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Sibling relationship qualities and interaction during middle childhood:  
Structural properties of the sibling dyad,  
features of family climate and parent-child relations.

Jasmin Aquan-Assee

A Thesis

in

The Department

of

Psychology

Presented in Partial Fulfilment of the Requirements  
for the Degree of Doctor of Philosophy at  
Concordia University  
Montréal, Québec, Canada

September 1992

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## ABSTRACT

Sibling relationship qualities and interaction during middle childhood:  
Structural properties of the sibling dyad,  
features of family climate and parent-child relations.

Jasmin Aquan-Assee, Ph.D.  
Concordia University, 1992

Relatively little research has focused on the qualities of the sibling relationship examining sibling interaction from a family systems perspective. In this dissertation, the qualities of the sibling relationship during middle childhood were examined to assess their association to other factors within the family system including family functioning, parent-child relations, and sibling dyad structural variables. The influence of the qualities on sibling relations on other aspects of sibling and interpersonal interaction was also explored. Participants were 102 fourth to sixth grade students (64 girls and 38 boys) ranging in age from 8 to 13 years (mean = 10 years). Children were administered self-report questionnaires that examined qualities and aspects of sibling and parent-child relations, and perceptions of family environment and they participated in tasks that examined (a) perspective-taking, (b) rivalrous versus nonrivalrous play, and they generated stories to a projective story-telling task involving pictures of sibling and family interaction. Data on family functioning were obtained from the children's parents.

Results indicated that structural (i.e., age related) variables predicted perceptions of sibling conflict and relative status and power but not warmth and closeness. Family adaptability predicted sibling conflict in a curvilinear manner indicating that families who were 'chaotic' in terms of their family organisation



suppressed sibling conflict beyond normative levels. This may inhibit later adjustment as sibling conflict appears to function as a forum in which children develop interpersonal problem-solving skills and begin to individuate themselves from their siblings and family. Cohesion was indirectly related to sibling warmth and closeness through its effects on fostering positive parent-child relations and promoting greater interaction frequency between siblings. These variables in turn, predicted greater sibling warmth and closeness. Structural and sibling relationship qualities predicted behaviours on tasks measuring interpersonal interaction such as interaction frequency, cooperative play behaviour and responses on the story-telling task.

A comprehensive model was generated to conceptualize how family and sibling structure variables function together to affect the quality of the sibling relationship. Socialization forces originating from the family appear to characterise and influence the sibling relationship and interaction by promoting social development through facilitating the positive qualities of the sibling relationship. This study provides a framework from which future research can build to further our understanding of the causes and consequences of the sibling relationship.

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*This thesis is dedicated to my younger brothers who have helped me to experience the many advantages and disadvantages of being the first born and inspired my study of sibling relations.*

*Most of all, I dedicate this work to my brother Malcolm, from whom I learnt how meaningful and influential the sibling bond really is.*

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Sibling relationship qualities and interaction during middle childhood:  
Structural properties of the sibling dyad,  
features family climate and parent-child relations.

A child's relations within their family comprise some of the most important relationships that s/he experiences (Hartup, 1979). Theories of psychological development have held that these early relationships affect the relationships that the child forms later in life (e.g., Bowlby, 1988; Erickson, 1950/63; Freud, 1940/64). An important facet of the family system is the relationship between the siblings. As such, it is surprising that the impact of family functioning and features of the family on the quality of the sibling relationship has been ignored in the empirical and theoretical literature on sibling interactions.

Although the sibling relationship has not been an integral part of many theories of personality development (Rabin, 1989), social scientists agree that sibling relationships are developmentally important (Bank & Kahn, 1982; Bryant, 1982; Dunn & Kendrick, 1982; Lamb & Sutton-Smith, 1982). Siblings have been identified as important members of the child's social network (Furman & Buhrmester, 1982; Hartup, 1979) and according to theory, their impact on personality, and social development extends into peer and later adult relationships (Bell, Avery, Jenkins, Feld, & Schoenrock, 1985; Hartup, 1989; Lamb & Sutton-Smith, 1982).

Many investigators have examined the influence of structural variables such as age, age spacing, birth order and gender of the children (see Sutton-Smith & Rosenberg, 1970; Wagner, Schubert, & Schubert, 1979), however, research on the qualities of sibling relationships and research on the effects of structural variables are

not one and the same (Furman & Buhrmester, 1985a). Only recently have investigators begun to appreciate the importance of examining the qualities of the sibling relationship to better understand the influence siblings have on one another (Dunn, 1983; Furman & Buhrmester, 1985a; Lamb & Sutton-Smith, 1982). These qualities distinguish the sibling relationship from other family relations (Adler & Furman, 1988; Furman & Buhrmester, 1985b; Hartup, 1989). Family constellation may define the sibling dyad however, its effects may also exert their impact on the sibling relationship via other family subsystems such as the parent-child relationship.

Researchers have begun to call for the examination of the 'relations among relations' of the child's social experiences (Adler & Furman, 1988; Dunn, 1988b; Hartup, 1979; Lamb, 1982). A basic premise of this research is that the developmental significance of relationships is best understood when the unit of analysis becomes the relationship rather than the individual (Hinde, 1979, 1987; Stevenson-Hinde, 1988). Focusing on a single relationship fails to illuminate the multiple influences on a child's socio-emotional development (Adler & Furman, 1988; Park & Waters, 1988). Indeed, relationships function as a context in which learning occurs (Hays, 1985) and are also a source of knowledge about social roles (Park & Waters, 1988). In this respect, they are related to current behaviour, and also serve to mediate socialization outcomes (Waters, Hay & Richters, 1986).

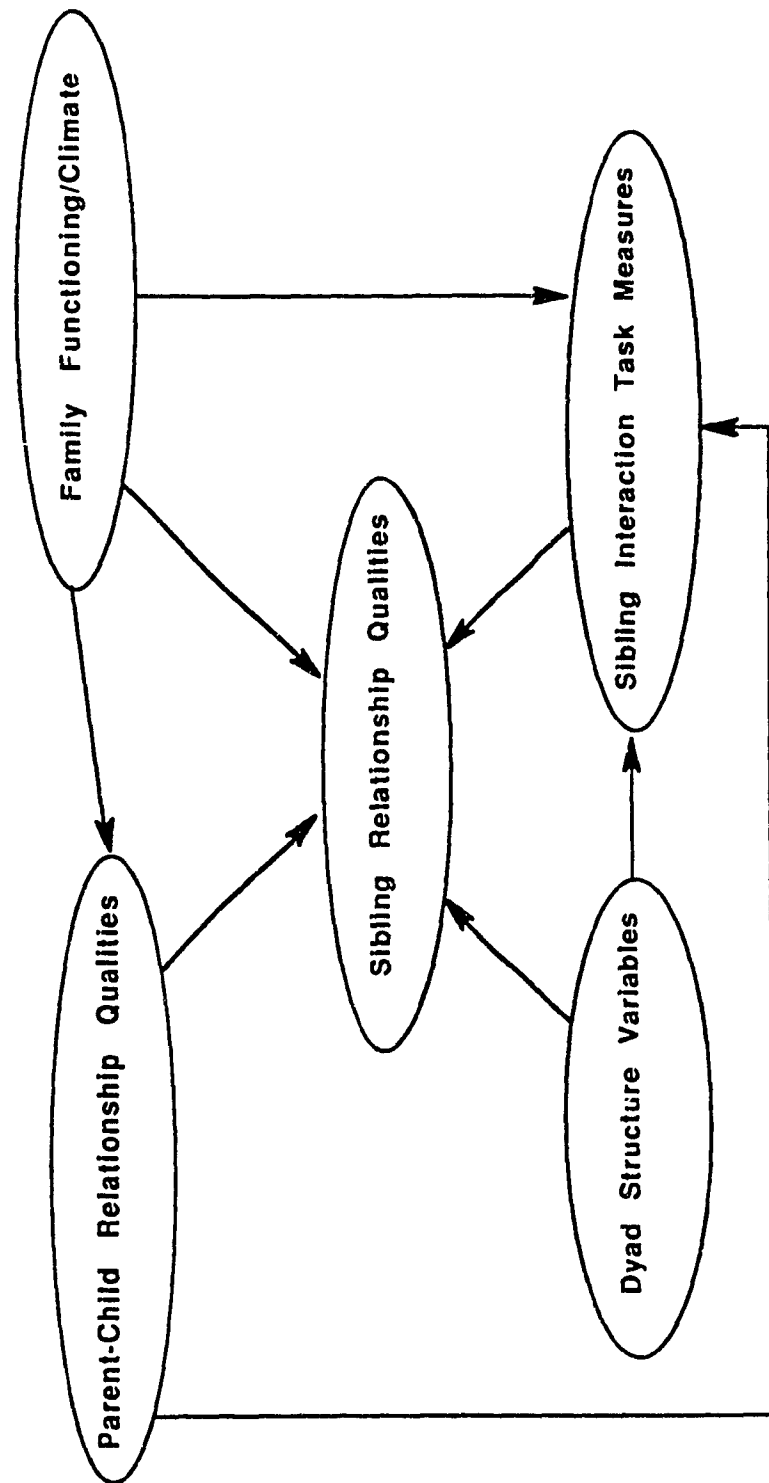
The family is a context in which there are several related relationships. Embedded within the family there is a constellation of subsystems, (spouse-spouse, child-parent, and sibling-sibling) that operate semi-independently within the family



structure. Schvaneveldt and Ihinger (1979) in their analysis of sibling interactions and interdependence declared the importance of considering families as systems and conceptualizing the sibling relationship within the context of the larger family system.

Building upon previous research the present study was guided by two underlying goals. The first goal involved examination of the qualities of the sibling relationship during middle childhood and investigating how these qualities are not only related to the sibling dyad constellation variables, but also to measures of the intra- and interpersonal experience of the sibling relationship. Secondly, based on the premise that the family may influence the development of children's relations both within and outside of the immediate family, the associations between features of the family system and the quality of the sibling relationship were investigated. Figure 1 presents a diagram of the model illustrating the proposed interconnected features of relationships that formed the basis for this investigation. The model consists of associations between the qualities of the sibling relationship and: (a) the structural characteristics (birth order, age, sex and age spacing) of the sibling dyad; (b) behavioural, social and affective measures of sibling interaction; (c) measures of family climate and; (d) those family climate effects on the sibling relationship which are mediated through the characteristics of the parent-child relationship. The major focus of the following literature review is on presenting a survey of the literature on the qualities of sibling relationships and what influences these qualities, in particular, the family processes and variables that may underlie the quality of sibling relationships during middle childhood.

Figure 1. Proposed Model of the Family Environment Influences on the Qualities of the Sibling Relationship.



## LITERATURE REVIEW

### A Historical Perspective on the Sibling Relationship

Research on siblings is almost as old as the science of psychology itself. Sir Francis Galton conducted the first studies on siblings (Galton, 1874). In his book titled English Men of Science, Galton showed how first born children exceeded both non-first borns and chance expectation in becoming Fellows of the Royal Society; in appearing in the Dictionary of National Biography (the predecessor to the current Who's who?), professors, men of letters, Rhodes Scholars, scientists, and having I.Q's in the top one percent. Thus, early sibling relationship research was dominated by studies examining eminence, scholarship and birth order (see also Altus, 1965; Sutton-Smith & Rosenberg, 1970; Zajonc, 1975; Zajonc & Markus, 1975).

One of the most important contributors to the early study of sibling relations was Alfred Adler. He was the first social scientist to make explicit claims about the effects of being born in different sibling positions and also the first to use sibling differences for explanatory purposes in describing personality development (Adler 1928, 1959). A product of Adler's theories that has dominated theoretical and empirical thought on siblings was the focus on rivalry for parental love and attention during early childhood. Clinical reports have also seen rivalry between siblings for parental affection and attention as a major influence on personality (Burlingham & Freud, 1944; Levy, 1934, 1937; Winnicott, 1977).

### The Importance of the Sibling Relationship

Still - whether one celebrates or denies the sibling bond-as long as one has a brother or sister alive, there is always another human being who has known one as a child, who has experienced one in a unique and intimate way over which one has little control, who has been a mirror, however distorted, of one's childhood and youth - someone, in short, who has been a child of, and has shared the same parents (p. 366; Bank & Kahn, 1982)

Like many other relationships, the sibling relationship is a powerful experience and one that most of us experience during our lifetime. Although in our Western culture we have many other rituals and transitional periods that denote important changes between children and their parents, the sibling relationship is ignored. There are no church or synagogue rituals that celebrate sibling bonds, nor legal means to make or break them (Roberts, 1982). Siblings do not choose to be with one another, nor do they directly play a role in their inception. Nonetheless, siblings are important members of the child's social world (Furman & Buhrmester, 1982, 1985b; Hartup, 1979). It is conceivable that in the interactions with our brothers and sisters, our siblings, that we acquire many social and cognitive skills that are developmentally important (Bank & Kahn, 1982; Bryant, 1982; Dunn & Kendrick, 1982; Lamb & Sutton-Smith, 1982). The emotional ties between siblings are second in strength only to those between parents and children (Irish, 1964). Siblings share a common genetic and cultural heritage as well as common early experiences (Cicirelli, 1982). Siblings provide a continuing permanent relationship and exert considerable influence over each other through lifelong interactions (Bedford, 1989c,d, 1990; Cicirelli, 1980; Powell & Ogle, 1985; Pulakos, 1987, 1989).

Sibling interactions have been identified as contributing to childhood socialization as they provide an opportunity for experience in both vertical and horizontal relationships. Hartup (1989) defines vertical relationships as those characterised by power, nurturance, and dependence. These relationships are typically those in which the dyad is comprised of a child and adult. Horizontal relationships are those in which there is equal power, reciprocity, and egalitarian expectations, such as those usually found between children. Sibling relationships are more egalitarian than the hierarchical parent-child relationship and thus, resemble peer interaction.

This distinction between adult-child and child-child relationships has been discussed by different researchers, sometimes employing different terms to describe the features of each relationship. For example, Dunn (1983) has described sibling relationships in terms of reciprocal versus complementary characteristics (see also Youniss, 1980). Despite the differences in terminology, investigators agree that the quality of these relationships can affect the child in enduring ways.

#### Middle Childhood as a Context for Sibling Relationships

In general, most of the literature on sibling relations covers the period of early childhood emphasising the commonly accepted belief that this period is the most salient for sibling influence on development. Many of these studies were conducted to examine the child's reaction to the birth of their sibling (e.g., Dunn & Kendrick, 1982; Dunn, Kendrick & MacNamee, 1981; for a review see Vandell, 1987). The general conclusion from these studies is that the stage is set by the child's emotional reaction to the new baby. The influence of the sibling relationship begins even before

birth in the anticipation of the new sibling and availability of the parents (Lamb & Sutton-Smith, 1982). Thus, within the first four years the sibling becomes an important influence for both first-born and later-born children (Dunn, 1985).

Relative to the abundance of empirical work that examines the developmental period of early childhood, the periods of middle childhood and early adolescence have remained neglected by researchers. This is surprising as middle childhood is a period of active social and emotional development (Scarr, 1979; Sullivan, 1953). Bryant (1982) stated that during this important developmental period children are actively engaged with their siblings, struggling to manage sibling interaction and are effectively attuned to their social status within a variety of contexts (e.g., family, school, home, and neighbourhoods) with siblings playing important roles. During middle childhood social and affective phenomena are integrated such that dramatic advances in social understanding (Bryan, 1975) and interpersonal problem-solving (Breger, 1974) are made possible. Middle childhood's developmental importance lies in its function as a period of transition between early childhood, in which children are intensely involved with adult caretaking figures, and early adolescence in which children are developing broader, more egalitarian social networks characteristic of adult interpersonal relations (Adler, 1928, 1959; Hartup, 1979; Vandell, Minnett & Santrock, 1987). Wherever possible, discussion and analysis of the literature will concentrate on findings from studies examining the qualities of the sibling relationship during middle childhood.

## Influences on the Qualities of the Sibling Relationship

### Age and Gender Related Differences in Sibling Relationship Qualities

Research on the sibling relationship qualities has been anticipated by investigators interested in the different behavioral roles that siblings occupy in relation to each other. By middle childhood, children's roles have been determined by the family and personality characteristics have been clearly established (Cicirelli, 1982). Siblings provide each other with a playmate, confidante, a teacher, someone to imitate and use as a guide for behaviour (Howe, Aquan-Assee, & Bukowski, in press; Lamb, 1978). Siblings provide a unique forum for social support (Powell & Ogle, 1985) and may fill in for distant or absent parents (Bank & Kahn, 1982). The roles and functions siblings serve for each other depends upon their age, sex, birth order (Dunn, 1988a; Lamb & Sutton-Smith, 1982; Scarr & Grajek, 1982), and these variables have been at the focus of psychological research for quite some time (see Adler, 1928). Interest in the effects of sibling dyad structure variables (e.g., family size, ordinal position, age spacing, etc.) on intelligence, creativity, achievement, personality and health has resulted in over 2000 research articles published by 1979 summarized by Wagner, Schubert and Schubert (1979). Comparatively less attention has been paid to describing qualities of sibling interaction and experience.

Age and gender differences and family constellation impose a differential status on each of the siblings. Interactions may be vertical (i.e., complementary, hierarchical relationships such as those between children and parents) or horizontal (i.e., reciprocal or relationships between equals such as friendships between peers) in

nature. Reciprocal features may promote trust and mutual understanding, whereas complementary features may facilitate opportunities for guidance and direction. For example, the older sibling may have a greater responsibility in the care and nurturance of their younger sibling and consequently the two siblings may differ in the status and power they have in the relationship (e.g., Weisner & Gallimore, 1977).

Behavioural observations of sibling interaction. A glance at the extant literature indicates that the preponderance of knowledge about sibling interaction has come from observational studies of children. In these studies attention has been paid to the association between family structure (e.g. birth order, sex and spacing of siblings) and sibling interaction.

