model of genotype -->environment effects, in which children with certain genotypes are more likely to "receive certain kinds of parenting, evoke certain responses from others, and select certain aspects from the available environments..." although "...nothing is rigidly determined". (p. 428)

Context

Additional data on the tendency for children with more liked-least nominations (particularly rejected boys) to come from lower socioeconomic status homes, also points to the importance of the greater social context in which any child lives. Hess (cited in Sameroff & Seifer, 1983, p.1260) succinctly concludes that "different levels of socioeconomic status offer children experiences which are both different and unequal with respect to the resources and rewards of society."

Although certain child characteristics may be more or less likely to "fit" well in most social contexts, then, more or less privileged environments are also more likely to foster or hinder optimal development.

Additional evidence of the importance of enviromental factors includes a longitudinal study by Magnusson, Duner, and Zetterblom (1975) in which low status children tended to

come from homes characterized by interpersonal conflict and dissatisfaction.

A recent study by Finnie and Russell (1988) revealed that differences in behaviour and social knowledge between mothers of high and low status children mirrored differences between the two groups of children. These results suggest that low status children learn their social repertoires, in part, from models who are themselves less socially skilled.

Additional research examining the links between parent-child interactions and peer relationships also provides strong evidence to suggest that children of different peer group status experience different environments and interactions at home (MacDonald, 1987; Putallez, 1987), although future research is needed to reveal the processes and direction of effects involved.

The combination of child characteristics and socioeconomic status associated with low peer group status in the present study, as well as research on "high risk" and "difficult" infants which indicates that risk characteristics can be overcome when such children are brought up in middle-class homes (Sameroff & Chandler, 1975), suggests that it is a combination of characteristics of the child and the environment that best accounts for outcomes.

Self-perceptions

In addition to child characteristics and the larger social context, social-cognitive factors also contribute to

social interactions and peer group status. Although the role of self-perceptions, in particular, in influencing a child's status with peers is not yet well understood (Hartup, 1983), results of the present study provide some interesting preliminary data on the ways in which children of differing social status view themselves in terms of their own temperaments.

The finding that children with more liked-least nominations (rejected children in particular) tended to view themselves as less emotional than any of the other children, whereas adults rated them as more emotional, is particularly intriguing, and definitely warrants further study. Social desirability may be a more important factor for these children than others, and the child's knowledge that the parent may have been watching the child rate him/herself on this potentially "loaded" temperament may have differentially affected self-reports depending on the nature of the relationship with the parent.

Thompson's (1986) contention that emotionality affects the interactions of children indirectly by "influencing the child's understanding and interpretation of the social environment" (p.48), as well as directly, may also be of some relevance to present findings in view of the higher emotionality of these children.

There may also be links to research in which rejected boys were less able to identify different expressions of

emotion (sad, happy, angry, surprised, scared) than more popular peers (Goldman et al., 1980), as well as to research by Wass (1988) in which rejected boys demonstrated a bias to interpret pictures of ambiguous hypothetical situations as involving hostile provocations.

Although parallels drawn among these studies are speculative, future research comparing self-perceptions of temperament, and emotionality in particular, with those of significant others in the child's environment may provide important links between a variety of social cognitive processes and sociometric status.

Are Unpopular Children "At-Risk" for Maladaptive Outcomes?

In a recent review of over 50 years of research relating peer relationships in childhood to later adjustment (using largely male samples), Parker and Asher (1987) conclude that children classified as rejected are more likely to have later adjustment difficulties than those who are neglected. The evidence regarding neglected children is not sufficient to draw any conclusions about them (very few studies have distinguished between rejected and neglected low status children).

Results of the present study suggest that although sociometric nomination data are useful for general research purposes, assumptions of "risk" status cannot be made on the basis of sociometric classification alone.

Reciprocated Positive Nominations

The finding that 82% of the rejected children and 50% of the neglected children had no positive choices reciprocated, taken together with evidence provided by Coie and Kupersmidt (1983) that sociometric status in analogue playgroups is likely to be highly correlated with that in the children's regular classrooms, does suggest that the majority of rejected children and a number of neglected ones may have difficulties with peer relationships.

The lack of attention to girls of low sociometric status (Parker & Asher, 1987) is particularly unfortunate in view of the finding that only one of the 11 rejected girls in the present study had a reciprocated positive nomination, and, furthermore, that rejected girls were represented in a greater proportion than rejected boys (22% as compared to 14%, the latter being comparable to other studies). Half of the neglected girls were also unable or unwilling to make a friend in this setting.

Further research delineating the characteristics of low status girls and their interactions with others, as well as the stability of their status as compared to boys, is needed to replicate and extend these preliminary data.

On the other hand, some low status children may be quite capable of forming friendships. One girl in this study who was classified as neglected because she had received only two nominations (both positive), for example, had both her

choices reciprocated. She had therefore made two "friends" in this setting (one more than many of the average and popular children), and could hardly be considered "at risk" for difficulties with peer relations.

Although four of the six rejected boys received no positive nominations, two of them received one reciprocated positive nomination each. Thus, two of these boys, although classified as "rejected", had also made a friend in the playgroup.

Furthermore, results of a recent longitudinal study of young children by Howes (1987) do suggest that low status children who have a reciprocated friend are likely to suffer fewer of the negative effects associated with peer rejection than those who have no-one, in that the friend facilitates greater access to the ongoing play of other children.

Research designed to target children at risk for peer difficulties with a view to later intervention should therefore attend to both sociometric status, or overall reputation, and friendships as reflected in reciprocal choices.

The observation that one rejected boy had a best friend in another group also points to the need to ascertain whether or not a child who has few or no friends in school has perhaps a friend or even a social network out of the school setting.

Sociometric Methodology, Chance Events, and Context

Although the ubiquitous sociometric interview is widely touted as a valid and reliable measure of a child's standing in his or her peer group, several shortcomings are worth noting, particularly if children are selected for intervention on the basis of their sociometric status.

Conceptual and practical difficulties with this technique include the different criteria used to define various sociometric groups, and the observation that a child's sociometric status can change from one category to another with the addition or subtraction of just one nomination. These shortcomings have been discussed more fully in the Analysis section (pp. 74 - 75). Additional measures of peer status and social functioning, such as teacher reports, and rating-scale sociometric methods should therefore be included to corroborate results of sociometric interviews (Newcomb & Bukowski, 1984). Another option is to perform additional analyses on nomination scores rather than classifications as in the present study. These continuous variables are obviously not as affected by chance variability as categorical variables.

In addition to these reservations, sources of variability were observed during data collection that may affect the distribution of nominations. For example, although care was taken to keep children apart until all were assembled in the morning, there were sometimes instances where the last two

children would arrive together and so walk down the hall and enter the room together (with me). Such chance events may well have predisposed children to engage with others that they may or may not have otherwise chosen to interact with, and affected sociometric nominations.