In a series of observational studies that examined the sibling interactions of school age children (Brody, Stoneman & MacKinnon, 1982; Brody, Stoneman, MacKinnon, & MacKinnon, 1985; Stoneman, Brody & MacKinnon, 1984), results revealed that the older sibling of a same-sex dyad was more often in roles of the manager and teacher than the younger sibling. Similarly, teaching, modelling and helping has been observed in first-born children with their younger sibling (Bryant & Crockenberg, 1980; Dunn & Kendrick, 1982; Irish, 1964; Sutton-Smith & Rosenberg, 1970).

Minnett, Vandell, and Santrock (1983) observed 73 pairs of siblings in the schools and focused on the 7 to 8-year-old firstborn siblings. The sibling pairs participated in unstructured, cooperative, and competitive contests. Similar to the findings above, the authors found that firstborn siblings were significantly more likely than their younger siblings to use praise, to teach and to display more dominant



behaviours. In addition to describing the roles siblings occupy within the family and for one another, studies have observed sibling interaction focusing on prosocial and agonistic behaviours.

In an attempt to characterize the processes involved in the sibling relationship Summers (1987) conducted a meta-analysis using 24 studies related to sibling interaction and analyzed them using four dimensions: prosocial behaviour, agonism, imitation and dominance. Similar to conclusions presented about sibling roles she found that the older child was dominant within the sibling relationship. Birth order and age spacing were also significant variables. Agonism was greater in closely spaced dyads and conversely, prosocial behaviour was greater in wide spaced dyads. She also noted that males were more often agonistic with their siblings, whereas females were more prosocial with their siblings highlighting the importance of gender variables in predicting behaviour with siblings. Gender composition of the dyads was also seen to be important in that children in same-sex dyads were more agonistic towards one another but also imitated each other more. These results provided an interesting framework in which sibling relations could be characterized in terms of these four dimensions. One criticism of this work is that it did not select the samples for study controlling for the age of the sample. Studies of adolescents were analyzed alongside studies of preschoolers. While important consistencies among the ages can be drawn from the results, a more selective approach is needed to take account of differences in sibling relationships during different developmental periods.

One would intuitively expect that there would be changes in the qualities of the sibling relationship with age. Abramovitch, Corter and Lando (1979), Abramovitch, Corter, and Pepler (1980) and Pepler, Abramovitch, and Corter (1981) conducted a series of studies in which they observed preschool-age siblings to determine how sibling relationships may influence social development. A consistent finding that was replicated at each of the time periods was that sex of the child and sibling, and age differences in dyads made little or no difference in the social interactions of the preschool sibling pairs. Similar results were found by Dunn and Munn (1986b) in their study of preschool children interacting with their siblings. This contrasts with findings from a study conducted by Minnett, Vandell and Santrock (1983). They observed more positive behaviours between children (age 7-8 years) in sibling dyads that were widely spaced (3 to 4 years difference), while aggression appeared more common in closely spaced pairs (1 to 2 years difference). Although the results of these studies appear inconsistent, it is possible that changes in sibling interaction have occurred in the developmental span from early to middle childhood.

Studies using observation techniques with school age children have noted that structural properties of the dyad influenced sibling interaction at this period more so than during early childhood. Vandell, Minnett and Santrock (1987) examined the impact of age differences on sibling relationships by observing 73 sibling pairs between the ages of 4 and 11 at their schools. They found that with age, siblings became more equal in power and status. Positive emotional tone of the sibling interaction increased with age, however contrary to expectations, sibling conflict also

increased but it was relatively infrequent in all the age groups. Studies of sibling relations during adolescence and early adulthood have also shown that the relationship becomes more egalitarian and less asymmetrical in terms of power and status with age. Adolescents reported less intense relationships with their siblings compared to the reports of younger children about their siblings (Buhrmester & Furman, 1990).

Therefore, caution is necessary when interpreting results that draw broad generalizations from many studies. It is important to recognize the unique features that characterize the sibling relationship at each developmental period as well as trying to address the common features and qualities that distinguish this relationship from others. As previously mentioned, this study limited its focus to sibling relations during middle childhood in an attempt to portray the particular characteristics and features of sibling relations during this important developmental period.

Another criticism of inclusive studies and reviews such as Summers (1987) is that inasmuch as valuable information regarding sibling interaction has been derived from these studies, they did not evaluate the sibling relationship from the child's perspective. Of the 24 studies included in Summer's analysis, only three obtained the children's perceptions of their sibling relationship. Furman and Buhrmester (1985a,b) have emphasised that to examine the continuities among different relationships in the child's social network it is important to consider the child's perceptions of the relationship. In a similar vein, Hinde (1979) stated that to understand relationships fully it is necessary to not only gather behavioural information, but also cognitive and affective aspects, recognizing that they are inextricably woven together.

In contrast to the relatively large amount of information gleaned from behavioral observation of siblings, few studies have examined the sibling relationship from the perspective of the children participating in the dyad. The multifaceted nature of the sibling relationship needs to be focused on rather than isolating particular aspects of the relationship such as prosocial or agonistic behaviour. Knowledge of how children perceive and experience their sibling relationship is necessary to understand under what conditions particular behaviours or qualities are more frequent than others.

Self-report of sibling relationship qualities. A few investigators have begun to study siblings' own perceptions and attitudes toward each other. For example, Bowerman and Dobash (1974) examined the level of affect in adolescent sibling relations. They asked adolescents to rate the closeness of their relationship to their older brother or sister and to their younger brother or sister. Results indicated that females were more likely to have high affect toward siblings than males and that same-sex siblings also had a higher level of affect (see also Pulakos, 1987). They also found that on average, affect was higher toward older than younger siblings. Similar results were obtained by Montemayor and Hanson (1985) who interviewed adolescents by telephone about their sibling relations. They found that the teens had more arguments with same-sex siblings than opposite sex siblings. Although these are some of the few studies that actually ask children for their perceptions of their sibling relationship, the focus in both is narrow and again, little is known about children's perceptions during middle childhood.

A measure developed by Furman and Buhrmester (1985b) addressed some of

these criticisms. They compared children's relationships within their social network with the aim of developing a systematic framework for portraying the individual differences in the qualities of a child's relationships with others. They found that children seek different provisions from different individuals. Furman and Buhrmester (1985a) further extended this research to examine the qualities in sibling relations. They sampled perceptions of qualities of sibling relationships from children in grades five and six ranging in age from 11 to 13 years. They developed a questionnaire based on four main dimensions that characterised children's sibling relations: warmth/closeness, conflict, relative status and power, and rivalry. Results indicated that narrow spaced and same-sex dyads were greater in warmth and closeness. When children were the eldest in a wide-spaced dyads they reported engaging in greater amounts of nurturing behaviours and caretaking of the sibling. Children reported less admiration of their sibling when age spacing was narrow than when it was wide.

Stocker and McHale (1988) also used a questionnaire and interview procedure similar to Furman and Buhrmester's (1985a) with children in grades four and five. They found that larger age gaps between the siblings were associated with higher scores on affection and lower scores on hostility when the respondent was the older sibling. Whereas younger siblings within a large age gap dyad reported greater rivalry with their older sibling. Interestingly, there were no gender effects on the sibling relationship scales.

The findings from the above studies, using behavioural observation and self-report techniques at all ages demonstrate that the child's experiences with siblings is partially

determined by the child's standing in the family constellation and by other age and gender related variables. While there may be broad stereotypes regarding the effects of these variables on individuals (cf. Adler, 1959), if one adopts a relationship perspective, it is clear that sibling relations may differ even within similar family constellations. Individual differences within any particular type of family constellation seem to be the rule and not the exception (Furman & Buhrmester, 1985a). Therefore, structural variables alone are unlikely to be the primary determinants of sibling relationship quality. An exhaustive listing of factors that may influence the quality of the sibling relationship is probably an unrealistic task given the range of variables that potentially influence child development, however, there are some variables (e.g., the frequency that sibling choose to interact with one another, how similar they are and the affective perceptions of the relationship) that may have unique significance in determining the sibling experience.

#### Sibling Access or Interaction Frequency

The degree of access or the interaction frequency the child has with her/his siblings may play a role in influencing the qualities experienced in the sibling relationship. Bank and Kahn (1982) proposed that current social changes may result in greater levels of sibling contact and emotional interdependence. They called attention to seven factors increasing sibling relevance: decreasing family size, longer life spans, geographic mobility of families, frequent divorce and remarriage, maternal employment and alternate sources of child care, competitive pressures from society to use siblings as yardsticks for performance and stress and parental inaccessibility or

emotional absence. Bank and Kahn (1982) noted that the earlier sibling access is established the more intense the sibling bond,

children are growing up in a vastly more complex world than did their grandparents - a world where opportunities for contact, constancy, and permanency are rare. Children are biologically propelled by these vital needs ... to turn for satisfaction to any accessible person. In a worried, mobile, small family, high stress, fast-paced, parent absent America, that person can be a brother or a sister (p. 15)

Children spend a surprisingly large amount of time (over 80% with members of their immediate family (Bloch, 1978; McGuire, 1991). Interestingly, a study of preschool children interacting with their parents and infant siblings found that children preferred interaction with their parents than with siblings (Lamb, 1978). One context of interaction is household chores or care of younger siblings. Bryant (1985) found that less than 25% of her sample of children performed any specific chore with their sibling, that is, there were no chores identified as sibling chores to be done together. In our culture children are less likely to be "in charge" of their siblings as compared to other cultures (Weisner & Gallimore, 1977). Sutton-Smith and Rosenberg (1970) found that one half of children in their sample reported that involvement in games was central to their experience of having fun with their siblings. Siblings usually engaged in passive play together (e.g., watching television together) whereas, active play involved their peers (McGuire, 1991). Gender differences have also been noted in sibling interaction. Bloch (1987) found that by age 5 to 6 years, boys were spending less time with their sisters and mixed-sex groups than girls were. Therefore, sibling interaction appears to be generally recreational and non-task

oriented. Structural variables may influence the interaction frequency of siblings. However, the extent of sibling interaction has not been well documented nor have associations between interaction frequency and relationship qualities been investigated. Missing from the literature on sibling relations are studies documenting how sibling access may influence the relationship tone. To complete the picture of the sibling experience, information is needed on psychological dimensions such as how siblings are similar or different and how they affectively experience this relationship.

#### Sibling "Deidentification"

Pfouts (1976) has described the sibling bond as volatile and stressful because it is characterised by ambivalence. Love and hate are commonly depicted as the two sides of the sibling relationship. A striking finding in the field of behavioural genetics is that siblings tend to be almost as different from each other as are children from different families in personality, intellectual development and psychopathology, despite the shared aspects of their home, school and community environments (Rowe & Plomin, 1981; Scarr & Grajek, 1982). One phenomena that may contribute to an understanding of why siblings can be so dissimilar is that siblings define themselves as different from one another and so do their parents (e.g., the easy child versus the difficult child; the active versus the passive child; Dunn, 1985; Schacter & Stone, 1987). By expressing themselves in different ways and in different spheres, conflicts are more manageable as siblings need not defend their turf against incursions from the other. Once in place, differences are reinforced and amplified (Bank & Kahn, 1982).

It is possible that many children have ambivalent feelings about their sibling



(Buhler, 1939). Psychoanalytic theory has focused on the theme of rivalry to explain sibling conflict. Adler (1924) wrote that personality differences among siblings are an expression of underlying sense of competition. Rivalry is defined as the competition between siblings for parental recognition and attention and a process whereby each child begins to define their individual identity (Pfouts, 1976). Following a psychoanalytic path, researchers interested in social comparison processes have argued that siblings experience themselves as different from one another ("deidentified") by the beginning of middle childhood (age 6) and that this is a defensive manoeuvre to guard against unpleasant emotions associated with competition and rivalry (Schacter, Gilutz, Shore, & Adler, 1978). They found that same-sex siblings who were the first two children in a family demonstrated the most deidentification. They further proposed that sibling deidentification mitigates sibling rivalry as these are the conditions under which social comparison and rivalry are expected to be the most intense. Same-sex siblings are more likely to compete or be compared because of the common core of shared attributes more so than opposite-sex siblings (Schacter & Stone, 1987). Bigner (1974b) reported that closely spaced, same-sex siblings were more ambivalent than other dyad combinations. Similarly, the first two children in a family are more likely to be rivalrous than other sibling pairs since competition, comparison and conflict are present in their relationship longer than in the others.

One view is that middle childhood is the period in which sibling rivalry is resolved by way of the deidentification process. Bank and Kahn (1982) discussed extreme deidentification as a process by which siblings deny any similarities between

them and disown the relationship. The sibling relationship is thus characterised as distant and rejecting. These authors stated that rejection between such siblings often results from family identification of one sibling as strong or good and the other as weak or bad. Schacter and Stone (1987) suggested that via deidentification, negative feelings abate and the bond between the siblings is strengthened, however, they do not present data to support this point of view.

Although deidentification has been proposed as a normal process, there have been no studies of this concept. Moreover, research on sibling interaction presented above has shown that sibling conflict persists through middle childhood. Therefore, conclusions regarding the process by which siblings regard themselves as different or similar are tenuous as actual interactions may not be consistent with theories of sibling deidentification. Nevertheless, sibling deidentification may be a process that has direct relevance for the description of the qualities and functions of the sibling relationship. The present study attempted to examine this concept of deidentification between siblings. Just as perceptions sibling have of one another may influence the tone of their relationship, in the next paragraph the affective internal representations that siblings have about the sibling relationship is reviewed.

#### Affective Perceptions of the Sibling Relationship.

A final aspect of the intra-personal experience of the sibling relationship that has not been addressed in the literature on children's sibling relationships involves the affective perception of the qualities of sibling bond. The research of Furman and Buhrmester (1985a) demonstrated that elementary school age children were able to list

psychologically meaningful features of the sibling relationship. Research has also shown that as children develop they perceive their siblings as individuals, differentiated from the sibling context (Bigner, 1974a,b). However, the question remains as to how children directly experience and perceive their siblings? Bedford (1989b) used the term "symbolic relationship" (i.e., one that does not cease in the absence of contact) to describe the sibling relationship. The sibling relationship can also be portrayed as highly emotional and at first glance largely irrational (Bank & Kahn, 1982). As long as the focus of science is on examining behaviour rather than the impact of relationships and interactions with others, we will never be able to go beyond the objective and observable and capture the essence of the intra-personal experience of relationships (Hinde, 1979). Pfouts (1976) writes:

It is ironic that laymen more than family experts acknowledge the importance of the sibling bond, and that artists more than researchers have succeeded in capturing its essence. Since the beginning of history, the popular interest in sibling interaction had been reflected in fables, fairy tales, biblical accounts, plays and novels that vividly portray the characteristic sibling themes of power struggles, rivalry, solidarity, and ambivalence (p. 200).

The challenge in investigating relationships is to try and assess not only the behaviour but also the meaning or internal representations that the interactions have for them (Radke-Yarrow, Richters, & Wilson, 1988). Assessing how children experience themselves and their social worlds is a challenging task. The psychological dimensions of the sibling relationship have been mainly examined in the adult literature on sibling relations (e.g., Bedford, 1989a,b,c,d, 1990a,b; Cicirelli, 1989). Bedford (1989b) proposed that the psychological and behavioural aspects of sibling relationships are independent of one another. For example, siblings might not help

each other very often, yet remain in the background, ready to step in when needed and the quality of those instances might compensate for their relative infrequency.

Bedford (1986) argued that traditional methods of assessment have failed to tap the qualities of the sibling relationship to the fullest extent. To clarify issues of quality in the sibling relationship and to examine the underlying feelings individuals might have about their siblings, Bedford developed a projective technique called the Sibling Thematic Apperception Test (STAT). The STAT was an adaptation of Murray's TAT (1943) and was proposed as an alternative to the confounds of self-report and observational methods of data-gathering. She stated that it was efficient to administer and provided systematic data on the private sibling experiences and interpersonal "dynamics" of adults based on time-tested premises about projective processes. The underlying dimensions analyzed in the responses were separation, affiliation, and conflict. These theoretical dimensions were used as they appear as recurrent sibling themes in empirical studies, clinical reports, folklore and literature. An important methodological finding was that the frequency of any one theme did not predict the frequency of another in describing feelings about a sibling. Bedford concluded that her findings supported the proposition of Lowenthal, Thurnher and Chiriboga (1975) that positive and negative qualities of the sibling relationship are not necessarily opposite poles of a single dimension.

As stated previously, there is a relative dearth of studies conducted on the qualities of the sibling relationship, particularly in middle childhood. Studies that probe the psychological dimensions or affective qualities of sibling relations in

children are needed to explore the extent to which underlying feelings were associated with self-reported qualities or overt behaviour between siblings. Radke-Yarrow et al. (1988) used a projective technique (i.e., a set of pictures of ambiguous family interaction) to examine how children would interpret mother reactions in the scenes and compared this to the observed affective mother-child interaction. An important finding that underscored the usefulness of such a technique was that children who described a particular theme in the mother-child interaction (e.g., mother-as-punisher) were not themselves more negative when interacting in any of the contexts in which they were observed (i.e., they were not projecting their own negativity). Rather, their interpretation of the picture seemed to reflect accurately the levels of maternal negativity to which they had been exposed. Thus, this technique provided a means of accessing the child's images of the relationship they carry with them and contributed to an understanding of the child's actual experiences with the other member of the relationship.

#### Summary of the Literature on Sibling Relationship Qualities

The literature on the sibling relationship has been reviewed in an attempt to describe the sibling experience. In summary, the sibling relationship and interaction can be characterized by patterns of qualities and characteristics. Studies that have addressed observed roles or self-reported qualities of sibling relationships have shown that children's relationships with their siblings have a structural and functional dimension. These features may be a result of the amount of access or frequency of contact the siblings share, or the perceptions of differences or similarities they

perceive they have to each other. The intricacy of interaction in accounting for the effects of structural variables and other processes on the qualities of the sibling relationship can make interpretation difficult. Research has also neglected to examine the affective dimension of sibling relationships. The different methodologies and approaches to the study of the sibling bond already described provide pathways to sources of information about the sibling relationship and represent a first step in portraying the sibling relationship in middle childhood. What is needed are studies that examine sibling relationships from a broader context, incorporating information related to the different qualities and features associated with this very special relationship. Furthermore, studies are needed that examine the sibling relationship within the family context. Little is known about whether it is dependent or independent of the environment in which it develops.

#### The Family as a Context for Sibling Relationships

We are only beginning to understand the family's role in regulating relationships. Underlying theories of child development is the assumption that childhood experiences in the family have profound influences on the child's social development with others (Radke-Yarrow & Zahn-Waxler, 1986). Although the child, and consequently the sibling relation is a subsystem of the family system, researchers have not emphasized the 'embeddedness' of the child in the family as a social context (Bronfenbrenner, 1979; Oliveri & Reiss, 1981; Sroufe & Fleeson, 1988). Previous research has emphasized the parent-child (i.e., mother-child) dyad rather than examining the family as a system. However, more and more researchers have stated that to understand

what, and how familial factors influence the child's characteristics, the family must be conceptualised as a system of mutual influences and relationships (Belsky, 1981; Feiring & Lewis, 1978; Hinde, 1979; Minuchin, 1988). The role of any dyadic relationship can not be fully appreciated without adopting a broader perspective by placing the dyad into the larger framework of the child's family life (Lewis & Feiring, 1982). Very few studies have examined the contributory role of the family on the qualities of the sibling bond.

Furman and Buhrmester (1985a) proposed a model of the causes and consequences of the qualities of the sibling relationship. In this model they suggested that although family constellation variables play a role in determining the qualities of sibling relationship qualities, other factors also need to be considered. These factors are the quality of the parent-child relationship and the parent's management style of their children's relationships. They also suggested that the social, personality and cognitive characteristics of the child shape, and are shaped by the qualities of the child's relationships with siblings and parents. The current literature review examines the role of the family on sibling relations by: (1) reviewing and extending studies concerned with the mother-child relationship as an influence on the sibling relations, and (2) examining the various processes within the family unit that may influence the child's relations with other members of the system.

### Parent-Child Relations as Influences on the Sibling Relationship.

Dunn (1983) elaborated on the nature of the relationship between young siblings. She discussed sibling interaction in terms of "reciprocal" and "complementary" interaction. Dunn argued that the developmental significance of siblings is due to the reciprocal features of the relationship. Of less developmental significance are the sibling status variables, such as birth order, age and sex differences, which have been the focus of previous research. Dunn stated that these variables are related to the complementary features of the sibling relationship. She concluded that research into the individual differences between siblings must take account of the mutual influence of parental and sibling relationships, not solely sibling status variables.

In one of the first systematic observations of parent-child and sibling interaction, Lamb (1978) examined the behaviour of preschoolers and their toddler siblings. He noted that both children preferred interacting with their parents than with each other. Therefore, it is possible that child-child and adult-child relationships are not simply different but they are sources of two types of social understanding, each serving a different developmental function. Consistent with the dimension of vertical and horizontal relationships, Baskett and Johnson (1982) observed patterns of interaction that distinguished parent-child from child-child interactions. More positive behaviour was directed by children to their parents than to their siblings during home observations. Behaviour with parents was reciprocal, however, with siblings, the interaction style was coercive. The investigators concluded that parents function as socializing agents whereas with siblings, children learn how, when, and with whom to



use aversive control techniques. This is consistent with Patterson's (1986) analysis of how antisocial behaviour develops within the family. He proposed a "sibling-trainer" model in which disrupted or ineffective family management practices have permitted a child to learn antisocial behaviours. The sibling(s) becomes caught up in, and contribute directly to a coercive cycle that "trains" the socially aggressive individual.

The quality and type of relationship between mother and child appears to be influential in mediating young children's sibling relationships. Investigators have examined the influence of the mother on preschool children's interaction with infant siblings (e.g., Abramovitch, Corter & Lando, 1979; Abramovitch, Corter & Pepler, 1980; Abramovitch, Corter, Pepler & Stanhope, 1986; Pepler, Abramovitch & Corter, 1981; Berndt & Bulleit, 1985; Dunn & Munn, 1986a; Howe & Ross, 1990).

Parents as referees and intervening agents. It has been suggested that parental management of sibling conflicts is a key factor in influencing sibling relationship outcome. Parents are commonly held responsible for expressions of hostility or aggression between their children (Calladine & Calladine, 1979) and in fact, may contribute to sibling interaction by the manner in which they manage, that is, amplify or avoid conflicts (Bank & Kahn, 1982). Although both mothers and fathers are involved in the parenting, researchers have generally focused on the relation of maternal behaviour and mother-child relations as a contributor to harmonious or conflictual sibling relationships. The question driving many of these investigations is to what extent are the individual differences in the developing sibling relationship related to different forms of maternal response to sibling behaviour? There has been

little systematic theory of how sibling interaction is linked to mother's strategies and action (Kendrick & Dunn, 1983). One notable exception is Ihinger's (1975) theory of sibling conflict. She suggested that less challenge of parental norms and less conflict between siblings are both associated with parent referee behaviour. This parent behaviour is based on principles or rules which are verbally communicated in a consistent fashion to the children. Although her theory is limited to discussion of the parental referee role in sibling conflict, it provides a valuable framework from which investigations can explore and test these propositions.

A series of studies have examined how mothers act as mediators in family conversations about emotions and conflict (e.g., Dunn, Bretherton & Munn, 1987; Dunn & Munn, 1986a,b, 1987; Dunn & Kendrick, 1982; Howe & Ross, 1990). A thorough discussion of maternal correlates of young children's sibling interactions is beyond the scope of this paper, however, a brief summary of the findings and conclusions is as follows. Results from studies in this area have consistently shown that maternal involvement in conflicts between young siblings was associated with increased frequency of sibling conflict (see also Brody & Stoneman, 1987; Brody, Stoneman & Burke, 1987; Brody, Stoneman, & MacKinnon, 1986; Felson & Russo, 1988). Conversely, a maternal style of discussing rules and feelings contributed to the development of mature, prosocial forms of behaviour (Howe & Ross, 1990). For instance, second-born children showed more frequent prosocial behaviour toward their older siblings if, six months earlier, their mothers had talked about the feelings of their sibling, than children whose mothers had not discussed feelings in this way

(Dunn & Munn, 1986a; see also Dunn et al. 1991). Conversely, in families in which the mothers became involved in a high proportion of sibling conflict without including communication and discussion of other family members, there was a longer duration of conflict and a higher proportion of child physical aggression (Dunn & Kendrick, 1982). Some studies noted that more discussion of feeling states was directed toward girls than boys (Dunn, Bretherton & Munn, 1987). Dunn (1988a) suggested that maternal references that communicate or interpret family members' feelings may be one process linking mother-child and sibling relations within the family system. Thus, differential maternal socialization and interaction with her children during early childhood plays a role in determining the quality of the interaction of young siblings.

Maternal behaviour, child perspective-taking and sibling relations. The sensitivity with which children observe their mothers' behaviour suggests that the beginnings of social understanding are developed in the sibling relationship. The child learns about the rights of others, sharing and reciprocity gradually. They are shaped from an egocentric being into a social being. Dunn (1988a) argued that the discussion of feelings, actions, and intentions of each child with the other contribute to the relationship quality of siblings, especially during middle childhood and adolescence when children have powers of reflection about their own and others' behaviour. Even during the second year children can show mature powers of cooperation, sharing, comforting, conciliation, and teasing (Dunn & Munn, 1986b). Each of these abilities requires a degree of competence in social and affective perspective-taking (Dunn, 1988c).

The variability in perspective-taking ability may account for the considerable variability in how well young children get along within the family (Dunn & Kendrick, 1982; Stewart & Marvin, 1984). Howe and Ross (1990) observed preschool sibling pairs to study the relations between perspective-taking, friendly sibling relations and maternal socialization techniques. They established that positive sibling interactions were associated with child references to their younger sibling about feelings and skills and with measures of perspective-taking. However, a recurrent finding was that frequent interaction of mothers with either child, including conversations about babies' feelings were associated with poorer, less friendly sibling relations. These findings suggest that the development of perspective-taking occurs within the context of reciprocal interactions during play of young siblings rather than via the complementary exchanges with parents or where older siblings dominate or control the younger siblings behaviour, or are involved in caretaking behaviour of the sibling. Howe (1991) further reported that preschool children who were able to recognize internal states and direct comments to their younger sibling also engaged in more positive behaviour with their sibling. She noted that internal state language may be one way of regulating sibling interaction. Gender differences in perspective-taking were found by Dunn et al. (1991). They found that girls were more successful than boys at understanding feelings and using social discourse with their siblings.

In summary, maternal reference to communication and discussion of other family members facilitates positive sibling interaction whereas maternal intervention in sibling interaction may indirectly promote increased hostility and negative interaction.

Therefore, mothers may indirectly contribute to the development of social understanding and affective perspective-taking of children (see also Dunn, 1988c; Dunn et al., 1991). Further research is needed to investigate these processes and associations during middle childhood. The sibling relationship is an on-going interaction that is influenced not just at the arrival of a sibling and during the subsequent years in early childhood, but also by the interaction with each other as the children grow up together. Assuming a dynamic process that changes as the child grows and matures, researchers need to direct their attention to process that might also operate during middle childhood. As already noted, middle childhood is a transitional development period in which children begin to look beyond their immediate family network and establish peer and friendship bonds.

Effective perspective-taking skills are necessary for the transition towards, and maintenance of positive peer relations (e.g., Gnepp, 1989; Kurdek & Krile, 1982; Mannarino, 1976; McGuire & Weisz, 1982; Rubin, 1972). Many researchers have argued that perspective-taking develops in the context of peer interactions (e.g., Hartup, 1983; Piaget, 1932/65; Selman, 1980). The present study did not refute this notion but attempted to address the proposition that promotion of social understanding by the mother during early childhood may contribute to perspective-taking skills and, in turn, may be related to the qualities of the sibling relationship during middle childhood. As maternal behaviour has been shown to influence sibling interaction, the relations among relationship qualities of the parent-child and sibling relationships is discussed in the next section.

### Relations among Relationships

In the substantial body of research concerning parental influences on the child, one would expect to find research using a relationship approach (Radke-Yarrow, Richters, & Wilson, 1988). Investigations have focused primarily on behavioural interactions and have been less concerned with the child's perceptions and expectations of the parent-child relationship. An aspect considered in the present study is the child's attributions and feelings about the parent(s). Children may relate differently to different members of their families (Furman & Buhrmester, 1985b). Some children may have warm relations with their parents whereas they may perceive their sibling relationships to be primarily conflictual. Adler and Furman (1988) have argued that there are commonalities in the underlying dimensions of children's relations with others in their social network. They administered the Network of Relationships Inventory (Furman & Buhrmester, 1985b) to 195 grade 5 and 6 children. Although properties of sibling and parent-child relations had some superficial similarity, they were functionally very different. Dimensions of sibling relations fell into four categories: warmth/closeness, conflict, rivalry and relative status/power. Relationships with parents (mother or father) were also represented by four dimensions: warmth/closeness, egalitarian closeness, power/assertion/conflict, and protectiveness. The differences between the dimensions of the two types of relationships were discussed in light of the meaning they had in each relationship. For example, although a single dimension of conflict was derived for both relationships, the parent-child dimension included types of parental discipline as well

as quarrelling. Sibling relationship conflict was related to quarrelling, competition and antagonism. This study was unique in providing such a descriptive framework of relationship properties. Although many researchers have begun to consider the connections between relationships, especially within the family setting (e.g., Dunn, 1988a,b), extant literature on sibling relationships has yet to address how properties of one relationship may be associated with another. Comparisons of the similarities and differences among family relationships can be a fruitful means of examining how qualities of one relationship may be related to another within the larger family system.

#### Perceptions of Differential Family Environments

The evidence that children are responsive to the interaction between their mothers and their siblings suggests an additional process that links mother-child and sibling-child relationships. Dunn (1988b) suggested that it is not the absolute, but the relative affection, control, warmth or punitiveness that the mother shows towards each child that matters to the siblings. More conflictual and less amicable sibling relationships have been reported in families in which mothers were differentially affectionate, responsive, or controlling toward their children (Brody & Stoneman, 1987; Brody, Stoneman, & Burke, 1987; Brody, Stoneman & MacKinnon, 1986; Bryant & Crockenberg, 1980; Daniels, Dunn, Furstenberg, & Plomin, 1985; Hetherington, 1988; McHale & Gamble, 1987). Thus, children are very aware of the subtle differences that make up their sibling relationship (see also Dunn, 1988c). Moreover, findings have shown that children's perceptions of sibling relationships are more strongly related to family dynamics (i.e., indices of parental warmth and

hostility and parental differential treatment of the two siblings) than to the more traditionally studied family structure variables such as gender and birth order (Stocker, Dunn & Plomin, 1989; Stocker & McHale, 1988). Hence, growing up in the same family incorporates a different experience for each child.

Resemblance between siblings appears to be primarily a function of their genetic similarity, not their shared family environment; environmental factors make siblings in a family different, not similar to one another (Rowe & Plomin, 1981). Studies have shown that siblings have different perceptions of their family environment (Daniels, 1986; Daniels & Plomin, 1984). Daniels, Dunn, Furstenberg and Plomin (1985) interviewed 348 children (age 11-17), their sibling, and mother to investigate the influence of differential perceptions of family environment on child adjustment. They used parent and sibling reports to find systematic relationships between differences in siblings' behaviour and measured within family environmental influences. Nine environmental measures were developed: family cooperation, family stress, parental rule and chore expectations, maternal and paternal closeness, the child's say in decisions, sibling and peer friendliness. They found that differential maternal closeness, a say in family decisions, and differential sibling friendliness were associated with adjustment as rated by the sibling, parent and teacher of the child.

In an extension of Daniels et al.'s (1985) study, siblings' self-reports of the quality of differential within sibling and peer interactions were compared. Results indicated that variance in sibling personality difference scores were predicted by self-reported differential experience (Daniels, 1986). Thus, children experience their



family and consequently the sibling relationship in different ways. Although the examination of micro-environments within the family system is crucial to increase the understanding and explanation of developmental differences between siblings, this study's results explained only a small amount of the variance in sibling differences. Further research is necessary to expand the current focus on associations between family processes and individual differences in children's perceptions of their sibling relationships. What these studies do not address is how the larger family style may influence the perceived micro-environments within the family system.

#### Family Functioning and Sibling Interaction

Few studies have emphasized the embeddedness of the child in family relationships and family social contexts (Bronfenbrenner, 1979). Reviewers of this field have voiced their disappointment with the paucity of significant empirical evidence of family influences on the child (Maccoby & Martin, 1983). Hartup (1979) summed up the state of the literature almost a decade ago by stating, "Although the family is the most thoroughly studied of the social systems bearing on child development, our knowledge is uneven of the behavioural reciprocities existing within it (p. 944)." Hinde and Stevenson-Hinde (1987) advocated the use of a relationship approach in the study of developmental psychology. They argued that in the study of relationships the individual must be dealt with "not as an isolated entity but as a social being, formed by and forming part of a network of relationships which are crucial to its integrity..." (p. 1). The impact of family processes on family relationships such as sibling relations has also gone unnoticed. One area that may shed some light on how

family processes may influence relationships within the family occurs when families are under stress. Lanthier (1991) measured dimensions of life stress and qualities of sibling relations in adolescents. Results indicated that stress was generally negative for sibling relations, however, when major stressors occurred, such as death, illness or other family events, greater sibling warmth was reported. Bank and Kahn (1982) speculated that at times of stress siblings may use one another as sources of support.

The high incidence of divorce has prompted some researchers to investigate how family variables might affect sibling relationships. In one of the few studies of family system correlates of sibling behaviour, siblings' antagonistic behaviour was related to marital adjustment (Brody, Stoneman & Burke, 1987b); the greater the marital conflict, the more negative the siblings relationships. MacKinnon (1989) also identified important interactions between quality of spousal, parent-child and sibling interactions in divorced families. She found that dyads from divorced families containing an older male were more negative, more resistant, and less compliant than older female dyads from divorced families or older male dyads from married families. In the divorced families, the older sibling was more negative than their younger siblings, especially when interacting with younger sisters. The quality of the sibling relationship was also shown to be related to the quality of other relations within the family. Interestingly, the older sibling's prosocial behaviour was most associated with mothers' marital adjustment. Moreover, it was the quality of the spousal relationship more so than the marital status of the parents that predicted negative sibling interaction. Pre- and post-divorce reports of sibling relationship quality were

obtained in a sample of college students using retrospective and self-report measures (Zembar, Behrendt & Etz, 1991). They found that following divorce, changes in sibling relationships were usually regarded as positive even though subjects also reported that they argued more with their siblings. Subjects stated that they felt closer to their sibling post-divorce and had found their sibling to be supportive and a positive influence on their life.

Only one study to date has examined how family climate in non-distressed families may influence the nature of micro-family relations, in particular, sibling relationships. Pulakos (1990) gave 107 undergraduates questionnaires measuring perceptions of their family environment and sibling relationships. Dimensions of family support and opportunity to express feelings were related to feelings of closeness with the sibling.