The nature of the toys selected for the children to play with may also have affected interactions and subsequent sociometric choices. One or two of the more popular joint games involved four people. In such instances the appeal of the game may have brought and kept groups of children together who may not otherwise have chosen to spend time with each other.

A final issue concerning the distribution of nomination choices is the nature of the context of the group in which a child finds him/herself. In one of the girls groups that was particularly homogeneous on several measures, for example, there were more pairs of reciprocal choices. This is consistent with research showing that higher rates of social interaction take place in more homogeneous groups (Hartup, 1983).

Compositional analyses as well as interactional designs may help delineate the unique aspects of the social structure of any one group. Research in which the same children are observed in at least two such playgroups with different groups of unacquainted peers would provide interesting data

on the relative importance of child characteristics and context to sociometric status.

Intervention

The presence of subgroups of children in the different sociometric status groups, and the sex differences found within status groups in the present study, clearly have implications for the isolation of child characteristics that promote peer acceptance and popularity, as well as for the design of any intervention programs for children with peer relationship difficulties. The reciprocal interactions between child characteristics, and those of the environment in which the child is embedded, must also be taken into account. Similarly, the importance of socioeconomic status as a summary variable must be recognized in any attempts to change a child's interactions with peers.

Lerner and Lerner (1983) contend that because child characteristics are the basis of the degree of any child-environment "fit", intervention attempts are best directed at the individual level.

Employing various skill training, behaviour modification, and cognitive-behavioural programs is useful for subgroups of low status children, although success is limited, partially because not all unpopular children have social social skill deficits. All potentially important contributors to low peer group status should be considered before assumptions of social skill deficits are made. The importance of physical

appearance, for example, suggests additional avenues of improving a child's "fit" including fashionable clothing and haircuts as compensation for less attractive appearance.

Evidence of strong associations between emotional relationships at home and the child's success with peers (Magnusson et al., 1975) also suggests that programs based on the premise that the source of a child's problems lies exclusively within the child are less than optimal (Kendall, Lerner, and Craighead, 1983). A recent review by Kazdin (1988) suggests that Patterson's (1982) method of parent management training, based on behavioural analyses of the coercive processes in family interactions, may be particularly effective with some children who demonstrate highly emotional and aggressive behaviour.

Sex Differences in Temperament Measures

Finally, overall sex differences in temperament measures are consistent with those found within different sociometric status groups. Differences between rater and parent measures of temperament are also worthy of note.

The findings that parents rated boys as significantly more emotional than girls, and raters judged boys to be significantly more active and less shy than girls in the playgroups are consistent with the well-documented differential socialization of males and females (see J.H. Block, 1983, for a review).

Rowe and Plomin (1977), however, found no such results for either emotionality or shyness, but they did find a significant sex difference on parent-rated activity, with boys being more active. Because the mean age of children in Rowe and Plomin's (1977) study was 3.6 (range 5 months - 9 years) as compared to 7.6 in the present study, discrepancies between the two studies may reflect a tendency for sex differences in temperament and temperament-context interactions to become more pronounced over time as the child's temperament interacts with parental values which themselves are influenced by the larger social context.

The lack of any significant sex difference in parent-rated activity in the present study may also reflect cohort differences and more liberal cultural prescriptions for acceptable behaviour for boys and girls today. Longitudinal research involving new cohorts could test these speculations.

The preliminary data in this study suggesting that family structure influences the expression of temperament differently for boys and girls also points to the importance of different child-context interactions. Further research with larger samples and detailed path analyses is needed to replicate and extend these findings.

Agreement Between Parents and Raters on Temperament

The significant agreement between parents and raters on all of the girls' temperaments except emotionality, but only on shyness for boys is perhaps indicative of sex-of-judge by

sex-of-child interactions (most parents who participated were female), or a sex difference in consistency of behavioural style across contexts.

The range of correlations (low to moderate) between the parent and rater ratings of the children's temperaments is consistent with that of other researchers (e.g. Keogh, 1986). These results are also in accord with other studies indicating that children often behave differently in different social contexts, and that characteristics measured in any given setting are likely to be more strongly related to other behaviours in that setting than behaviours in another context (e.g. Billman and McDevitt, 1980; Stevenson-Hinde & Hinde, 1986).

The moderate to high stability of teacher temperament ratings of young children over six months reported in earlier work (Martin, Wisenbacker, Matthews-Morgan, Holbrook, Hooper, & Spalding, 1985) also suggests that such behavioural discrepancies between contexts may be quite consistent over time within a given context and developmental period.

CONCLUSIONS

Results of the present study suggest that child characteristics, including temperament variables and physical appearance, play an important role in the development of peer group status among previously unacquainted children. Findings also indicate that temperament interacts with numerous other variables, including sex, social context, and self-perceptions, to produce behaviour.

Despite the support for the predictive power of differences in child characteristics for peer group status, the amount of variance explained is nonetheless relatively modest. Although children within rejected, neglected, average, or popular classifications had many similar characteristics, it is important to note that there were also children in each status group who were exceptions on at least one variable. Several rejected girls were attractive, for example, and one came from a high income home. Conversely, two of the popular girls were not particularly attractive, and one came from a low income home. These exceptions are encouraging, because although child characteristics are obviously important, there are clearly numerous additional interacting factors not captured in this study that contribute to a child's status with other children. Although it is impossible to consider every aspect of the child and context, the assimilation of as much information as is

reasonably possible may provide increasingly more accurate reflections of the complexity of human development and social interactions.

In conclusion, methodology used in studies of peer relations, and theory and measures provided by temperament researchers provide a promising combination for future research on the ways in which children differentially act upon, and react to, members of their own peer group in the development of peer group status.

The continued use of parent- and observer-ratings of temperament to identify the more "stable" child characteristics within a social context, along with more sophisticated observational measures that retain contextual sources of variance, may eventually elucidate the processes by which different children come to achieve more or less favorable peer group status. Concurrent analyses of parent-child interactions and the larger social context will provide additional data critical to the understanding of the processes which may facilitate, or sabotage, rewarding interactions and optimal social development among children.

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APPENDIX A

Letters to Parents and Advertisements

Dear Parent(s),

The crucial role that social relations play in a child's optimal development is becoming increasingly apparent, and I am therefore very interested in research in the area of social relationships among children.

If you have any children between the ages of six and nine years of age, I would very much appreciate his or her participation in one of my "playgroups", which should be a great deal of fun for everyone.

PARTICIPATION IN THIS PROJECT WOULD INVOLVE:

1. One visit of less than an hour to the University of Victoria during which:

a) you will be asked to fill out a questionnaire on your child's behaviour.

b) your child will be given three short tests of various abilities (you are welcome to watch).

c) I will take a full-length photograph of your child (which will be given to you at the end of the summer).

2. Your child's participation in one FUN-FILLED day-long "playgroup" during July or August. Activities will include a scavenger hunt, a film, crafts and drawing, and access to toys, books, and games both outside and in (everyone who participates also gets a prize at the end of the day). Your child will simply have the opportunity to play with various toys, games, and seven other children (who will be new to your child) under my supervision so that we can watch relationships develop "in action". At the end of the day your child will be asked a few questions about their participation in their group.

If you are willing to have your child participate in this study, please call me at 598-0068 any day or evening at your earliest convenience. In order that all the children coming to each group have the same understanding as the the purpose of this study, I would ask that you explain that I want to find out how children play together and what things (games, etc.) they especially like to do. If you have any questions or would like to discuss further the purpose and procedures in this research, please feel free to call me.

Thank you in advance for your cooperation!

Penny Hobson-Underwood,
Ph.D. Candidate in Psychology
at the University of Victoria,
Supervised by Dr. G. A. Milton

Dear Mr. and/or Mrs.

Three summers ago I conducted a study on social relationships among preschool age children, and you contributed considerably by agreeing to let your child participate (by allowing daycare workers at _____ to "rate" your child on a number of variables).

The crucial role that social relationships play in a child's optimal development is becoming increasingly apparent, and I am therefore continuing my work in this area.

I would very much appreciate your child's further participation in my new study. Your child is particularly valuable to this project as very few studies have been able to collect information on the same children over time.

PARTICIPATION IN THIS PROJECT WOULD INVOLVE:

1. <u>One visit of less than an hour to the University of Victoria</u> during which:

a) you will be asked to fill out a questionnaire on your child's behaviour.

b) your child will be given three short tests of various abilities (you are welcome to watch).

c) I will take a full-length photograph of your child (which will be given to you at the end of the summer).

2. <u>Your child's participation in one FUN-FILLED day-long "playgroup"</u> during July or August. Activities will include a scavenger hunt, a film, crafts and drawing, and access to toys, books, and games both outside and in (everyone who participates also gets a prize at the end of the day). Your child will simply have the opportunity to play with various toys, games, and seven other children (who will be new to your child) under my supervision so that we can watch relationships develop "in action". At the end of the day your child will be asked a few questions about their participation in their group.

If you are willing to have your child participate in this study, please call me at <u>598-0068</u> any day or evening at your earliest convenience. In order that <u>all</u> the children coming to each group have the <u>same understanding</u> as to the <u>purpose</u> of this study, I would ask that you explain that I want to find out <u>how children play together and what things (games, etc.) they especially like to do.</u> If you have any questions or would like to discuss further the purpose and procedures in this research, please feel free to call me.

(etc. as above letter)

FOR CHILDREN **6 TO 9** YEARS OLD

LOTS OF FUN INCLUDING:

- a scavenger hunt and hike in the University of Victoria trails.
- a movie
- crafts and drawing
- access to books, toys, and lots of games
- **AND** a prize for everyone.

AS PART OF A STUDY ON CHILDREN'S SOCIAL INTERACTIONS

598-0068

APPENDIX B

Parent Rating Scales, Consents, and Data Sheets

RATING INFORMATION

1. Please base your rating on your child's recent and current behaviour (the last four to six weeks).

2. Consider only your own impressions and observations of the child.

3. Rate each question independently. Do not purposely attempt to present a consistent picture of the child.

4. Use extreme ratings where appropriate. Avoid rating only near the middle of the scale.

5. Rate each item quickly. If you cannot decide, skip the item and come back to it later.

6. Rate every item. Circle the number of any item that you are unable to answer due to lack of information or any item that does not apply to your child.

T H A N K Y O U !!!!!

(These instructions are based on those of the Behaviour Style Questionnaire by McDevitt and Carey, 1978).

Name: _____

The EAS Temperament Survey for Children: Parent Ratings

PLEASE RATE EACH OF THE ITEMS FOR YOUR CHILD ON A SCALE FROM 1 (NOT CHARACTERISTIC OR TYPICAL OF YOUR CHILD) TO 5 (VERY CHARACTERISTIC OR TYPICAL OF YOUR CHILD).

1. Child tends to be shy.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
2. Child cries easily.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
3. Child likes to be with people.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
4. Child is always on the go.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
5. Child prefers playing with others rather than alone.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
6. Child tends to be somewhat emotional.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
7. When child moves about, (s)he usually moves slowly.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
8. Child makes friends easily.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
9. Child is off and running as soon as (s)he wakes up in the morning.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
10. Child finds people more stimulating than anything else.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
11. Child often fusses and cries.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
12. Child is very sociable.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
13. Child is very energetic.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
14. Child takes a long time to warm up to strangers.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical

15. Child gets upset easily.	NOT typical	1	2	3	4	5	VERY typical
16. Child is something of a loner.	NOT typical	1	2	3	4	5	VERY typical
17. Child prefers quiet, inactive games to more active ones.	NOT typical	1	2	3	4	5	VERY typical
18. When alone, child feels isolated.	NOT typical	1	2	3	4	5	VERY typical
19. Child reacts intensely when upset.	NOT typical	1	2	3	4	5	VERY typical
20. Child is very friendly with strangers.	NOT typical	1	2	3	4	5	VERY typical

Parent/Guardian Consent Form

I, _____, give permission for _____ to participate in the study conducted by Penny Hobson-Underwood from the University of Victoria.

I understand that participation in this project involves:

1. One visit of less than an hour to the University of Victoria during which:

a) I will be asked to fill out a questionnaire on my child's behaviour.

b) My child will be given three short tests of various abilities (which I am welcome to watch).

c) A full-length photograph will be taken of my child (which will be given to me at the end of the summer).

2. My child's participation in a "playgroup" during July, August, or September. My child will simply be required to play with seven other children (who will be new to my child) under the supervision of Penny Hobson-Underwood so that she can watch friendships develop "in action". At the end of the session my child will be asked a few questions about his/her participation in the group.

Date:_____

Signature of
Parent or Guardian:_____

VIDEOTAPE CONSENT FORM

Portions of the playgroups will be videotaped to allow Penny Hobson-Underwood to check that the observations of social interactions are coded correctly.

The children will be identified only by number in all data records. The sheet that connects your child's name with this number will be kept separately in a secure place.

Please indicate below the way(s) in which I may use the videotape made during the playgroup in which your child is participating.

I, _____, hereby give my consent to have the videotape made during the playgroup in which _____ participates used in the following way(s):

1. ___ only for the checking of the day's observations by researchers (P. Hobson-Underwood, Dr. G. A. Milton, Supervisor, research assistants) as outlined above.

2. ___ for demonstration purposes if the need arises. (e.g. in my Ph.D. dissertation defense).

3. ___ for use in future research projects where Penny Hobson-Underwood would view the tapes in order to obtain additional information on the nature of social interactions.

4. ___ all of the above.

5. ___ none of the above. I do not wish my child to be videotaped.