In summary, findings from families under stress, as well as preliminary findings from "normal" families, indicate that the quality of the overall family system plays a significant role in determining quality of other relationships within the family system. It is possible that the sibling relationship may be independent of the processes that operate in the greater family system. Conversely, the direction of effect might flow from the sibling relationship towards determining the family climate. Family system theory stresses that influences are reciprocal. Furman and Buhrmester (1985a) included bidirectional pathways of effects in their proposed model of causes and consequences of the sibling relationship. Although the present study acknowledged the possibility of reciprocal effects, central to this study was the assumption that the

direction of effects is from the broader environment down to the micro-environments of the dyadic relationships and that it is unlikely that sibling relationship qualities are independent of the larger family functioning. Surprisingly, investigators have not explored how the family system affects the quality of sibling interactions. One explanation for the dearth of research in this important area is the lack of theoretical models to explain the effects that many of us understand as commonsense and that research in the past has been at a loss as how to measure family system processes.

#### Dimensions of Family Functioning or Family Climate

Relatively few models or theories have been proposed that elaborate on the influence of the larger family characteristics on the quality of relations within the family. Adler and Furman (1988) developed a model to describe how dysfunction in any relationship can be viewed as instances in which the quality of the relationship exceeds normal variation along one or more of three broad dimensions: warmth and closeness, conflict, and relative status and power. Although this is a valuable descriptive framework for categorizing relationships within the child's social network, the limitation of this model in explaining family relations is in its scope. The emphasis is on how one relationship compares to another and how such comparisons affect the quality of specific relationships. In fact, the authors suggested that to obtain a complete picture of the social network descriptions of dyadic relationships need to be supplemented with additional descriptions of the family as a whole.

The family as a unitary system has received increasing interest in the literature. Oliveri and Reiss (1981) argued for the importance of comparing families based on

their features as a unitary whole rather than focusing on component characteristics such as father's occupation, or marital status. They contended that factors intrinsic to the families as a whole are responsible for shaping and regulating family members' modes of perceiving and interacting within their social networks. Therefore, a comprehensive understanding of family relationships must take into account factors or processes inherent in each unique family system.

Minuchin (1974) has suggested that each family has a structure - an invisible set of demands that organizes the ways in which family members interact with each other. In a similar vein, Reiss (1981) outlined a model that specifies processes by which the family explores and interprets its immediate social environment. The model's primary focus is the role of shared family constructs in family interactions (see also Oliveri & Reiss, 1981; Reiss & Oliveri, 1983) and thus, will not be elaborated on in this paper. However, one of the premises of this model that has relevance to intra-system relationships is that each family can be characterised by the set of family members' underlying assumptions (working models) about the nature of the social environment. Reiss (1981) called this shared "theory" of how the social world works, the "family paradigm." He defined the "family paradigm" as a stable disposition or orientation governing the family's interpretation of any new situation and its behaviour in relation to it" (p. 393; Oliveri & Reiss, 1981). This construct of a "paradigm" clarifies family processes and modes of interaction, however, it is difficult to measure as it is rarely articulated and must be inferred from the family functioning.

Another important principle of family system theory is that the whole system is reflected in each sub-relationship (Minuchin, 1988; Sroufe & Fleeson, 1988). The premise is that relationships within the family are constrained by the organization of the whole such that characteristics of the individual relationships within the family will reflect the characteristics of the family context. That is, because the sibling relationship is embedded within the larger constellation of the family, the relationship that develops between siblings is largely determined by qualities of the family context.

#### Cohesion and Adaptability as Dimensions of Family Functioning

Two dimensions of family systems that characterise the style and dynamic organization of the family are cohesion and adaptability. Family cohesion refers to the "connectedness" (togetherness) among family members or the extent and degree of the emotional bonding that family members have toward one another. According to the conceptual model used here, extremely high cohesiveness represents "enmeshment" within the family network whereas extremely low cohesiveness represents "disengagement". This is a curvilinear function in which both extremes of the continuum are regarded as perilous to the development of social competence and adaptation in children. Highly cohesive or enmeshed systems are thought to promote the over-identification of family members with one another thus preventing differentiation and individuation. Individuals in enmeshed systems are characterised more frequently as pursuers who provoke distancing in others. They are also portrayed as those individuals with a high degree of emotional reactivity (e.g., anxiety, anger, guilt) in their interactions (e.g., Olson et al., 1983).

Although the closeness of enmeshed relationships may seem desirable, these relationships can be dysfunctional either by restricting the autonomy of individual family members or excluding other relationships. In contrast, disengaged families or those extremely low in cohesion, refer to systems in which there is unusually great autonomy. Individuals in these systems are thought to use more distancing than pursuing actions in their relationships. This situation results in limited commitment and low involvement of family members to one another and insecure attachments (Minuchin, 1974). Optimal family functioning is promoted by moderate levels of cohesiveness (Olson, 1979, 1980).

The other dimension of adaptability refers to the capacity of the family system to change its power structure, role relations and relationship rules in response to situational and developmental stress. In general, adaptability portrays characteristic ways of solving problems, coping with change, and accommodating to stress. Analogous to cohesion, the extreme levels of adaptability are considered to be hazardous to family functioning. Extremely high adaptability describes families with no clear social rules, erratic leadership and laissez-faire discipline; conditions that are "chaotic". As a result of their disorganized structure, these families are involved in endless negotiation, and sporadic, diffuse communication. The power structure in the family is confused and continually shifting from one member to another resulting in a large amount of irresponsibility. Conversely, extremely low adaptability typifies "rigid" families. These families are characterised by inflexible social rules, authoritarian modes of discipline, and the absence of negotiated problem-solving.

Individuals in these systems learn over-responsible, overdependent patterns of behaviour and interaction (e.g., Olson et al., 1983). Flexible relationships with moderate adaptability are thought to foster healthy psychosocial functioning in children (Hetherington & Martin, 1979). In a healthy family, the boundaries between individuals are clear but flexible (Adler & Furman, 1988; Lewis & Feiring, 1982).

The Circumplex Model of Family Functioning. These dimensions have been integrated into a circumplex model of family functioning by Olson, Russell, and Sprenkel (1979, 1980). This model enables one to identify 16 theoretical "types" of family systems. The 16 types can be broken down into three more general types according to their levels of cohesion and adaptability: Balanced, Midrange, and Extreme. "Balanced" systems have moderate levels on both dimensions. Balanced relationships involve successful negotiation and problem-solving among members, using cooperation and assertiveness without dominating or submitting unnecessarily. Individuals have power over themselves and learn to take responsibility for the self. Goals and needs are fair and effectively communicated. "Midrange" systems are those families who score in the extreme level for one of the dimensions (either high or low) and score in the moderate range for the other. "Extreme" families are classified as extreme when cohesiveness and adaptability are both in the extreme range (either both extremely high or low or in combination high and low). The central hypothesis derived from the model is that balanced families function more adequately than extreme families. This means that too little or too much cohesion or adaptability is dysfunctional to the family system and families that can balance



between these two extremes seem to function more adequately.

A number of studies have demonstrated the validity of these dimensions of cohesion and adaptability to characterise family functioning. For example, Smets and Hartup (1988) showed that families in the balanced range had children with fewer symptoms of problem behaviours than midrange or extreme families. The child's level of self-esteem did not moderate the relation between system and symptoms, but was independently related to family functioning. Findings from another study showed that families in which cohesion was rated as low had adolescents who demonstrated more symptoms of stress even in the absence of negative life events (Walker & Greene, 1987). The authors concluded that lack of cohesion in itself may be a stressor. For a complete review of studies that validate the circumplex model the reader is referred to Olson (1982, 1980).

#### Sibling Relationships and the Circumplex Model of Family Functioning

Middle childhood is a period in which parent-child relationships are "co-regulated" (Maccoby & Martin, 1983), as parents try out new patterns of supervision and support. Children are allowed greater independence from the family but are encouraged to seek support when necessary. Similarly, children are negotiating their own social competence outside of the family within their peer networks, while still depending upon the family for support and guidance. Thus, parents and children are involved in continuing negotiations to work out their co-regulated system as smoothly as possible. Family systems that are insensitive to this delicate balance should have an especially difficult time during this period.

Although the Olson et al.'s (1979, 1980, 1983) circumplex model has been used as a framework for describing family functioning in clinical samples, there have been few investigations that attempted to use the dimensions of cohesion and adaptability as determinants of family subsystem relationships. The sub-system at the focus of this project is the sibling system. The circumplex model provides a multi-trait assessment based on the central dimensions of cohesion and adaptability. Although there are other traits that characterise family system functioning, these two dimensions provide a foundation and central core of this relationship system. These constructs can also be integrated with Reiss's (1981) notion of a family paradigm. Based on the premise of the circumplex model, measurement of a family's location along each of these dimensions can predict its experience and behaviour in social interactions. Thus, these dimensions may be a means of measuring an aspect of the family paradigm.

### Summary of the Literature Review

This review of the literature has examined findings from research on sibling relationships. The study of sibling relationships has been around for nearly as long as psychology has been a science. The preponderance of research on siblings has focused on achievement, adjustment and behavioural interaction as consequences of structural variables, such as, age differences, birth order and gender variables defining the dyad. Although this work has been fruitful in contributing to psychological theory, the current drive in sibling research is to understand better the multifaceted nature of the sibling relationship. Research has shown that qualities such as warmth/closeness, conflict, and relative status and power differ in systematic ways depending upon the structural aspects of the sibling dyad. However, also beginning to be recognized that constellations variables are not the primary determinants of individual differences in sibling relations.

Other processes proposed as influencing sibling interaction are the interaction frequency or access siblings have with each other and processes of sibling deidentification. Studies using behavioural observations of preschool children have shown how maternal behaviour can have important negative and positive effects on sibling interaction. Finally, this review noted that despite the obvious importance of the family environment in promoting psychological health in children, this is an area that has been relatively ignored by research on sibling relations. Two features of family functioning, cohesion and adaptability, were discussed as possible contributors to the quality of sibling relations within the family system.

## STATEMENT OF PURPOSE

This project constituted an investigation of the qualities of the sibling relationship as they relate to aspects of the family system, namely, family functioning, quality of the parent-child relationships, and structural properties of the sibling dyad. No study has attempted to examine the multi-faceted nature of the family environment as a whole, nor whether there are systematic patterns in the inter-relations among the child's family relationships that may impinge on the sibling relationship. The present investigation extended past findings from early childhood to examine the processes involved in sibling relationships during middle childhood. Moreover, this study adopted a systems perspective in its approach to the influences on the sibling relationship by recognizing the contiguous impact of structural properties of the sibling dyad, the importance of the larger family dynamics and style, as well as the qualities of the relationship the child has with each parent, as mediating variables on the qualities of the sibling relationship. A systems approach is valuable because it allows for a holistic conceptualisation of the relationships within the family and the impact of the system upon these subsystems.

In contrast to the bulk of the literature which has focused on the observable features of sibling interaction during early childhood, the present investigation looked at the consistency and continuity among features and qualities of the sibling relationship obtained using a multi-method perspective. Furman and Buhrmester (1985b) began the process of developing a framework of relationship qualities and postulating a model of influences on the sibling relationship. Their work provides the

base from which this project expanded upon ideas regarding the influences on sibling relationship qualities and interaction.

The value of this study is in the comprehensive approach to data collection that was adopted. In this project, information gained from the child self-report questionnaires were supplemented by data from multiple sources. The sibling relationship qualities that were focused on in this study are those already described above (Adler & Furman, 1988; Furman & Buhrmester, 1985a,b). Specifically, these dimensions were warmth and closeness, conflict, status and power and rivalry.

Other sources of information on the quality of the sibling bond were derived from observations of the child's performance on an experimental task that allowed for competitive or cooperative behaviour, self-report of the interaction frequency with the sibling and measures of sibling deidentification. Underlying feelings and affective information regarding the sibling relationship were explored using a projective technique. In contrast to self-report questionnaires, projective tasks offer few cues and as such, the child's responses are more likely to be determined by their own views and concepts. Thus, inferences about the character of the sibling bond can be drawn from the performance on this task and compared with the more direct self-report data. As noted from the review, missing in current literature are comparisons of the child's perceptions of qualities among their relationship with primary caretakers (i.e., parents), and their siblings. To maintain as much comparability between measures of relationship qualities as possible, parent-child relationship qualities were obtained from self-report measures similar in format to that of the sibling relationship

measure. Maternal discussion of feelings with children appears to provide an indirect influence on the development of social understanding. Therefore, perspective-taking ability was also measured.

Following from the discussion of how the influence of family processes on sibling relationships, family functioning (i.e., family climate) was measured using the dimensions of cohesion and adaptability described above. Parent reports of family functioning were used with the child's perceptions of other aspects of family climate using self-report questionnaires.

The above features and dimensions of family environment influences on the sibling relationship by no means exhaust the possible causes and consequences of family system influences on the sibling relationship, however, they do address areas of influence that have been overlooked or ignored by researchers in the past. Given the methodological variety of this study, and dearth of systematic, consistent, empirically derived findings or theories that address the causes and consequences of the configuration of qualities found in the sibling relationship, this was an exploratory study. The nature of this study therefore precluded rigorous hypothesis testing. Instead, the associations between qualities of the sibling relationship with the aspects of the environment previously shown to be influential in a child's social development were explored. The measures of family functioning, the quality of parent-child relationships, and structural properties of the sibling dyad were hypothesized to be related to the multifaceted qualities of the sibling relationship as described by the following research questions and depicted in the proposed model (Figure 1).

## RESEARCH QUESTIONS AND HYPOTHESES

The first set of research questions and hypotheses examined the associations among structural, self-report and features of the sibling interaction.

Question 1. It was expected that structural variables would be related to this sample's sibling relationship qualities in a manner similar to that found by previous investigators. In keeping with past research it was predicted that: (a) girls and same-sex siblings would report more warmth and closeness and less conflict in their sibling relationship; (b) siblings close in age would report more conflict; and (c) older children would perceive more status and power relative to their sibling.

Question 2. In an extension of past findings, the associations of structural variables with the other measures of the sibling bond, that is, rivalrous or competitive behaviour, interaction frequency, perspective-taking ability, sibling deidentification and the child's responses to a "projective" task using images of sibling and family interaction will be examined. Furthermore, the associations among the sibling relationship qualities and variables measuring features of the sibling relationship were examined. Although specific hypotheses for each of the structural and relationship quality variables with the measures of sibling interaction and perceptions were exploratory, some patterns of results were expected for each of the tasks:

- i - Perspective-taking Based on the notion that sensitivity to intentions, feelings and actions of others is central to the development of social understanding and positive relations with others, children who described their sibling relations as warm and close were expected to have strong perspective-taking skills.

- ii - Story-telling task Children's self-reported sibling relationship qualities were expected to predict the qualitative themes coded from their stories to the images of sibling interaction. By assuming that when the child has been given few cues, the responses on 'projective' techniques are more likely to be determined by his/her own views and concepts of sibling relationships, it was predicted that the self-reported qualities and the affective themes coded from the children's stories would converge. Positive sibling relationships would correspond to themes of affiliation in the children's stories whereas, negative perceptions of the actual sibling relationship would correspond to themes of conflict and separation in the children's stories.
- iii- Rivalrous versus nonrivalrous behaviour Children's behaviour towards their sibling observed during a game in which children can choose to play in either a cooperative or rivalrous/competitive manner, was expected to correspond to their perceptions of the qualities that make up their sibling relationship and also to be related to gender variables. Boys were expected to be more rivalrous/competitive than girls. Children from sibling relations characterized as warm and close were not expected to engage in competitive behaviour, rather, it was predicted that they would make more cooperative or sharing choices on the marble game. Conversely, perceptions of conflictual or rivalrous sibling relationships were hypothesized to be associated with competitive or rivalrous game behaviour.



- iv - Interaction frequency Children from same-sex and closely spaced pairs were expected to choose to interact with their sibling more often. Furthermore, the more warmth/closeness perceived in the relationship, the more likely children were to seek out this sibling as a companion whereas, children from sibling relationships described as conflictual were less likely to seek out their siblings as interaction partners.
- v - Sibling deidentification Finally, following from theory of sibling deidentification, same-sex, closely spaced children were expected to perceive themselves as different from one another and also report less conflict in their relations. If deidentification is a search for separate identities, children who perceived themselves as similar to their sibling were predicted to express a desire to change their relationship and become different from the sibling rather than stay the same.

The following research questions and hypotheses explored the links between family functioning, parent-child and sibling relationship qualities and features of interaction.

Question 3. Consistent with the discussion of family influences on relations and the Circumplex Model, qualities of sibling relationships were expected to differ as a function of family functioning/climate. Positive sibling relations were expected to be observed in families characterised as moderately cohesive and flexible in their family relations. Conflictual sibling relations were expected to be associated with families were rated as dysfunctional in terms of their cohesion or adaptability (i.e., lacked cohesion and who fell at either of the extreme ends of the adaptability dimension).

Family functioning was also expected to be related to the other measures of sibling relations and interaction however, specific hypotheses regarding the direction of effects were not proposed as this was an exploratory question. One exception was that characteristics of family functioning was expected to be reflected in the stories children generated to scenes of family interaction.

Question 4. Consistent with the discussion of family systems and the framework for characterizing family relations proposed by Adler and Furman (1988), the perceived qualities of the parent-child relationship were hypothesized to reflect the perceived qualities of the sibling relationship. Thus, children who reported conflictual parent-child relations were also expected to describe having conflictual sibling relationships. Similarly, parent-child relationships described as positive and affectionate would be associated with similar qualities in the sibling relationship.

Parent-child relationship qualities were predicted to be related to the behavioral, social and affective measures of the sibling relationship however, hypotheses regarding specific directions of results were not offered due to the exploratory nature of the research.

Question 5. As the parent-child relationship is also a subsystem of the family system, family functioning was expected to contribute to the perceived qualities of the parent-child relationship.