Signature:_____

Date:_____

NAME:_____ Parent's Name:_____

Address:_____ Phone: Hm:_____ /wk_____

D.O.B./age:_____

Preschool:_____ Present school:_____

Birth order:_____ Parent's education:_____

Family structure:_____ Parent's job:_____

COGNITIVE TESTS: Favorite toys and games:

Similarities:____

Block Design:____

TEMPERAMENT	Parent	Self1	Self2	Rater1	Rater2
Emotionality					
Activity					
Sociability					
Shyness					

Picture taken?___

ATTRANK:	Female1	F2	F3	F4	F5	Male1	M2	M3	M4	M5
	Girl1	G2	G3	G4	G5	Boy1	B2	B3	B4	B5

Group:_____ Sociometric status: R N A P

LMnoms:_____ LLnoms:_____

Played with most:_____

OTHER:

APPENDIX C

Materials Used by Observers

Rating Information

1. Consider only your own impressions and observations of the child.

2. Rate each question independently. Do not purposely attempt to present a consistent picture of the child.

3. Use extreme ratings where appropriate. Avoid rating only near the middle of the scale.

4. Rate each item quickly. If you cannot decide, skip the item and come back to it later.

5. Rate every item. Circle the number of any item that you are unable to answer due to lack of information.

The EAS Temperament Survey for Children: Teacher Ratings

PLEASE RATE EACH OF THE ITEMS FOR THE CHILD ON A SCALE FROM 1 (NOT CHARACTERISTIC OR TYPICAL OF THE CHILD) TO 5 (VERY CHARACTERISTIC OR TYPICAL OF THE CHILD).

1. Child tends to be shy.	NOT typical	1 2 3 4 5	VERY typical
2. When with other children this child seems to be having a good time.	NOT typical	1 2 3 4 5	VERY typical
3. Child cries easily.	NOT typical	1 2 3 4 5	VERY typical
4. Child is always on the go, especially on breaks outside.	NOT typical	1 2 3 4 5	VERY typical
5. Child tends to be somewhat emotional.	NOT typical	1 2 3 4 5	VERY typical
6. When child moves about, (s)he usually moves slowly.	NOT typical	1 2 3 4 5	VERY typical
7. Child makes friends easily.	NOT typical	1 2 3 4 5	VERY typical
8. Child is full of vigour when (s)he arrives in the morning.	NOT typical	1 2 3 4 5	VERY typical
9. Child likes to be with people.	NOT typical	1 2 3 4 5	VERY typical
10. Child often fusses or cries.	NOT typical	1 2 3 4 5	VERY typical
11. Child likes to chat with others.	NOT typical	1 2 3 4 5	VERY typical
12. Child is very sociable.	NOT typical	1 2 3 4 5	VERY typical
13. Child is very energetic.	NOT typical	1 2 3 4 5	VERY typical
14. Child takes a long time to warm up to strangers.	NOT typical	1 2 3 4 5	VERY typical

15. Child prefers to do things alone.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
16. Child gets upset easily.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
17. Child prefers quiet, inactive games to more active ones.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
18. Child tends to be a loner.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
19. Child reacts intensely when upset.	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical
20. Child is very friendly with strangers (i.e. new kids and you). *	NOT typical	__:__:__:__:__ 1 2 3 4 5	VERY typical

Note. The material in parentheses was added to the original item to clarify it for the raters in this study.

List of Behaviour Codes

(Adapted from Ladd, 1983, p. 291)

Noninteractive behaviours

Unoccupied child is alone, away from other kids, and appears to be "doing nothing" (e.g. wandering around aimlessly, staring off into space, playing with his/her own body).

Watching child is alone, close to other kids and watching others' activity (but not joining in).

Solitary play: child is alone but occupied with a central activity (e.g. playing alone with toys, reading, fixing something, drawing).

Parallel play: child is engaged in independent or similar activity beside others (not WITH others), such as dressing a Barhbie doll near other girls who are also playing with dolls.

Interactive Behaviours - Also note WHO child is interacting with.

Social conversation: child is engaged in positive or neutral talk with others in the absence of play activity (e.g. asking questions, joking, discussing activities).

Hostile verbalizations: child is engaged in negative verbalizations with others - arguing, insults, threats, bossing, provocative remarks.

Cooperative play: Turn-taking and games. Child is engaged in organized activity with others (e.g. playing Mr. Mouth, Chinese skipping, acting out roles).

Rough and Tumble: unorganized agonistic activity with others: mock-fighting, wrestling, pushing, shoving.

Inappropriate Play: standing on tables, disrupting other kids' games, being destructive.

Interaction with adult:

1. social conversation
2. question or asking for help
3. being reprimanded

Also look out for and code the following events, including the other children involved:

Social approach: the child attemps to initiate play with a peer (also note here whether the approach was successful; whether it was accepted or not).

Physical Contact Behaviours:

1. positive: e.g. physically affectionate
2. negative: e.g. hitting, grabbing toys, etc.

Other - specify in appropriate time segment box.

ALSO At the end of the day please indicate your overall impression of "what the child is like" (a sentence or two only), and any additional things about the child' behaviour or the child her/himself that are not defined by the above codes (e.g. holding your hand, crying alone, speech impediment, etc.).

APPENDIX D

Details of Self-Rated Temperament Interviews and Illustrated Temperament Scales

Details of Self-Rated Temperament Interviews

(to accompany illustrated temperament scales)

1. Sociability.

I'm going to show you a picture. This one is about how sociable kids are, or how much they like to be with other people or kids.

Which one of these kids do you think is very sociable?

Why do you think that? That's right!

A. This is a sociability line, and this girl/boy is at the top of the sociability line because:

1. (s)he always likes to be with other people.
2. (s)he likes playing with other kids way better than playing with toys or games on her/his own.
3. When this girl/boy is alone (s)he isn't very happy.

B. This girl/boy is at the bottom of the sociability line because:

1. (s)he like to play by her/himself better than with other kids.
2. (s)he likes playing with toys and games more than with other children.

This one is in the middle - sort of average.

Now I'd like to know how sociable you think you are.

Where are you on the sociability line? Are you more like 1, 2, 3, or in between 1 and 2 perhaps, or in between 2 and 3?

2. Activity.

Let's look at another picture. This one is about how active kids are, or how much they like to keep moving. Which one do you think is the most active? That's right. Why?

A. This girl/boy is at the top of the activity scale because (s)he:

1. is always on the go and doesn't like to sit still.
2. always moves fast, and talks fast, and likes to play games where (s)he has to run and jump a lot.

B. This girl/boy is at the bottom of the activity line because (s)he usually:

1. takes her/his time, moves slowly, and is never in a hurry.
2. sits quietly without fidgeting while watching T.V.
3. likes quiet games where (s)he doesn't have to move around a lot.

Where do you think you are on the activity line? etc.

3. Shyness.

This picture is about how shy kids are. This picture shows the story of the first day of school at a new school. At recess some of the other kids in the class are standing around and talking. These three kids are new to the school and don't know anyone. Which one do you think is the most shy? Why? That's right.

A. This girl/boy is at the top of the shyness line because (s)he:

1. is very shy and just watches the other kids for a long time before (s)he talks to any of them.

2. doesn't make friends very easily.

3. is never friendly with new adults or kids right away either.

B. This girl/boy is at the bottom of the shyness line because (s)he:

1. isn't shy at all and walks over right away to play with the other kids.

2. always makes friends easily and is always friendly with new people that (s)he doesn't know.

This one is in the middle - sort of average.

Now I want to know how shy you think you are. Are you more like the girl/boy number 1, 2, or 3, or in between?

4. Emotionality.

This is the last picture. It's about how emotional kids are, how easily they get upset, or mad or sad. Which one is the most emotional? Why? etc.

A. This girl/boy is at the high end of the emotionality line because (s)he:

1. always gets really upset, even at little things.

2. gets mad or cries a lot.

B. This girl/boy is at the low end of the emotionality line because (s)he:

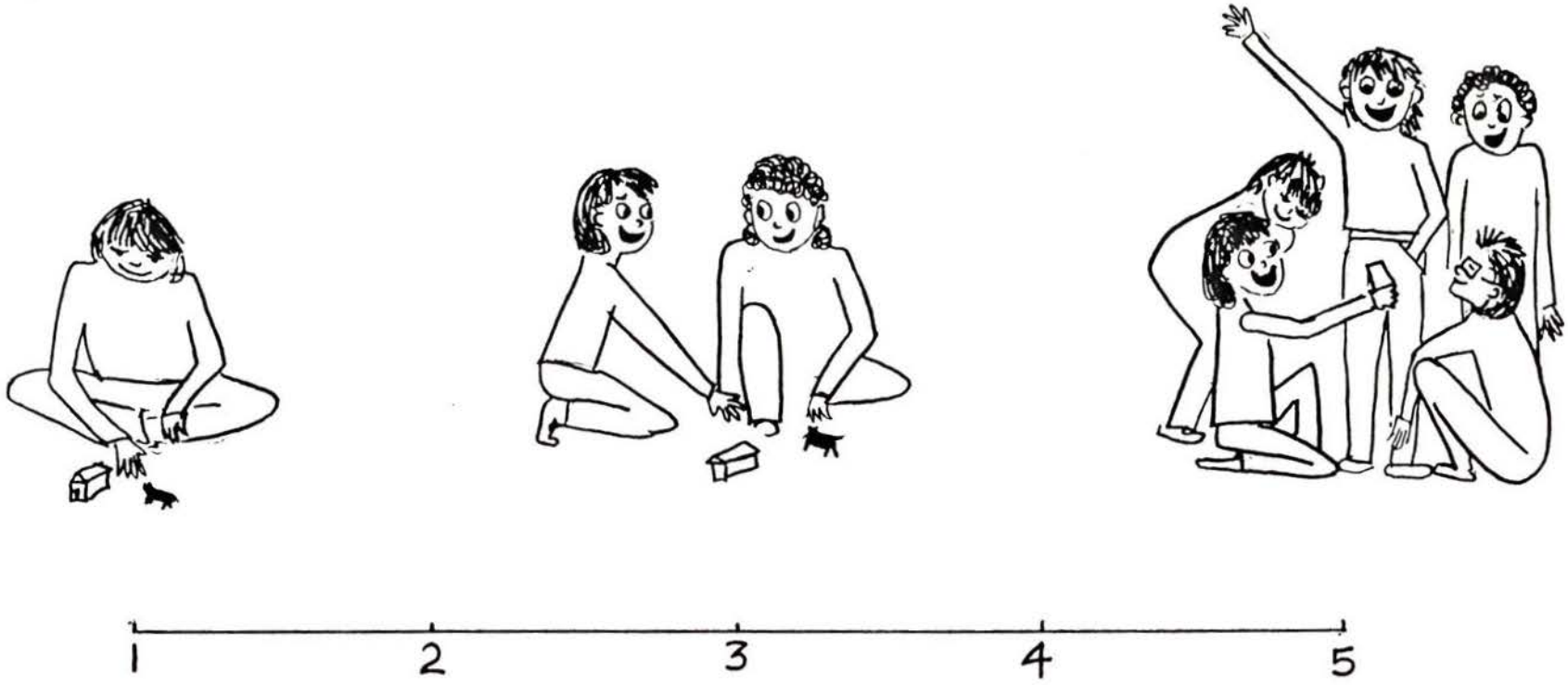
1. hardly ever gets upset or cries, even if someone breaks a favorite toy.

2. only ever gets a little mad or sad when things go wrong.

Now I want to know how emotional you think you are. Where are you on the emotionality line? How easily do you get upset, or mad, or sad? etc.

(These questions varied depending on how quickly the child understood, e.g. tell me about this child at the bottom of the line - what is (s)he like? What else might (s)he do? etc.)