## METHOD

### Subjects

Participants in this study were English-speaking children from grades 4, 5 and 6 ( $N = 188$ , 85 boys and 103 girls,  $M = 10.47$  years,  $SD = .99$ ), representing over 93% of the potential pool of subjects at two elementary schools. Each child received parental permission to participate (Appendix A presents the introductory letter and parent and child consent forms). The study consisted of two parts. Part one was a group testing in which all subjects with a sibling ( $N = 175$ ) participated. Part two was an individual interview in which 102 children took part (64 girls and 38 boys,  $M = 10.43$  years,  $SD = 1.07$ ). The target sibling was the sibling identified as the closest-in-age to the child as this sibling is most likely to have had: (a) the greatest access to the target child (Bank & Kahn, 1982), and (b) a highly charged relationship (i.e., potential for both positive and negative experiences; Furman & Buhrmester, 1985b; Tesser, 1980). Therefore, bias as to the emotional tone of the sibling relationship was minimized. Sibling age ranged from 1 year to 25 years old ( $M = 11.18$  years,  $SD = 3.9$ ) with 75% of the sibling ages were relatively evenly distributed within the range of 7 to 14 years. 41 children had a younger sibling and 59 children had an older sibling. 101 parents of the sample of 102 children agreed to complete questionnaires as part of the study. Selected characteristics of the subjects participating at both testing sessions appear in Table 1. Chi-square analyses revealed no significant differences between the initial ( $N = 175$ ) and the final ( $N = 102$ ) sample of child participants based on sex of child and sibling, gender composition of

Table 1  
Selected Characteristics of the Total Sample (N=102)

Variable	Level	Frequency	Percent <sup>a</sup>
Age of Child	8	1	1.0
	9	26	25.5
	10	26	25.5
	11	37	36.3
	12	13	12.8
	13	2	2.0
Gender of Child	Female	64	62.8
	Male	38	37.2
Grade of Child	4	34	33.3
	5	32	31.4
	6	36	35.3
Dyad Gender Composition	Same-sex: boys	19	18.6
	girls	42	41.2
	Opposite-sex	41	40.2
Birth Order of Child	Older	41	40.2
	Younger	59	57.8
	Same	2	2.0 <sup>b</sup>
Family Size	2	88	86.3
	3	11	10.8
	4	3	2.9
Family Status	Divorced	14	13.7
	Intact	88	86.3

Note. Percentages are rounded to the nearest tenth.

<sup>a</sup>Frequency counts and percentages for each variable are based on the total sample participating at both testing sessions (N=102) unless otherwise indicated.

<sup>b</sup>Two twin sibling dyads participated in the study.

the dyad, birth order and sibling age. Significant differences ( $X^2 = 14.48, p < .05$ ) between the samples were found for the age of the participating child. This appeared to be related to the very low participation of one class of ten year olds.

### Instruments

A variety of measures were used to evaluate the qualities of the sibling and family relationships which included a battery of self-report questionnaires, tasks examining aspects of behaviour towards the sibling, an unstructured story-telling task, and a semi-structured interview. The measures used in this study are described below. Reliability data is presented in the measurement model section.

#### Self-Report Questionnaires Examining Sibling and Family Relations.

Sibling Relationship Inventory (SRI, Furman & Buhrmester, 1985a), This questionnaire assessed children's perceptions of the qualities of their sibling relationship using the closest-in-age sibling as the target. Children were provided with a version of the SRI that was worded to correspond with the particular sibling dyad (i.e., brother-sister, sister-sister, sister-brother, brother-brother) to help them focus on that particular sibling when answering the items. Subjects responded to items describing qualities of sibling relationships. Using a five category multiple choice format, they identified how characteristic each quality was of their sibling relationship. Appendix B presents the SRI questionnaire.

Sibling Inventory of Differential Environment (SIDE). Developed by Daniels, Dunn, Furstenberg and Plomin (1985), this measures was designed to tap perceptions of family environment using true/false and multiple choice formats (see Appendix C).

Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985a). This questionnaire has a similar development and format to the Sibling Relationship Inventory described above (see Appendix D). Given this study's interest in the immediate family, items focused on relationships with the mother or stepmother and the father or stepfather of each child. The subjects were asked how much a relationship quality occurs in each relationship.

Sibling Deidentification Scale (SDID). This measure, adapted from the work of Schacter and Stone (1987), consisted of questions that addressed child perceptions of similarity to, or difference from the sibling closest-in-age to the child (see Appendix E). Also included were items that examined the importance of the sibling to the child and their satisfaction with the relationship.

Family Adaptability and Cohesion Evaluation Scales - II (FACES-II; Olson, Portner, & Bell, 1982). The FACES-II was designed to assess family climate according to two constructs; adaptability (i.e., the family's capacity for flexibility and change) and cohesion (i.e., the degree of emotional bonding between family members). The respondent is asked to read the statements and decide for each one how frequent, on a scale that ranges from 1 (almost never) to 5 (almost always), the described situation occurs in his/her family (see Appendix F). Only parents completed this questionnaire.

### Tasks Measuring Behaviour Qualities Related to the Sibling Relationship

Marble choice game (Kagan & Madsen, 1972). This task was originally designed to trace the development of rivalry between peers. For the purposes of this study, the task was adapted to examine sibling rivalry and competition. The task is comprised of four conditions designed to systematically vary absolute and relative outcomes based on rivalrous or non-rivalrous choices. The choice conditions represent rivalrous (competitive) or nonrivalrous (cooperative) behaviours.

The child was asked to imagine that they were playing this game with their sibling who they should imagine was sitting opposite them. The child was presented with white cardboard choice cards (13 X 26 centimetres) which had holes in which the experimenter placed marbles (Appendix G presents the stimulus cards and choice conditions). Each choice condition was presented four times, once in each of the four trial blocks such that the child made a total of sixteen marble choices. The experimenter explained that the child could select either the right or left side of the card and they could place the marbles from his/her half of the selected alternative into her/his container and the marble's from their sibling's side (i.e., directly opposite) would be collected in the container designated as the sibling's. For each subject the left-right location of the rivalrous choice alternated over trials for each condition, appearing twice on the right and twice on the left. Within each trial block, the right-left position of the rivalrous alternative was also balanced for each subject, occurring twice on each side. Appendix H displays the presentation order and Appendix I presents the task instructions for the child. Once the task had been terminated,

children were asked to describe what they had been thinking about when they made their choices, that is, what was their strategy for playing with their sibling.

Responses were evaluated according to the presence or absence of rivalry as a determining factor in the marble choices (see Appendix J).

Flavell's perspective-taking task. Flavell's test (1968) was employed to assess perspective-taking (see Appendix K for instructions). The ability to take another person's perspective was assessed by examining the degree of sophistication the subject revealed about the problem-solving ability of an imaginary player (their sibling). The child (S) played a game with the examiner in which s/he was aware of the location of either one or two nickels under one of two styrofoam cups. The child was instructed to pretend they were playing with their closest-in-age sibling. S/he was instructed to imagine they were playing with their sibling, who was not privy to the location or amount of money. The child had to determine which cup the imaginary sibling would think the money was under and outline his/her reasoning. Responses were evaluated according to a hierarchy of reasoning strategies which revealed increasingly complex perspective-taking (see Appendix L for a more extensive description of categories).

Flavell's task was selected for several reasons. First, Flavell's results using his perspective-taking task indicated considerable variability at age 10. Maximized variability on the perspective-taking task was sought so that any relationship between sibling relationship qualities and perspective-taking could be clearly observed. Moreover, most other perspective-taking tests are appropriate for children of younger



ages and not suitable for school-age children. Chandler and Greenspan's Bystander Cartoon measure was administered by the examiner during pre-testing to 10 children of the total sample. No child exhibited any egocentric errors (consistent with LeMare and Rubin, 1987). This is in marked contrast with Chandler's report (1973) that preadolescents displayed egocentric errors using the same measure. Second, Flavell's test assesses the perspective-taking of another person's thoughts of a specific situation rather asking for another's perceptions at the end of a visual sequence of events. The ability to consider a person's thought and feelings was judged to be more relevant to inter-personal relationship than are spatial perceptions tested in other tasks. Third, the test requires approximately five minutes to administer.

Sibling story-telling task. The story-telling task used in this study is an adaptation of Bedford's Sibling Thematic Apperception Test (S-TAT; 1986). In her study of adult sibling relationships, Bedford adapted Murray's TAT (1943) pictorial stimuli in the development of her measure. In this study pictures from the Robert's Apperception Test for Children (McArthur & Roberts, 1982) were adapted in a similar fashion and used as the stimuli to which children generated stories (Appendix M presents the development of the pictures used in this study).

A series of ten pictures were presented to the children as a test of story-telling ability or imagination. Seven of the pictures depicted two same-sex children who were described as siblings and depicted in ambiguous situations. Two pictures depicted a family scene involving at least one child and the two parents. The children's responses to these cards were thought to be reflective of their perceptions

of the nature of positive and negative family interactions. A third card showed a mother with a new born baby designed to elicit feelings about having a new sibling and the child's perceptions of his/her mother's parenting.

The story-telling task procedure essentially followed the one set forth by McArthur and Roberts (1982) for the administration of the Roberts Apperception Test (see Appendix N for task instructions). The stimuli were presented in a different random order to each child to avoid order effects. The instructions were read aloud. Parallel versions of the ten cards were developed for boys and girls such that the sex of the children in the pictures corresponded to the child's gender. For the sibling interaction cards, subjects who were male were told that these figures were close-in-age brothers. Similarly, girls were told that the figures were close-in-age sisters. Children were instructed to examine a card and then to use their imaginations to tell a story about the scene illustrated on the card. When necessary the following prompts were used to assist the children in telling their stories: "What is happening? What happened before? What are they thinking and feeling? What will happen next?"

Interpretation of the stories was based upon the assumption that children, when presented with ambiguous drawings of children and adults in every day interaction, would project their characteristic thoughts, concerns, conflicts and coping styles into the stories they created. Because the rationale and purpose of this test was more ambiguous than the relatively straightforward request for information implied in the self-report questionnaires, it was assumed that children would respond with a minimum of intentional distortion. In general, it was hoped that their responses

would reflect how they feel or act in interpersonal situations similar to those portrayed in the pictures. Even if the manifest content of stories did not directly reflect their feelings, thoughts, or actions in real situations, it was assumed that it could provide important clues to issues that might be salient for the child.

Semi-structured interview. The final task involved a short semi-structured interview in which the following questions were used to direct the flow of the conversation about the child's sibling relationship: "What matters most to you about your brother/sister? What do you talk about together? Who do you tell secrets and private thoughts to? What do you fight about together? What do you help each other with? What really bothers you about your brother/sister? Who in your family do you spend the most free time with?"

#### Parent Data

Parents who had agreed to participate ( $N = 101$ ) were asked to complete the FACES-II which was sent home with their children and returned through the mail. Families were given a twenty dollar honorarium for participating. In the majority of cases, the mother completed the questionnaires.

#### Procedure

Part one Children were tested at two sessions. Initially, all participating children ( $N = 188$ ) completed the battery of self-report questionnaires (with the exception of the FACES questionnaire which was only completed by the parents). The questionnaires were administered in a group format to children in their classrooms. Children also provided information on the age and sex of their sibling(s).

Part two Children with siblings who had received parental permission to participate in further testing ( $N = 102$ ) were interviewed individually. Each testing session lasted approximately 45 minutes per child. Interviewers were graduate students in psychology who had been trained in the administration of the tasks and interview. The tasks were administered in a random order. Each testing session was tape recorded and later transcribed verbatim to facilitate coding.

At the end of the testing the children were thanked for their participation and given a choice of an assortment of balls, whistles, pens, pencils, stickers and other toys provided by the experimenter.

#### Measurement Model - Reliability Analyses

Prior to analysis, a number of variables were constructed from the scales of the questionnaires. The following section will present a description of these composite variables and their reliability which was assessed using Cronbach's alpha.

Sibling dyad structure variables. In addition to the subject and sibling age and sex variables, four sibling dyadic structure variables were formed. One variable, referred to as birth order was computed by assigning a value to each child depending on whether they were older or younger than their sibling. The absolute sibling age difference variable was simply the absolute value of the difference between the age of the child and the age of the sibling. In addition, an interaction score was created with these latter two variables and used in the analyses. Finally, same-sex or opposite-sex sibling dyad scores were created for each participating child.

Reliability of SRI scales. Items on the SRI were grouped into 16 scales that consist of three items each. Four general dimensions underlie the 16 scales: warmth and closeness, consisting of the subscale scores for affection, prosociability, companionship, similarity, and intimacy within the sibling relationship as well as items that indicated the degree of admiration of and by the siblings to one another; conflict, consisting of the subscale score for antagonism, competitiveness and quarrelling between siblings; relative status and power, consisting of the difference between the subscale scores of nurturance and dominance by the sibling and subscale scores of nurturance and dominance of the sibling and rivalry, consisting of maternal and paternal partiality. Partiality is defined as how much the child perceives that they are treated differently (i.e., who is favoured more) by their parents. Scores for the partiality scales are calculated as the deviations of the responses around the midpoint "About the same" where the response choices range from "Almost always him/her [favoured]" to "Almost always me [favoured]." Scores for the other scales were derived by summing the three items that represent each scale.

The internal consistency (Cronbach's alpha) of the items for each scale was calculated. The observed values in this study for warmth and closeness, conflict, and relative status and power, were .96, .90 and .73 respectively. Rivalry was not retained as a variable of interest as the scale had very low reliability (alpha = .53) thus, it was dropped from further analyses. Scores of relative status and power and rivalry were uncorrelated with warmth-closeness and conflict ( $r < .05$ ). The latter two scales were moderately negatively correlated ( $r = -.45$ ).

Reliability of SIDE scales. The original SIDE consisted of nine measures (composite scales and individual items) which comprised the following: family cooperation, family stress, family rule expectations, parental chore expectations, maternal closeness, paternal closeness, child's say in decisions, sibling friendliness, and peer friendliness. For this study, items on the SIDE were grouped to form into three scores: family style, consisting of subscale scores for family stress and family cooperation ( $\alpha = .69$ ); chore expectations, consisting of the child's perceptions of parental chore expectations for child and sibling ( $\alpha = .62$ ); and family decisions, consisting of ratings of how much the child perceives s/he and his/her sibling participate in family decisions ( $\alpha = .72$ ). Ratings of the child's perception of their friendliness with their sibling and their sibling's friendliness with them were grouped with two items from the SDID (importance and satisfaction of relationship with sibling) to form sibling relation ( $\alpha = .84$ ). Family rule expectations for children was not included in analyses as the scale was unreliable ( $\alpha = .47$ ).

Reliability of NRI scales. The NRI used in this study was a modified version which consisted of 30 questions that assessed 10 relationship qualities: companionship, conflict, instrumental aid, satisfaction, intimacy, nurturance, affection, admiration, relative power, and reliable alliance. Scale scores were derived by summing the three items representing each scale. Given the relatively strong positive correlations between the degree of relationship qualities reported for mothers and fathers ( $r$ 's = .4 to .7), scores for each parent were summed to form a composite unit score for each relationship quality.

Items on the NRI were grouped to form into two scores: (a) conflict and power, consisting of the subscale scores for conflict with mother and father, and the relative power in the relationship with mother and with father ( $\alpha = .73$ ); and (b) parent-child relationship, consisting of subscale scores of mother and father companionship, instrumental aid, nurturance, reliable alliance, intimacy, satisfaction, affection, admiration by mother/father, closeness to mother/father, perceptions of sibling closeness to mother and father, satisfaction with relationship with mother and father and an item from the SDID regarding satisfaction with family relations ( $\alpha = .87$ ).

Reliability of SDID scales. From the SDID two sibling deidentification scores and a parent similarity score were calculated. The de-identification scores were based on the responses to the two questions that asked: (1) are they similar to their sibling? and (2) would they change to become more like their sibling (see Appendix D).

The measure of similarity to parents was developed by combining the child's responses to the questions regarding to which parent they feel they and their sibling are most similar to. A summary of the categories is as follows:

- 0 - subject and sibling are not similar to the same parent;
- 1 - subject and sibling share a similarity with one parent, that is, one is similar to both parents and the other is similar to either mother or father - but not both;
- 2 - subject and sibling are both similar to mother, father, neither or both.

Reliability of FACES-II scales. The FACES-II consists of 30 items with two to three items for each of the 14 sub-scales. There are 16 cohesion items and 14 adaptability items. Eight cohesion constructs contain two items each: emotional bonding, family boundaries, coalitions, time, space, friends, decision-making, and interests and recreation. (Sample items: "Family members feel very close to each other;" "We have difficulty thinking of things to do as a family.") There are two or three items for each of the six concepts pertaining to adaptability: assertiveness, leadership, discipline, negotiation, roles and rules. (Sample items: "Discipline is fair in our family;" "Each family member has input in major family decisions.")

Family cohesion (i.e., the degree to which family members feel close to one another) and adaptability (i.e., the amount of flexibility within the family system) variables were calculated for each child. Reliability of these scores was calculated using alpha. The observed alpha for cohesion was .84. Three items (6, 12, 24) were dropped from the adaptability scale as they were poorly related to the other items. The reliability of this reduced scale (eleven items) was alpha = .68. The authors report an internal consistency (Cronbach's alpha) from a total sample of 2,412 respondents as alpha = .87 for cohesion and .78 for adaptability. The correlation between the measures of cohesion and adaptability in this sample was  $r = .60$ . Olson et al. (1985) report a correlation of  $r = .65$ . Given the hypothesized curvilinear nature of these constructs in the Circumplex theory (Olson et al., 1979), curvilinear component scores were created and used with the linear measures in the analyses.



Inter-rater reliability of coding. The coders of the transcribed interviews were two doctoral students in clinical psychology. The coding criteria for the children's verbal responses on the Marble Choice Game and Flavell's Perspective-Taking Task are presented in Appendices J and L respectively.