Note. See Appendix E for self-rated temperament: Time 2.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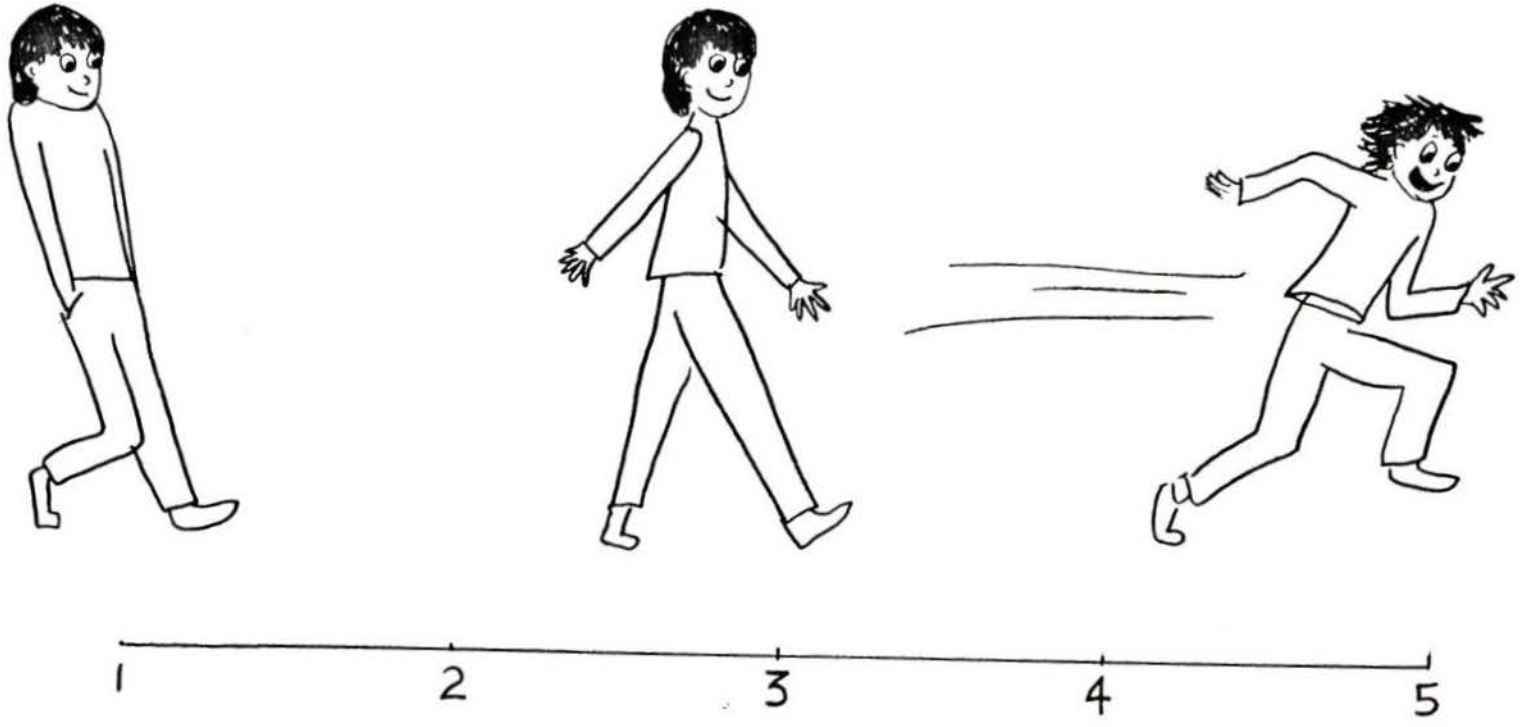
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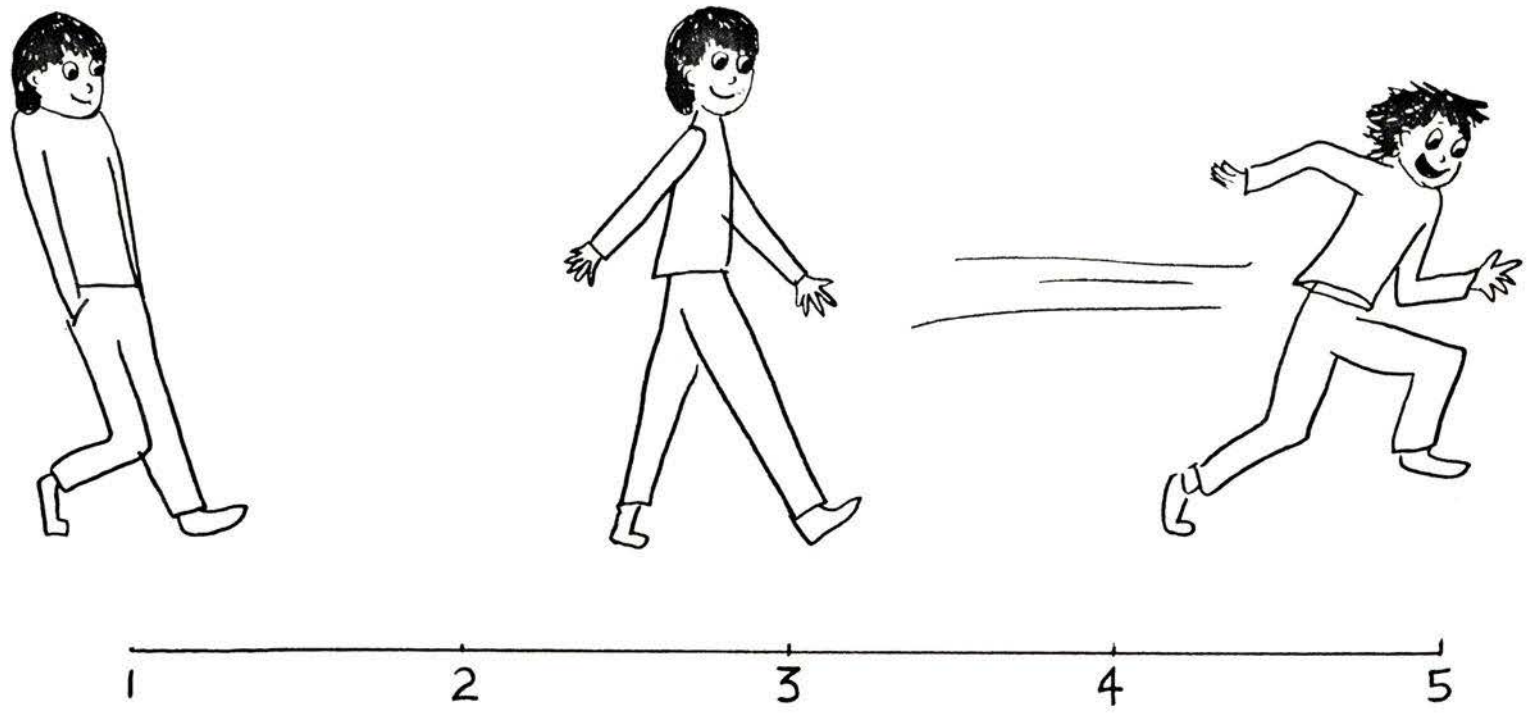
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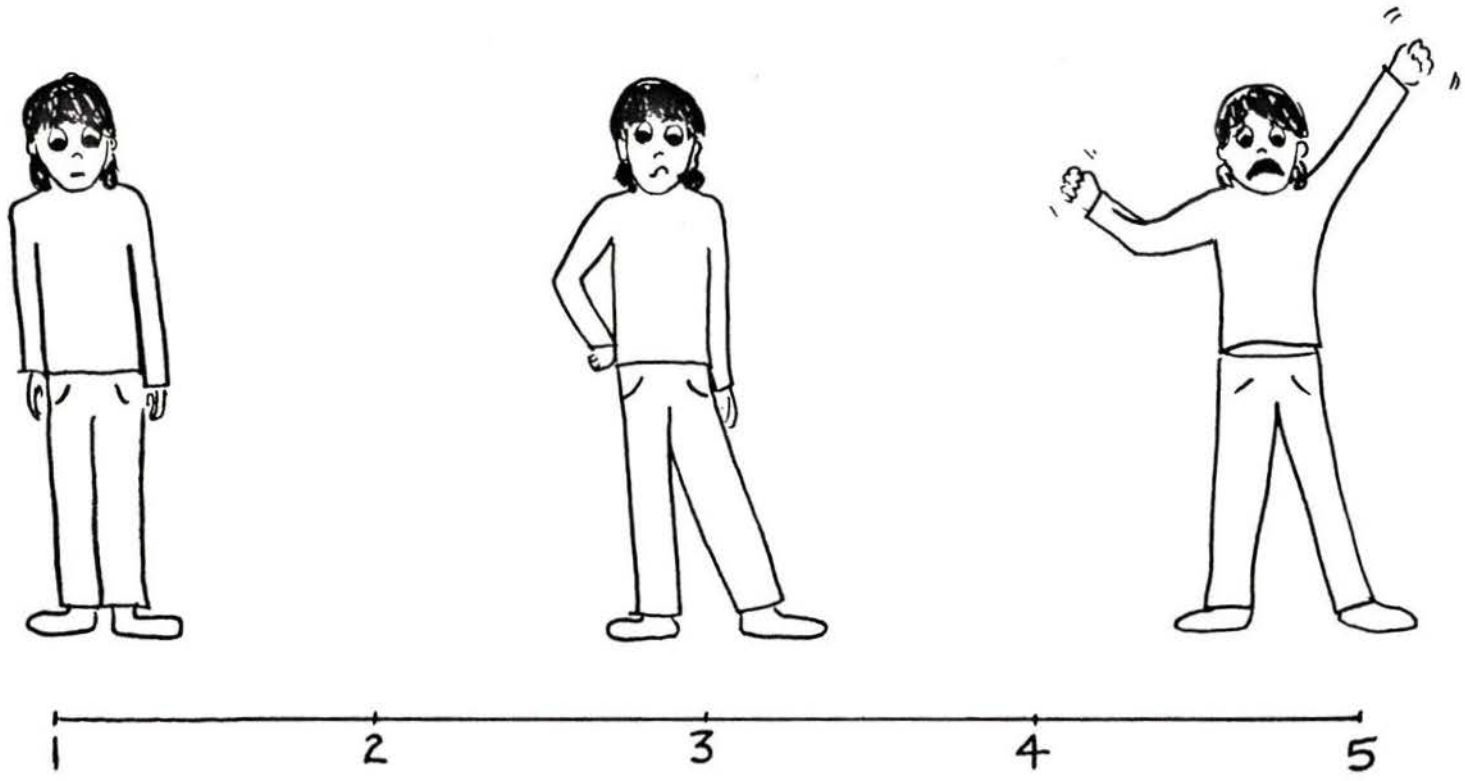
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APPENDIX E