Based on the total number of rivalrous versus non-rivalrous choices that they made on the marble choice game, a marble score was computed for each child. The observed Cronbach's alpha for this variable was .86 ( $N = 102$ ). From the interview, only the interaction frequency with the sibling was retained for analysis (see Appendix O for the coding of this variable). To determine inter-rater reliability of coding for the Marble Choice Game, Flavell's Perspective-Taking task and the Story-Telling Task, a random sample of 20 subjects (i.e., 20%) of the 102 transcripts were selected. Kappa was calculated for each task. The inter-rater reliability of the coding for the child's judgement of their behaviour during the marble choice game was .87. Kappa for the coding of the perspective-taking task was .81.

The children's stories were analyzed for relationship assessment. The manifest content of each story was analyzed by means of a coding system designed specifically for this type of measure (Bedford, 1986). A detailed coding manual is presented in Appendix P and Appendix Q presents examples of training stories that have been coded. The coding scheme involved a thematic analysis of the child's stories to each card. For the seven sibling interaction cards, relationship "segments" were identified as any reference to the sibling relationship, whether explicit or implicit. Those segments which exemplified one of the three interpersonal orientations were scored.

For the family interaction and sibling rivalry cards, the stories were coded for the overriding theme that was present in each response. The resolution quality of the family and sibling rivalry stories was also coded using the same categories as for the sibling interaction stories. Criteria for determining which theme(s) to score for the three types of stories (sibling, family and rivalry) were based upon their definitions and appear in the coding manual. The coders were trained using the coding manual and training stories. Once the coders were familiar with the rating technique eight subjects' transcripts were used for practice coding. Disagreements were resolved by arriving at a consensus, which was used as the final code for these training subjects.

Inter-rater reliability for coding of the story-telling task was calculated using the same 20 transcripts as for the coding of marble and perspective-taking tasks. For the story-telling task, the correlation between the raters for the total number of segments coded per card was calculated as  $r = .94$ . Reliability of the number of coded segments within each story was .97. Kappa for the themes and resolutions coded from the sibling interaction cards was .92. Inter-rater reliability of coding for the themes and resolutions coded on the family interaction cards was .99.

#### Data Scanning and Transformations

Prior to performing any analyses, all the variables were examined for accuracy of data entry, missing values, and fit between their distributions and the assumptions of multivariate analysis. Only data from the 102 children who had participated in both testing sessions and the responses from their parents was retained for analysis. Since the marble choice game strategy had greater than 5% missing values this

variable was deleted from the analyses. The sibling relation score from the SIDE was strongly associated with the child-rated warmth and closeness score ( $r = .82$ ) from the SRI and was deleted from further analyses to reduce multicollinearity. The variables used assumed to measure distinct phenomena.

A number of variables required transformations to improve residuals and to reduce their skewness and kurtosis. The total number of affiliation statements and conflict statements, the occurrence of immature resolutions to sibling stories, limit-setting in family stories, maladaptive resolutions to family stories, unresolved resolutions for family stories and the quality of the parent-child relationship were improved using square-root transformations. The use of maladaptive and unresolved resolutions to sibling stories were logarithmically transformed. Child ratings of family environment were extremely skewed and the distributions were not improved by transformations. Examination of the distribution revealed that approximately 50 percent of subjects indicated their family environment was cooperative and non-stressful whereas the other 50 percent of subjects described their families as stressful and non-cooperative, therefore, the best solution was to dichotomize this variable.

No univariate outliers were found for any of the variables; two cases were identified through Mahalanobis distance as multivariate outliers ( $p < .001$ ). Closer inspection of these cases revealed that both cases had inaudible tapes resulting in a loss of more than half of their stories. These two outliers were deleted, leaving 100 cases for analysis.

## RESULTS

Variables were grouped conceptually to form four broad sets of measures hypothesized to be related to the child perceptions of the qualities of the sibling relationship (i.e., scales from the SRI: warmth and closeness, sibling conflict, and relative status and power). The sets were composed of the following variables:

(1) sibling dyad structure variables, consisting of sex of child and sibling, age of child and sibling, birth order, absolute age difference between siblings, and the gender composition of the dyad (i.e., same or opposite-sex);

(2) family climate variables, consisting of linear and curvilinear cohesion and adaptability scores from the FACES-II, a measure of family cooperation and stress (family style), the child's participation in family decisions, and chore expectations for the child and his/her sibling;

(3) parent-child relationship variables, consisting of a measure of the child's judgement of their own and their sibling's similarity to their mother and father, the degree of conflict and power difficulties between parent and child, and a measure of the positive qualities of the parent-child relationship; and

(4) sibling interaction task measures, consisting of: perspective-taking ability, sibling deidentification scores, interaction frequency with the sibling, rivalrous-nonrivalrous behaviour observed on the marble choice game and variables derived from the sibling story-telling task (i.e., themes and resolutions of stories told in response to the sibling and family interaction, and sibling rivalry cards).

Multivariate procedures were used to explore the relationships among these sets of variables. With the exception of cohesion and adaptability, all variables used in the analyses were derived from child response data. Initially, canonical correlations were performed between each of the sets of variables in the model (see Figure 2). This was performed as a preliminary procedure to identify which sets of variables were statistically related to one another. In general, only those sets that had significant overall effects were examined further. Table 2 presents the results of the canonical correlations. Nine groups of variables were significantly related to one another. Multiple regression analyses were then used to examine the hypotheses regarding which variables predicted the qualities of the sibling relationship and how they, in turn, might be influenced by other variables in the proposed model.

Standard multiple regression tables display the correlations between the independent (IV) and dependent variables (DV), the standardized regression coefficients ( $\beta$ ), the semipartial correlations ( $\text{sr}^2$ ),  $\underline{R}$ , and  $\underline{R}^2$ . Hierarchical regression tables (i.e., those involving the family functioning scores of cohesion and adaptability) present the standardized regression coefficients ( $\beta$ ), the semipartial correlations ( $\text{sr}^2$ ), after entry of all independent variables as well as the equation  $\underline{R}$ ,  $\underline{R}^2$ , and adjusted  $\underline{R}^2$  after each step.

Figure 2. A model of the Associations among Family System Variables and Sibling Relationship Qualities and Interactions.

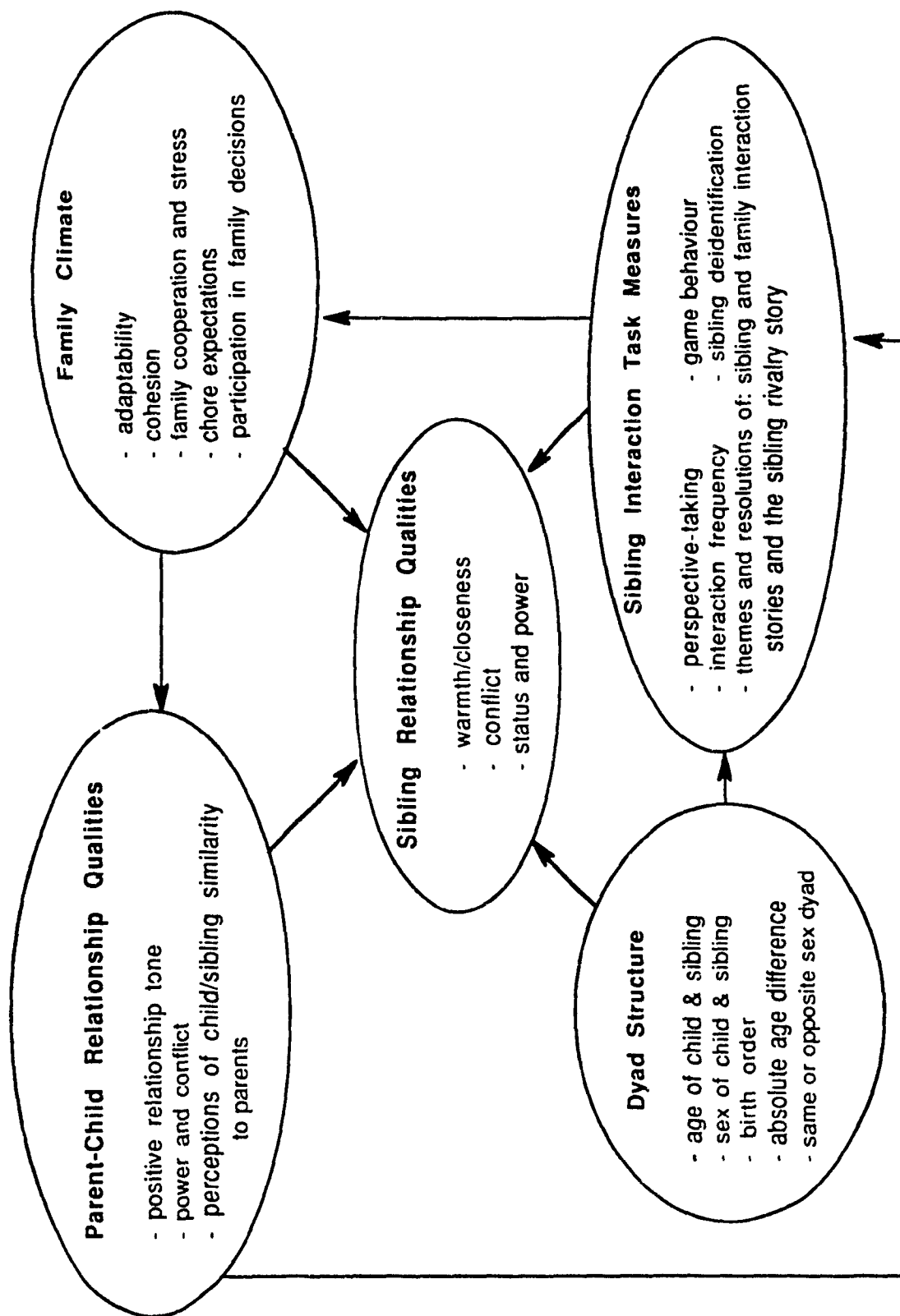


Table 2

Main effects of canonical correlations between sets of variables in the model of influences on sibling relations.

Variable Sets Compared <sup>a</sup>	F (Pillais)
<b>I Dyad structure variables</b>	
Structural variables with SRI scales	5.86****
Structural with parent-child variables	1.05
Structural with sibling task measures	1.36
Structural variables with sibling interaction stories	1.29
Structural variables with family interaction stories	1.55**
Structural variables with rivalry story	1.23
<b>II Family climate variables</b>	
Family climate with SRI scales	2.36***
Family climate with parent-child variables	2.92***
Family climate with sibling task measures	1.41
Family climate variables with sibling interaction stories	1.35
Family climate variables with family interaction stories	0.91
Family climate variables with rivalry story	1.09
<b>III Parent-child relationship qualities</b>	
Parent-child variables with SRI scales	3.39****
Parent-child variables with sibling interaction stories	1.01
Parent-child with Sibling task measures	2.32***
<b>IV Sibling interaction task measures</b>	
Sibling task measures with SRI scales	3.59****
Sibling interaction stories with SRI scales	0.74
Rivalry story with SRI scales	1.66*
Family interaction stories with SRI scales	0.99
Sibling task measures with sibling interaction story	1.65*

<sup>a</sup> variables are child ratings except parent rated family climate cohesion & adaptability

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$ ; \*\*\*\*  $p < .001$ .

### Structural Properties of the Dyad and Sibling Relationship Qualities

Standard multiple regression analyses were performed to examine which structural properties of the sibling dyad were associated with each of the sibling relationship qualities perceived by the child. Age of the child, age of the closest-in-age sibling, birth order, absolute age difference between siblings, sex of the child, sex of the sibling and the gender composition of the sibling dyad were entered as the independent variables with each of the three sibling relationship qualities (i.e., warmth-closeness, conflict and relative status and power) as dependent variables.

Sibling dyad structure with warmth and closeness. As a set, structural variables did not predict sibling relationship warmth-closeness,  $R = .30$ ,  $F(7, 92) = 1.33$ .

Sibling dyad structure with conflict. Only two of the IVs contributed significantly to prediction of conflict, the absolute age difference between the siblings ( $sr^2 = .13$ ) and sibling sex ( $sr^2 = .04$ ).  $R$  for regression was significantly different from zero,  $R = .44$ ,  $F(7, 92) = 3.15$ ,  $p < .005$  (Table 3). Altogether, 19% (13% adjusted) of the variability in conflict was predicted by knowing information on the structural composition of the sibling dyad.

The most significant predictor of perceptions of sibling conflict was the absolute age difference between the siblings. Regardless of birth order or ages of either sibling, more sibling conflict was perceived by children in closely spaced sibling relationships.



Table 3

Multiple Regression of Dyad Structure and Perceptions of Sibling RelationshipConflict

Variables (IVs)	Univariate r Conflict (DV)	$\beta$	$sr^2$ (unique)
Age of child	-.09	-.03	.00
Sex of child	-.09	-.09	.01
Sibling sex	-.14	.08	.04*
Sibling age	-.15	-.20	.00
Birth order	.06	.09	.00
Age difference <sup>a</sup>	-.38*	-.43	.13**
Dyad gender composition	-.07	-.01	.00
			$R = .44$
			$R^2 = .19$
			$F_{inc} = 3.15^{**}$

<sup>a</sup> absolute age difference\*  $p < .05$ ; \*\*  $p < .005$

A second finding revealed that if the sibling was a boy, the relationship was more often described as conflictual than if the sibling was a girl.

Sibling dyad structure with relative status and power. Relative status and power was the dependent variable in the next multiple regression (Table 4).  $R$  for regression was significantly different from zero,  $R = .79$ ,  $F(7, 92) = 21.20$ ,  $p < .005$ . Four of the seven IVs contributed significantly to prediction of status and power, sibling age ( $sr^2 = .21$ ), absolute age difference between the siblings ( $sr^2 = .03$ ), birth order ( $sr^2 = .03$ ) and age of the child respondent ( $sr^2 = .03$ ). Altogether, 62% (59% adjusted) of the variability in perceptions of relative status and power was predicted by knowing the age characteristics of the sibling dyad.

Structural variables had a greater impact and accounted for more of the variability among scores of status and power differences between siblings than for the other sibling relationship qualities. Greater status and power was perceived by children who were older than their siblings and in a closely spaced dyad. Moreover, the actual age of the child and the sibling's age also played a role in predictions of status and power. Children with very young siblings perceived they had more status and power than children with siblings older in age. Gender variables did not predict perceptions of status and power in this sample.

Table 4

Multiple Regression of Dyad Structure and Relative Status and Power

Variables (IVs)	Univariate r Conflict (DV)	$\beta$	$sr^2$ (unique)
Age of child	.07	.20	.03**
Sex of child	-.01	-.12	.01
Sibling sex	.18	.08	.00
Sibling age	-.65***	-.59	.21***
Birth order	.72***	.32	.03**
Age difference <sup>a</sup>	-.06	.22	.03***
Dyad gender composition	-.05	.03	.00
<hr/>			
			$R = .79$
			$R^2 = .62$
			$F_{inc} = 21.20***$

<sup>a</sup> absolute age difference\*\*  $p < .01$ ; \*\*\*  $p < .005$

### Structure of the Sibling Dyad and Sibling Interaction Task Measures

The canonical correlation between the set of structural variables and the set of sibling interaction task measures was not significant at the .05 level of significance (observed significance was  $p < .08$ ). However, inspection of the data using multiple regression analyses revealed that, in fact, structural variables significantly contributed to the prediction of rivalrous behaviour on the marble choice game and the interaction frequency between siblings and deserved commentary.

Structure of the dyad predicting game behaviour. The seven structural variables (IVs) were entered as a set predicting non-rivalrous, non-competitive behaviour observed on the marble choice game.  $R$  for regression was significantly different from zero,  $R = .43$ ,  $F(7, 92) = 2.90$ ,  $p < .01$  (Table 5).

Only sibling sex contributed to prediction of non-rivalrous choices ( $\beta^2 = .05$ ). Children with sisters were less rivalrous and competitive on this task than children with brothers, irrespective of their own sex. Although other variables were significantly correlated with the marble score, they did not contribute to the regression and post hoc analyses revealed that they were not significant.

Structural variables and interaction frequency. Structural variables were used to predict interaction frequency with the closest-in-age sibling.  $R$  for regression was significantly different from zero,  $R = .37$ ,  $F(7, 92) = 2.02$ ,  $p < .06$  (Table 6). The gender composition (same-sex/other-sex) of the sibling pair was the only IV that contributed significantly to the prediction of interaction frequency ( $\beta^2 = .06$ ). Same-sex children were more likely to spend time with one another than opposite-sex pairs.

Table 5

Multiple Regression of Dyad Structure and Marble Game Scores

Variables (IVs)	Univariate r Marble Scores (DV)	$\beta$	$sr^2$ (unique)
Age of child	.15	.19	.02
Sex of child	.21*	.14	.02
Sibling sex	.30***	.24	.05*
Sibling age	-.21*	-.25	.01
Birth order	.26**	.02	0
Age difference <sup>a</sup>	-.05	.08	0
Dyad gender composition	.05	0	0
$R = .43$			
$R^2 = .18$			
$F_{inc} = 2.90^{**}$			

<sup>a</sup> absolute age difference

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$

Table 6

Multiple Regression of Dyad Structure and Children's Reports of InteractionFrequency with their Sibling

Variables (IVs)	Univariate r Interaction Freq. (DV)	$\beta$	$sr^2$ (unique)
Age of child	0	.02	0
Sex of child	-.05	-.12	.01
Sibling sex	.22*	.14	.02
Sibling age	-.14	-.13	0
Birth order	.11	.02	0
Age difference <sup>a</sup>	-.14	-.07	0
Dyad gender composition	.26*	.26	.06*
			$R = .37$
			$R^2 = .13$
			$F_{inc} = 2.20^o$

<sup>a</sup> absolute age difference

<sup>o</sup>  $p < .06$ ; \*  $p < .05$

### Sibling Dyad Structure with the Story-Telling Task

The structural composition of the sibling dyad was unrelated to children's stories to both the sibling interaction cards and the sibling rivalry card. However, structural variables were related to family stories (themes and resolutions) from the story-telling task. Each of the themes (i.e., limit-setting, family activity and family problems) and resolutions (i.e., immature, mature, conflictual and unresolved resolutions) to the two family interaction cards were used as the dependent measures in the next analyses.

Structural variables and the limit-setting theme. Two of the IVs contributed significantly to the prediction of limit-setting as a theme generated to the family cards, sex of the child respondent ( $sr^2 = .09$ ) and sibling sex ( $sr^2 = .06$ ).  $R$  for regression was significantly different from zero,  $R = .43$ ,  $F(7, 92) = 3.05$ ,  $p < .01$  (Table 7). Girls identified the family cards scenes as involving limit-setting or punishment more often than boys. Similar results were found when the sibling was a girl.

Structural variables and the family activity theme. Family activity was the theme used as a dependent measure in the next regression analysis,  $R$  for regression was significantly different from zero,  $R = .38$ ,  $F(7, 92) = 2.19$ ,  $p < .05$  (Table 8). Only sex of the respondent ( $sr^2 = .07$ ) contributed significantly to the prediction of the theme family activities. Interpretation of the pictures as a family activity was done by boys more often than girls.

Table 7

Multiple Regression of Dyad Structure and the Limit-Setting Theme on the  
Story-Telling Task Family Cards

Variables (IVs)	Univariate r Limit-Setting (DV)	$\beta$	$sr^2$ (unique)
Age of child	.09	.18	.02
Sex of child	-.32**	-.30	.09**
Sibling sex	-.26*	-.25	.06*
Sibling age	.06	-.04	0
Birth order	-.08	-.07	0
Age difference <sup>a</sup>	-.06	.14	.01
Dyad gender composition	-.09	-.01	0
			$R = .43$
			$R^2 = .19$
			$F_{inc} = 3.05^*$

<sup>a</sup> absolute age difference

\*  $p < .01$ ; \*\*  $p < .005$



Table 8

Multiple Regression of Dyad Structure and the Family Activities Theme on the  
Story-Telling Task Family Cards

Variables (IVs)	Univariate r Family Activities (DV)	$\beta$	$sr^2$ (unique)
Age of child	.20*	.20	.03
Sex of child	-.25**	-.27	.07**
Sibling sex	-.12	-.12	.01
Sibling age	.12	.03	0
Birth order	0	.06	0
Age difference <sup>a</sup>	.11	.04	0
Dyad gender composition	.09	.14	.02
<hr/>			
			$R = .38$
			$R^2 = .14$
			$F_{inc} = 2.19^*$

<sup>a</sup> absolute age difference

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

Structural variables and the family problems theme. The family problems theme was used as the DV in the next regression analysis.  $R$  for regression was significantly different from zero,  $R = .54$ ,  $F(7, 92) = 5.35$ ,  $p < .005$  (Table 9). Three of the IVs contributed significantly to the prediction of family problems as a theme generated to the family cards, sex of the child ( $sr^2 = .16$ ), age of the child ( $sr^2 = .03$ ) and the gender of the sibling ( $sr^2 = .07$ ). Altogether, 30% (24% adjusted) of the shared variability in family problems as a theme in stories to these cards was predicted by knowing information about the structural properties of the sibling dyad.

Girls were more likely than boys to interpret family cards as illustrating a family problem situation. Similarly, if the sibling was a girl, family problems were coded more often than if the sibling was a boy. The older the child, the less likely they were to tell stories concerning family problems to these cards.

Structural variables and family card resolutions. Of the four possible categories of story resolution coded from the children's responses to these family interaction cards, only immature or fantasy oriented resolutions had an  $R$  significantly different from zero,  $R = .42$ ,  $F(7, 92) = 2.73$ ,  $p < .01$  (Table 10).

Gender of the sibling ( $sr^2 = .08$ ) contributed significantly to the prediction of immature or fantasy filled resolutions to stories generated to the family cards. Children with sisters used more fantasy or immaturity when ending their stories. Although the sex of the child did not contribute to the prediction of the use of these types of resolutions, it was correlated with immature resolutions,  $r = .21$ .

Table 9

Multiple Regression of Dyad Structure and the Family Problems Theme on the  
Story-Telling Task Family Cards

Variables (IVs)	Univariate r Family Problems (DV)	$\beta$	$sr^2$ (unique)
Age of child	-.18	-.23	.03*
Sex of child	-.42***	.42	.16***
Sibling sex	.28**	.27	.07**
Sibling age	-.13	-.02	0
Birth order	.07	-.01	0
Age difference*	-.02	.09	.01
Dyad gender composition	-.01	-.11	.01
<hr/>			
			$R = .54$
			$R^2 = .29$
			$F_{inc} = 5.35***$

\* absolute age difference

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$

Table 10

Multiple Regression of Dyad Structure and Immature Resolutions to the  
Story-Telling Task Family Cards

Variables (IVs)	Univariate r Immature Resol. (DV)	$\beta$	$sr^2$ (unique)
Age of child	-.09	-.23	.03°
Sex of child	.21*	.18	.03°
Sibling sex	.30**	.29	.08**
Sibling age	.05	.12	.02
Birth order	-.03	.11	0
Age difference <sup>a</sup>	-.02	-.03	0
Dyad gender composition	.19°	.09	.01
			$R = .42$
			$R^2 = .17$
			$F_{inc} = 2.73^*$

<sup>a</sup> absolute age difference

°  $p < .06$ ; \*  $p < .05$ ; \*\*  $p < .005$

### Sibling Relationship Qualities with Sibling Interaction Task Measures

Standard multiple regressions were performed to examine whether relationship qualities predicted other features of sibling interaction. Each of the sibling task measures (i.e., perspective-taking, marble game, interaction frequency and scores of deidentification) were used as dependent variables with the three sibling relationship qualities as independent variables in the following analyses.

Relationship qualities predicting perspective-taking. None of the sibling relationship qualities contributed to prediction of perspective-taking as measured with Flavell's perspective-taking task,  $R = .06$ ,  $F(3, 94) = .11$ .

Relationship qualities predicting behaviour on the marble game. Only sibling warmth and closeness significantly predicted the marble game score ( $sr^2 = .04$ ).  $R$  for regression was significantly different from zero,  $R = .28$ ,  $F(3, 96) = 2.69$ ,  $p < .05$  (Table 11). Positive descriptions of the sibling relationship were associated with non-rivalrous behaviour (i.e., not playing for personal gain against the sibling).

Relationship qualities with interaction frequency. The self-reported interaction frequency with the sibling was used as the dependent measure in the next analysis (Table 12).  $R$  for regression was significantly different from zero,  $R = .35$ ,  $F(3, 96) = 4.40$ ,  $p < .005$ . Of the three qualities, only warmth and closeness significantly predicted interaction frequency ( $sr^2 = .06$ ). Although the correlation between conflict and interaction frequency was  $-.22$ , it did not contribute significantly to regression. Therefore it was not the degree of conflict but rather, the feelings of closeness toward a sibling that determined whether a child chose to spend time with their sibling.

Table 11

Multiple Regression of Sibling Relationship Qualities and Marble Task Scores

Variables (IVs)	Univariate r Marble score (DV)	$\beta$	$sr^2$ (unique)
Warmth and Closeness	.24**	.23	.04*
Conflict	-.13	-.01	.00
Status and Power	.14	.14	.02
$R = .28$			
$R^2 = .08$			
$F_{inc} = 2.69^*$			

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

Table 12

Multiple Regression of Sibling Relationship Qualities and Interaction Frequency

Variables (IVs)	Univariate r Interaction Freq. (DV)	$\beta$	$sr^2$ (unique)
Warmth and Closeness	.33***	.29	.06**
Conflict	-.22*	-.07	.00
Status and Power	.11	.11	.01
$R = .35$			
$R^2 = .12$			
$F_{inc} = 4.40^{***}$			

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$

Relationship qualities and sibling deidentification. The prediction of child and sibling deidentification by sibling relationship qualities was examined in the next analyses. First, the child's perception of their similarity to or difference from their sibling was used as the dependent measure,  $R$  for regression was significantly different from zero,  $R = .48$ ,  $F(3, 96) = 9.55$ ,  $p < .005$  (Table 13).

Relationship warmth and closeness contributed significantly to prediction of perceptions of child and sibling similarity ( $\underline{s}r^2 = .13$ ). Children with warm and close sibling relations described themselves as similar to their sibling. Although conflictual sibling relations were associated with perceptions of being different from the sibling ( $r = .30$ ), conflict did not contribute to regression. Post hoc evaluation of the correlation revealed that it was significantly different from zero,  $F(3, 96) = 3.19$ ,  $p < .005$ . Apparently, the relationship between perceptions of difference from the sibling and relationship conflict is an indirect result of the association between warmth/closeness and perceptions of similarity.

The child's wish to become more like their sibling or to remain the same was used as the DV in the next analysis.  $R$  for regression was significantly different from zero,  $R = .36$ ,  $F(3, 96) = 4.84$ ,  $p < .005$  (Table 14). Warmth and closeness ( $\underline{s}r^2 = .08$ ) and relative status and power ( $\underline{s}r^2 = .05$ ) contributed to prediction of the child's desire to change/stay the same. Perceptions of warmth and closeness in the sibling relationship were associated with a desire to remain the same. Whereas perceptions of differential status and power were associated with a wish to change their relationship and become like their sibling.

Table 13

Multiple Regression of Sibling Relationship Qualities and Sibling Deidentification:  
Perceptions of Similarity or Difference to the Sibling

Variables (IVs)	Univariate r Similar or Different (DV)	$\beta$	$sr^2$ (unique)
Warmth and Closeness	-.47*	-.43	.13*
Conflict	.30*	.07	.00
Status and Power	-.08	-.07	.01
			$R = .48$
			$R^2 = .23$
			$F_{inc} = 9.55^*$

\*  $p < .005$

Table 14

Multiple Regression of Sibling Relationship Qualities and Sibling Deidentification:  
the Child's Wish to Change their Sibling Relationship or Remain the Same

Variables (IVs)	Univariate r Change or stay same (DV)	$\beta$	$sr^2$ (unique)
Warmth and Closeness	.28***	.35	.08***
Conflict	-.10	.11	.01
Status and Power	-.20*	-.22	.05*
			$R = .36$
			$R^2 = .13$
			$F_{inc} = 4.84^{***}$

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$



### Sibling Relationship Qualities with the Story-Telling Task

Of the three types of stimulus cards used in the story-telling task, canonical correlational analysis revealed that only stories about the sibling rivalry card were related with the sibling relationship qualities. Using the three sibling relationship qualities as independent variables, multiple regressions were conducted using each of the themes and resolutions for the rivalry card as dependent variables.

Coded themes and relationship qualities. Analyses using the three relationship qualities predicting each of the themes revealed that only relative status and power contributed significantly to prediction of interpretation of the scene as involving jealousy of the new sibling ( $sr^2 = .12$ ).  $R$  for regression was significantly different from zero,  $F(3, 96) = 5.00$ ,  $p < .005$ . The greater the status and power reported, the more often stories to this card would be coded as involving sentiments of jealousy towards the baby sibling.

Coded resolutions and relationship qualities. For the analyses involving the three relationship qualities predicting the resolutions to the sibling rivalry card,  $R$  for regression was not significant for any of the resolutions: immature or fantasy resolutions:  $R = .20$ ,  $F(3, 96) = 1.33$ ; mature resolutions:  $R = .11$ ,  $F(3, 96) = 0.36$ ; maladaptive or conflictual resolutions:  $R = .21$ ,  $F(3, 96) = 1.42$ ; and unresolved stories:  $R = .11$ ,  $F(3, 96) = 0.42$ ). Thus, qualities of the sibling relationship were unrelated to the manner in which the child resolved and ended their rivalry stories.

### Correlations Among Sibling Interaction and Story-Telling Measures

The relationship between both the interaction task measures and story-telling measures with the sibling relationship qualities has been described above. The association between each of the types of sibling relationship measures was also examined. Canonical correlations revealed that of the three story-card categories, only stories to cards depicting sibling interactions were related to scores on sibling interaction measures.

Perspective-taking abilities were correlated with the total number of affiliative segments ( $r = .31, p < .005$ ) and the total number of conflict segments ( $r = .21, p < .05$ ) in the stories. It was also related to the use of mature story resolutions for the sibling interaction ( $r = .27, p < .01$ ).

The degree of non-rivalrous behaviour on the marble choice game was associated with the proportion of affiliative segments ( $r = .25, p < .01$ ) and negatively related with both the total ( $r = -.21, p < .05$ ) and proportion ( $r = -.29, p < .005$ ) of conflict segments coded in the children's stories.

Perception of dissimilarity to the sibling was related to a greater proportion of conflict segments ( $r = .20, p < .05$ ) and negatively related to use of immature story resolutions ( $r = -.23, p < .05$ ). Maladaptive or conflictual resolutions were related to a wish to change to become more like the sibling ( $r = -.27, p < .001$ ).

### Family Climate Variables and Sibling Relationship Qualities

The effects of family climate on the qualities of the sibling relationship were determined with hierarchical regression models. Each of the three measures of sibling relationship quality (i.e., warmth-closeness, conflict, and status and power) were used as dependent variables. Family cohesion and adaptability (linear scores), their curvilinear components, family style, chore expectations and the child's participation in family decisions, were used as the independent (predictor) variables. Hierarchical regression was employed to determine if the addition of information regarding the curvilinear aspects of family functioning improved prediction of warmth and closeness after linear effects had already been entered into the equation.

Family climate with sibling warmth and closeness. Table 15 presents the results of this analysis. After step one, five IVs with the exception of curvilinear cohesion and adaptability had been entered into the equation,  $R = .36$ ,  $F(5, 93) = 2.68$ ,  $p < .05$ . Only perceptions of family style contributed significantly to prediction of warmth and closeness in the sibling relationship ( $\Delta R^2 = .07$ ). With cohesion and adaptability curvilinear scores included in the equation,  $R^2 = .17$  (adjusted  $R^2 = .11$ ),  $F_{inc}(2, 91) = 2.52$ . Addition of curvilinear functions of the family functioning did not significantly improve  $R^2$ . Children's judgments of warmth and closeness in the sibling relationship were only predicted by their perceptions of cooperation and stress within their family and not by parent ratings of family climate. Specifically, children who described their families as high in cooperation and low in stress also reported experiencing a positive relationship with their closest-in-age sibling.

Table 15

## Hierarchical Regression of Family Climate Variables on Sibling Relationship Warmth and Closeness

Variables (IVs)	Univariate $r$ Warmth & Closeness (DV)	$\beta^a$	$sr^2$ (unique <sup>a</sup> )	$R$	$R^2$	Change in $R^2$	$F$ (change)
Step 1:							
Cohesion	.23*	-1.71	.02				
Adaptability	.19 <sup>o</sup>	-1.04	0				
Family Style	.30	0.28	.07**				
Expectations	-.05	-0.07	0				
Decisions	.08	0	0				
Total equation following Step 1:				.36	.13	.13	2.68*
Step 2:							
Cohesion <sup>b</sup>		1.85	.02				
Adaptability <sup>b</sup>		1.82	.01				
Total equation following Step 2:				.41	.17	.052	.59

<sup>a</sup> after all variables entered into the equation;<sup>b</sup> curvilinear functions<sup>o</sup>  $p < .06$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$

Family climate with sibling conflict. Sibling conflict was used as the dependent variable with the family climate variables as IVs in the next analysis (Table 16).  $R$  was significant only at the end of the second step. After step two, with all IVs in the equation,  $R = .44$ ,  $F(7, 91) = 3.13$ ,  $p < .005$ .

Addition of curvilinear adaptability scores resulted in a significant increment in  $R^2$ . The negative beta for the curvilinear function of adaptability indicated a maximal (i.e., inverted u-shaped) curve. Therefore, moderate adaptability in family relations was associated with perceptions of a moderate degree of sibling conflict (Figure 3). Families falling at either extreme of the adaptability dimension had children who described low levels of conflict in their sibling relations. Children from families with very low adaptability scores (i.e., rigid families) reported lower levels of sibling conflict than those from balanced families. Similarly, children from families with very high adaptability scores (i.e., chaotic) reported extremely low levels of sibling conflict. Other indices of family climate were not predictive of children's perceptions of conflict with their siblings.

Family climate with relative status and power. Ratings of relative status and power in the sibling relationship (DV) and family measures (IVs) were used in the next hierarchical regression. After all IVs were entered into the equation,  $R = .34$ ,  $F(7, 91) = 1.71$ . Although family climate measures did not reliably predict relative status and power scores, the correlation between chore expectations and differential status was  $-.30$ ,  $p < .005$ . In families in which children were expected to contribute to chores, the child reported greater status and power relative to their sibling.