Temperament Self-Ratings (Time 2)

and Sociometric Interviews

Temperament Self-Ratings and Sociometric Interviews

I = interviewer; C = child

I: "Hi, how are you? That's a pretty dress etc. (girls); good-looking runners (boys)...Penny wishes me to weigh you - just hop on here. What do you think you weigh - oh boy. Now, just turn your back to the tape measure - let's see how tall you are. Good.

I: OK, that's your chair, this is mine. Tell me, what sort of game or games did you like best?

C: answer

I: I like that one, too. (marks it on sheet)

Temperament Self-ratings: TIme 2

The interiewer paraphrased the original temperament interviews (See Appendix D for details) after reviewing them as thoroughly as needed.

Sociometric Interviews

I: Just two more questions and then we're finished. (Picture board with photographs of all children in that day's group is placed in front of the child and interviewer).

Liked-most Nominations.

I: You have now played with these girls/boys for quite a time. Lets suppose that your mother said "Why not bring home the two you liked best for a little party." Perhaps you like more than two - but which two best of all - girls/boys you might go on to find out will be your best friends. Which two would you choose? (never seemed to be much difficulty).

Liked-least Nominations.

I: Last question, this is a bit harder but I know you can do it. OK. Just pretend that your mum said "I know what, why not bring them all home - wouldn't that be fun - oh dear, wait a minute, we've only got ice cream and party favors for 5 (including yourself). So you'll have to leave two out. Sorry." Which two would you not ask to come, which two do you like least of all? Which two do you think wouldn't be your friends?

Interviewer's Comments

Difficulties.

1) Liked-most nominations - virtually none - one or two wanted to take 3 home but every case was resolved.

2) Liked-least nominations - 80% of the children seemed to dislike two peers very easily and were not hesitant. Approximately 20% could always identify one they didn't like - but had varying degrees of difficulty getting the second. ("I don't know them all as well as they others"; "I only played with these guys").

General Comments.

All the children were amazingly cooperative and seemed to enjoy what went on. In general, I was surprised at the general level of interest and sincerity. They all seemed to be deeply concerned at making the right choices and answered the questions intelligently. At no time did I get the impression that any child wasn't doing her/his best.

Date:_____ Individual Interviews GROUP:_____

Child #1. Ht:_____ Wt:_____

1. Two favourite toys/games:_____

2. SELF-RATE

1. Sociability __; 2. Activity __; 3. Shyness:____

4. Emotionality__

3. LIKE MOST? 1. ___ 2. ___

LIKE LEAST? 1. ___ 2. ___

4. Any comments you have about child?

The same format was used for each child in the group...

Child #8. Ht:_____ Wt:_____

1. Two favourite toys/games:_____

2. SELF-RATE

1. Sociability __; 2. Activity __; 3. Shyness:____

4. Emotionality__

3. LIKE MOST? 1. ___ 2. ___

LIKE LEAST? 1. ___ 2. ___

4. Any comments you have about child?

APPENDIX F

Toys and Games

Toys and Games

Baboon Ball (1981 Hasbro Industries) (6 years & up)

Atomic Arcade Pinball (Tomy by Parker Bros.) (6 years & up)

Mr. Mouth (Tomy by Parker Bros.) (5 years & up)

Monopoly (Parker Bros.)

Computer Car MachXR (3 years & up)

Sneaky Snakes (Waddington's House of Games) (3 - 9 years)

Twister (Milton Bradley) (6 years to adult)

Chinese Checkers and marbles

Digital Derby Auto Raceway (Tomy)

Sew-Easy (toy sewing machine) (Hasbro Toys)

3 Barbie dolls and clothes

2 child dolls and clothes

Miniature furniture, comb, brush, mirror, playing cards

Chinese skipping rope (piece of elastic)

Comics and books (Rapunzel, Look out for Pirates)

Spirograph (Kenner Products)

Colored pens, crayons, pencil crayons, paper, erasers

Space Invader helmet and gun

Fisher Price toy stove

Waterfall basketball

Miniature pinball; puzzles

Stuffed toys (2 bears; 2 Rageddy Annes); 4 "My Little Pony"

11 Transformers

2 Tonka toys (tractor and truck)

Animal Dominoes (Whitman Toys) (4 & up)

APPENDIX G

List of all Variables and Abbreviations

List of All Variables and Abbreviations

EmotEAS	- EAS emotionality as rated by parents
ActEAS	- EAS activity as rated by parents
SocEAS	- EAS sociability as rated by parents
ShyEAS	- EAS shyness as rated by parents
EmotRTRS	- EAS emotionality as rated by observers
ActRTRS	- EAS activity as rated by observers
SocRTRS	- EAS sociability as rated by observers
ShyRTRS	- EAS shyness as rated by observers
EmotCHILD	- Child's self-ratings of emotionality
ActCHILD	- Child's self-ratings of activity
SocCHILD	- Child's self-ratings of sociability
ShyCHILD	- Child's self-ratings of shyness
PI	- ponderal index or body build (high score = thin; low score in this sample = average or mesomorphic)
IQ	- intelligence quotient
ATTrank	- Attractiveness ranking within playgroup (low = more attractive as compared to others in group)
SES	- socioeconomic status
LMnoms	- number of Liked-Most nominations received from peers
LLnoms	- number of Liked-Least nominations received from peers
Rejected Neglected Average Popular	- classification variables calculated from sociometric nomination variables (LMnoms, LLnoms; See p. 61.)
POSIX	- frequency of positive interactions with peers
NEGIX	- frequency of negative interactions with peers
NONIX	- frequency of noninteractive behaviours
SArej	- social approaches made to peers that are rejected or unsuccessful.

APPENDIX H

Means and Standard Deviations for All Variables by Sex

Means and Standard Deviations for All Variables by Sex.

Variable	Girls	Boys
SES	84.18 (41.89)	91.30 (37.72)
IQ	111.80 (10.04)	115.22 (12.86)
ATTrank	4.20 (1.32)	4.40 (1.43)
PI	13.32 (.51)	13.24 (.40)
EmotEAS	25.52 (10.42)	29.96 (8.86)
ActEAS	38.00 (10.42)	37.35 (8.34)
SocEAS	38.34 (8.27)	35.22 (7.54)
ShyEAS	23.60 (9.35)	23.09 (8.47)
EmotRTRS	15.56 (6.08)	16.34 (8.61)
ActRTRS	39.41 (9.99)	42.03 (8.97)
SocRTRS	40.36 (10.30)	42.16 (9.00)
ShyRTRS	22.55 (11.47)	20.09 (10.37)
EmotCHILD	26.05 (7.18)	23.70 (8.35)
ActCHILD	35.11 (8.26)	34.95 (11.14)
SocCHILD	33.85 (10.78)	33.65 (10.16)
ShyCHILD	26.70 (8.18)	23.80 (8.33)

APPENDIX I

Means and Standard Deviations for All Variables by Sex and Status

Table 1.

Means for Predictor Variables for Boys.

Status Group	Age	SES	I.Q.	ATTrank	PI
Rejected	86.83	56.00	112.50	5.84	13.57
Neglected	94.00	113.13	114.38	4.13	13.40
Average	91.56	88.56	116.11	4.20	13.14
Popular	96.20	113.60	115.00	4.11	13.13

Note. ATTrank = attractiveness ranking within playgroup.
PI - the higher the score, the more ectomorphic body build.

	Parental Temperament Ratings			
Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	34.00	37.00	32.00	21.00
Neglected	26.75	37.25	35.50	18.25
Average	30.59	36.59	35.63	26.15
Popular	26.80	42.00	36.40	16.80

	Rater Temperament Ratings			
Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	25.33	47.67	46.83	13.17
Neglected	13.25	37.63	37.63	24.63
Average	16.20	40.76	41.02	21.89
Popular	11.20	49.20	50.00	11.40

APPENDIX I

Table 2

Means for Predictor Variables by Status for Girls.

Status Group	Age	SES	I.Q.	ATTrank	PI
Rejected	93.09	84.00*	107.73	4.72	13.45
Neglected	91.25	100.88*	117.50	4.30	13.35
Average	93.91	77.96	113.35	4.25	13.27
Popular	96.75	85.63	107.25	3.25	13.26

Note. ATTrank = attractiveness ranking within playgroup.
PI = the higher the score, the more ectomorphic body build.

* One girl in each of the two status groups had much higher SES than the others. With these 2 girls excluded, SES means are: Rejected: 67.7; Neglected, 72.5.

	Parental Temperament Ratings			
Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	27.82	39.09	38.64	26.36
Neglected	31.25	40.00	40.50	20.75
Average	24.26	38.35	38.35	23.30
Popular	20.25	33.50	35.75	23.50

	Rater Temperament Ratings			
Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	16.27	36.77	35.59	26.05
Neglected	14.50	35.25	36.56	25.63
Average	16.13	41.43	42.65	20.78
Popular	14.00	41.38	44.13	19.75

APPENDIX I

Table 3

Standard Deviations for Predictor Variables by Status for Boys.

Status Group	Age	SES	I.Q.	ATTrank	PI
Rejected	13.20	9.30	19.94	1.20	.46
Neglected	9.61	44.91	15.91	1.26	.35
Average	12.69	32.79	11.55	1.36	.36
Popular	12.87	43.39	6.12	1.68	.32

Parental Temperament Ratings

Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	6.07	11.64	8.85	8.65
Neglected	9.62	7.63	5.53	8.10
Average	9.21	7.94	8.27	8.06
Popular	7.95	8.37	4.98	3.35

Rater Temperament Ratings

Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	13.82	3.39	2.79	1.60
Neglected	2.66	13.68	11.90	12.02
Average	7.90	7.83	8.70	10.54
Popular	1.79	1.79	0.00	1.67

APPENDIX I

Table 4

Standard Deviations for Predictor Variables by Status for Girls

Status Group	Age	SES	I.Q.	ATTrank	PI
Rejected	14.15	49.53	9.32	1.30	.60
Neglected	10.17	55.99	7.56	1.03	.40
Average	11.90	32.63	10.56	1.38	.56
Popular	8.63	43.00	8.89	1.13	.31

	Parental Temperament Ratings			
Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	9.05	8.12	11.68	7.94
Neglected	10.08	6.76	4.87	5.23
Average	11.84	6.70	7.15	10.78
Popular	4.20	12.04	9.29	10.41

	Rater Temperament Ratings			
Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	5.57	12.59	13.54	12.36
Neglected	3.78	10.58	10.66	12.10
Average	7.56	8.93	8.61	11.49
Popular	3.85	7.82	6.92	9.60

APPENDIX I

Table 5

Means and Standard Deviations of Self-rated Temperament by Status Group: Boys.

Status Group	Emotionality	Activity	Sociability	Shyness
Means				
Rejected	20.83	31.25	40.00	22.92
Neglected	24.38	38.13	31.25	24.38
Average	24.07	34.63	33.80	25.09
Popular	24.00	36.00	29.00	17.00
Standard Deviations				
Rejected	8.61	9.97	7.07	7.49
Neglected	7.29	9.33	11.26	6.78
Average	8.80	12.30	9.79	9.11
Popular	8.94	9.62	12.45	4.47

APPENDIX I

Table 6

Means and Standard Deviations of Self-rated Temperament by Status Group: Girls.

Means

Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	21.82	38.64	35.00	24.00
Neglected	31.25	32.50	33.75	28.75
Average	25.00	36.43	35.22	26.57
Popular	29.69	29.06	28.44	28.75

Standard Deviations

Status Group	Emotionality	Activity	Sociability	Shyness
Rejected	7.51	8.69	15.33	10.34
Neglected	5.18	3.78	10.94	4.43
Average	6.74	8.64	9.11	7.80
Popular	5.74	6.81	7.43	9.16

VITA

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Hobson, P.A. & Duncan, P. (1979). Sign learning and profoundly retarded people. Mental Retardation, 17(1), 33-37.

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CHILD-CONTEXT INTERACTIONS: TEMPERAMENT AND THE DEVELOPMENT OF PEER GROUP STATUS AMONG PREVIOUSLY UNACQUAINTED CHILDREN

Author: P. Hobson-Underwood P Hobson-Underwood April 20, 1989
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