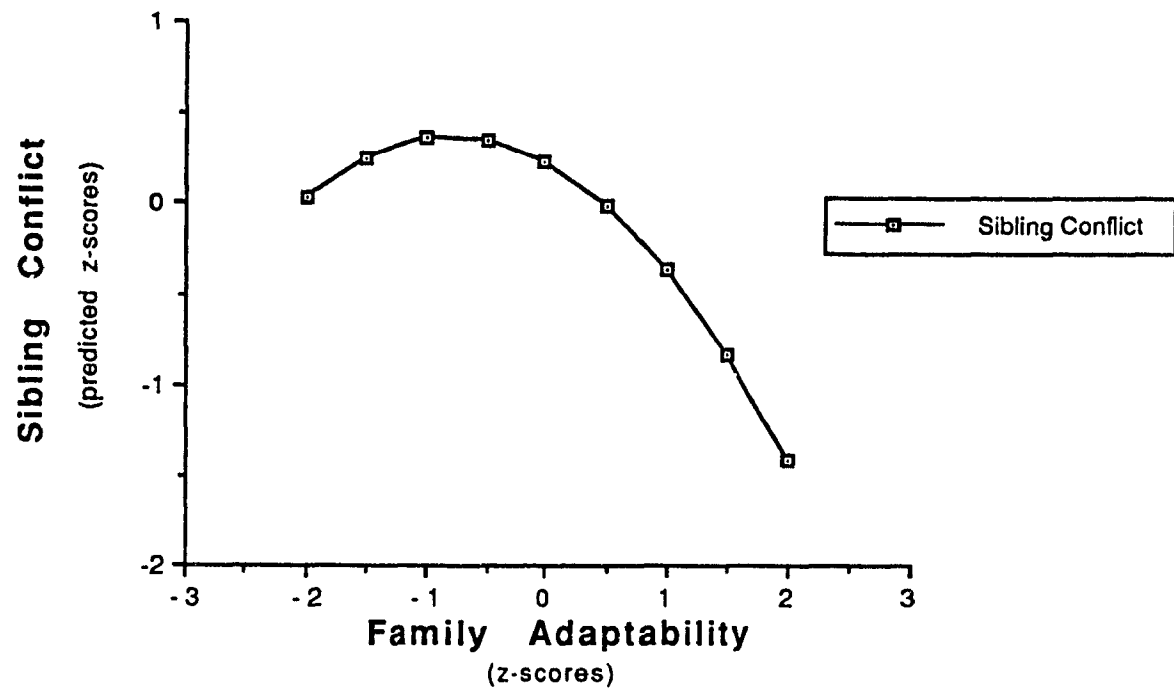
Table 16

## Hierarchical Regression of Family Climate Variables on Sibling Conflict

Variables (IVs)	Univariate r Sibling Conflict (DV)	$\beta^a$	$sr^2$ (unique <sup>a</sup> )	$\underline{R}$	$\underline{R}^2$	Change in $\underline{R}^2$	$\underline{F}$ (change)
Step 1:							
Cohesion	-.09	1.26	.01				
Adaptability	.21*	3.43	.05*				
Family Style	.08	-0.12	.01				
Expectations	.09	0.12	.01				
Decisions	.09	0.15	.02				
Total equation following Step 1:				.28	.08	.08	1.58
Step 2:							
Cohesion <sup>b</sup>		-1.23	.01				
Adaptability <sup>b</sup>		-3.68	.05**				
Total equation following Step 2:				.44	.19	.12	6.52***

<sup>a</sup> after all variables entered into the equation;<sup>b</sup> curvilinear functions\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$

Figure 3. The curvilinear relationship between family adaptability and sibling conflict.



### Family Climate as Predictors of Sibling Interaction Task Measures

Canonical correlations revealed that family climate variables were unrelated to sibling interaction task measures. Nevertheless a number of correlations deserve mention. Perspective-taking ability was significantly correlated with the child's perceptions of the cooperation and stress within the family,  $r = .28, p < .005$ . Sophisticated perspective-taking abilities were associated with family environments described by the children as low in stress and high in cooperativeness.

Furthermore, cohesion was significantly correlated with the interaction frequency with the sibling,  $r = .22, p < .05$ . The greater the emotional closeness within the family, the more likely the child were to report that they spent their free time with their sibling closest in age.

Family style (i.e., child ratings of high cooperation and low stress) was positively correlated with the total number of affiliation segments in the child's sibling stories ( $r = .26, p < .01$ ) and with the use of mature, adaptive resolutions to these stories ( $r = .22, p < .05$ ). Family style was also negatively related with the presence of unresolved sibling stories ( $r = -.20, p < .05$ ). Cohesion was unrelated to themes and resolutions of sibling interaction stories. Adaptability was negatively related to the proportion of separation segments a child used in the sibling stories,  $r = -.21, p < .05$ . Children from 'rigid' families (i.e., low in adaptability) interpreted the stories as involving children leaving or being separated or being very different from one another.



### Parent-Child Relationship Measures and Sibling Relationship Qualities

Standard multiple regressions were performed between each of the three sibling relationship qualities, as dependent variables, and parent-child relationship tone, conflict and power and child/sibling similarity to parent as independent variables.

Parent-child variables with sibling warmth and closeness.  $R$  for regression was significantly different from zero,  $R = .49$ ,  $F(3, 92) = 9.73$ ,  $p < .005$  (Table 17). Two of the three IVs contributed to prediction of warmth/closeness, parent-child relationship tone ( $sr^2 = .16$ ) and perceptions of similarity with parents ( $sr^2 = .03$ ). Altogether, 24% (22% adjusted) of the variability in warmth and closeness was predicted by knowing scores on these three IVs. Parent-child relationship characteristics had a significant impact on the warmth and closeness in the sibling relationship. In particular, reports of positive relations with the mother/father were associated with a portrayal of the sibling relationship as warm and close. In a similar fashion, the more overlap in perceptions of similarity to one or both of the parents a child perceived they shared with their sibling, the more likely they also viewed their sibling relationship in terms of warmth and closeness.

Parent-child variables and sibling conflict. Sibling conflict was the dependent variable in the next multiple regression analysis. Correlations between the parent-child variables and sibling conflict, the standardized regression coefficients ( $\beta$ ), the semipartial correlations ( $sr^2$ ),  $R$ , and  $R^2$  are presented in Table 18.  $R$  for regression was significantly different from zero,  $R = .35$ ,  $F(3, 92) = 4.19$ ,  $p < .01$ . Two of the IVs contributed to prediction of sibling conflict, parent-child conflict and

Table 17

Multiple Regression of Parent-Child Relationship Variables and Sibling RelationshipWarmth and Closeness

Variables (IVs)	Univariate r Warmth/Closeness (DV)	$\beta$	$sr^2$ (unique)
Relationship Tone	-.44***	.18	.03*
Conflict and Power	-.18°	-.13	.02
Similarity to Parents	.21*	-.41	.16***
$R = .49$			
$R^2 = .24$			
$F_{inc} = 9.73***$			

°  $p < .06$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$ 

Table 18

Multiple Regression of Parent-Child Relationship Variables and Sibling Conflict

Variables (IVs)	Univariate r Sibling Conflict (DV)	$\beta$	$sr^2$ (unique)
Relationship Tone	.25**	-.05	.00
Conflict and Power	.18***	.24	.06**
Similarity to Parents	-.05	.21	.04*
$R = .35$			
$R^2 = .12$			
$F_{inc} = 4.19***$			

°  $p < .06$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$

power struggles ( $\underline{sr}^2 = .06$ ) and parent-child relationship tone ( $\underline{sr}^2 = .04$ ).

Perceptions of conflict and power struggles with parents predicted perceptions of clashes with the sibling. Similarly, less positive parent-child relationships were also associated with conflictual sibling relations.

Parent-child variables and relative status and power. Sibling relationship relative status and power was used as the dependent variable in the final multiple regression.  $\underline{R}$  for regression was not significant,  $\underline{R} = .07$ ,  $F(3, 92) = .16$ . Thus, the quality of the parent-child relationship was not related to perceptions of status and power.

#### Parent-Child Variables with Sibling Interaction Task Measures

Multiple regression was employed using the three parent-child relationship measures as IVs and the five sibling task measures as dependent variables. Prediction of sibling deidentification (i.e., perceptions of being similar or different from the sibling) was the only analysis in which  $\underline{R}$  for regression was significantly different from zero,  $\underline{R} = .40$ ,  $F(3, 92) = 5.74$ ,  $p < .005$  (Table 19). Of the three IVs in the equation, only perceptions of similarity with parents contributed significantly to prediction of sibling deidentification ( $\underline{sr}^2 = .11$ ). The greater the overlap in the child's perceptions to which parent s/he was similar, and to which parent his/her sibling was similar, had a direct effect on perceptions of similarity to the sibling.

Although the correlation between parent-child relationship tone and perceptions of similarity was .21, parent-child relationship tone did not contribute significantly to regression. Moreover, post hoc evaluation of the correlation revealed that it was not significantly different from zero.

Table 19

Multiple Regression of Parent-Child Relationship Qualities and SiblingDeidentification: Perceptions of Similarity or Difference.

Variables (IVs)	Univariate r Deidentification (DV)	$\beta$	$sr^2$ (unique)
Relationship Tone	.21*	.16	.03
Conflict and Power	.07	.06	.00
Similarity to Parents	-.35***	-.34	.11***
			$R = .40$
			$R^2 = .16$
			$F_{inc} = 5.74^{***}$

o  $p < .06$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$

### Family Climate Influences on the Parent-Child Relationship

The above regressions indicated that parent-child relationship variables and family variables were related to similar sets of measures in the model (Figure 2). As parent-child relations are a subset of the larger group of family relations, the next analyses examined whether global measures of family climate were related to the child's perceptions of the nature of the parent-child relationship.

Family climate and parent-child relationship tone. The first hierarchical regression used parent-child relationship tone as the DV and family climate measures as IVs,  $R$  for regression was significant after both steps (Table 20). After all five family climate IVs entered into the equation,  $R = .46$ ,  $F(5, 93) = 4.98$ ,  $p < .005$ .

After step one, with family style, cohesion and adaptability in the equation,  $R^2 = .17$ ,  $F_{inc}(3, 93) = 6.38$ ,  $p < .005$ . Family style ( $sr^2 = .08$ ) and cohesion (linear;  $sr^2 = .03$ ) contributed significantly to prediction of positive aspects of the parent-child relationship. Addition of the curvilinear components of cohesion and adaptability in step two did not result in a significant increment in  $R^2$ . Emotional closeness among family members (parent rating) and family environments low in stress and high in cooperation (child rating) predicted ratings of positive relationships with parents.

Family climate and parent-child conflict and power struggles. Conflict and power struggles in the parent-child relationship was used as the dependent variable and family climate variables as the IVs in the next hierarchical regression (Table 21).  $R$  for regression was significantly different from zero after each step. After all family climate IVs were entered into the equation,  $R = .34$ ,  $F(5, 93) = 2.55$ ,  $p < .05$ .

Table 20

## Hierarchical Regression of Family Climate Variables on Parent-Child Relationship Tone

Variables (IVs)	Univariate r Relationship Tone (DV)	$\beta^a$	$sr^2$ (unique <sup>a</sup> )	R	R <sup>2</sup>	Change in R <sup>2</sup>	F (change)
Step 1:							
Cohesion	-.28**	2.49	.03				
Adaptability	-.07	-0.84	0				
Family Style	-.33***	-0.29	.08***	.41	.17	.17	6.38***
Total equation following Step 1:							
Step 2:							
Cohesion <sup>b</sup>		-2.79	.04*				
Adaptability <sup>b</sup>		.98	0				
Total equation, following Step 2:				.46	.21	.04	4.98***

<sup>a</sup> after all variables entered into the equation;<sup>b</sup> curvilinear functions\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$

After step one, with family style, cohesion and adaptability (linear scores) in the equation,  $R^2 = .34$ ,  $F_{inc}(3, 93) = 4.00$ ,  $p < .01$ . At this point, family cohesion was the only variable that contributed to prediction of parent-child conflict and power struggles ( $\Delta R^2 = .03$ ). After step two, once all the IVs had been added into the equation,  $R^2 = .12$ ,  $F_{inc}(2, 93) = .43$ . Addition of curvilinear family functioning scores to the equation did not reliably improve prediction of parent-child conflict. Although cohesion was negatively correlated with parent-child conflict and power ( $r = -.29$ ,  $p < .005$ ), it did not contribute once the curvilinear functions had been entered into the prediction equation. However, it appears that disengaged family environments may have some impact on conflict in parent-child relations.

Family climate and child/sibling similarity to parents. Perceptions of child-sibling similarity with one or both of their parents was employed as the dependent measure with family functioning and family style as IVs.  $R$  for regression was not significantly different at the end of either step. After the second step with all IVs (including the curvilinear family functioning scores) in the equation,  $R = .29$ ,  $F(5, 89) = 1.68$ . None of the family measures predicted perceptions of parent child-sibling similarity.

Table 21

Hierarchical Regression of Family Climate Variables on Parent-Child Relationship Conflict and Power

Variables (IVs)	Univariate <i>r</i> Conflict and Power (DV)	$\beta^a$	$sr^2$ (unique <sup>c</sup> )	<i>R</i>	<i>R</i> <sup>2</sup>	Change in <i>R</i> <sup>2</sup>	<i>F</i> (change)
Step 1:							
Cohesion	-.29***						
Adaptability		.66	0				
Family Style		.23	0				
Total equation following Step 1:		-.14	.02				
Step 2:							
Cohesion <sup>b</sup>				.34	.11	.11	4.00**
Adaptability <sup>b</sup>		-.87	0				
Total equation following Step 2:		-.34	0				
* after all variables entered into the equation;							
<sup>b</sup> curvilinear functions							
		.35			.12	.01	2.55*

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .005$



## DISCUSSION

The focus of the present study was on examining the qualities of the sibling relationship in the context of the larger family system. The basis for the ideas and analyses presented was a model of proposed influences on the related features and qualities of the sibling relationship within the family (see Figure 2). The investigation was guided by two main goals: (1) to examine fully the multifaceted experience of the sibling relationship, and (2) to investigate the associations between family system functioning, qualities of parent-child relations (as a subsystem of the family) with the qualities and features described in the sibling relationship. A series of research questions guided the specific analyses of the study within each of these goals. The findings are discussed as they pertain to each of the proposed questions.

### Structural Properties of the Sibling Dyad and Perceived Sibling Relationship Qualities

It was hypothesized that structural (i.e., age and gender variables), would predict sibling relationship qualities in the following manner: same-sex dyads would be characterised by more warmth and closeness than opposite-sex pairs, girls would report more warmth-closeness in their sibling relationships, conflict would be greater between closely-spaced siblings, and greater status and power would be experienced by the older sibling of the dyad. With the exception of the first prediction regarding the gender composition of the dyad, the hypotheses were supported. Results indicated that perceptions of sibling relations during middle childhood were associated with sibling dyad constellation variables. The specific findings for age and gender variables with the qualities of the sibling relationship will be discussed separately.

### Age Variables

The hypotheses that age variables would predict perceptions of conflict and relative status and power were supported. Consistent with other studies that have examined differences in status and power between siblings (e.g., Furman & Buhrmester, 1985a; see Summers, 1987 for a review), children with younger siblings and children from wide-spaced dyads perceived more nurturance of, and admiration by their sibling, as well as experiencing more power and dominance within the relationship. Unique to this study was the finding that this pattern was particularly salient when the closest-in-age sibling was very young, regardless of the age difference between the siblings. The mere fact of having a very young sibling, irrespective of the responding child's age, may endow the older sibling with greater status and power in the sibling dyad.

The age of the child or sibling was not predictive of warmth and closeness or conflict in the sibling relationship, however, age differences were significant predictors of perceptions of sibling conflict. Consistent with other studies on negative behaviour between siblings (e.g., Furman & Buhrmester, 1985a; Minnett, Vandell & Santrock, 1983; Stocker & McHale, 1988; Vandell, Minnett, & Santrock, 1987) higher levels of conflict were reported by children whose siblings were close in age to them, whereas, wider age gaps were characterized by less conflict. Children who are close in age presumably spend more time together and thus have more potential to interact and engage in conflict with one another. Wide spaced siblings pairs may not be as likely to share similar interests or participate in the same activities at the same

time and thus, may engage in less conflict. Furthermore, the fact that older siblings (from wide spaced dyads) are perceived as having greater status and power relative to the younger sibling may also be a mechanism through which conflict is attenuated.

### Gender Variables

Gender significantly predicted perceptions of sibling relationship conflict. Similar to other findings on sex differences in how the sibling relationship is characterised (e.g., Bowerman & Dobash, 1974; Montemayor & Hanson, 1985) and also with a review of studies that have included gender differences in sibling interaction as a variable of interest (Summers, 1987), children whose siblings were boys portrayed their sibling relationship as conflictual. This may be due to differences in expectations and different expressions of behaviour that is part of a larger socialization force between the sexes (e.g., Daniels & Plomin, 1984; Huston, 1983). Boys may tend to be rougher than girls and thus, more conflictual interactions may occur in sibling dyads including a brother.

A surprising observation was that although there was a moderate correlation between sex and warmth and closeness, that is, girls were more likely to report feeling warm and close to their sibling (consistent with the findings of Summers, 1987), in general, feelings of warmth and closeness between siblings were not predicted by any structural variables. This result failed to replicate findings from previous studies that have observed young children's prosocial interactions with their siblings or those examining affection and closeness in pre-adolescent sibling relationships (e.g., Bowerman & Dobash, 1974; Dunn & Kendrick, 1981; Furman &

Buhrmester, 1985a). Nevertheless, others have also reported similar findings. Stocker and McHale (1989) noted that in their study of grade 4 and 5 children, the perceptions of the sibling relationship were more strongly related to family dynamics than to the more typically studied structure variables such as gender and birth order. Their results revealed no effects of the children's gender or the gender composition of the sibling dyad on any of the sibling relationship scale scores. Is this similarity an arbitrary finding? In this study, gender was not a strong contributor in the prediction of any of the perceived sibling relationship qualities. One explanation for the apparent inconsistency with the bulk of other research may lie in the sample characteristics. Both the present study and Stocker and McHale (1989) sampled children predominantly from grades 4 and 5, whereas other studies have used children that have been either much younger or slightly older (e.g., studies during early childhood such as those by Dunn and Kendrick (1982) or studies using adolescents or adults such as Bedford (1989a) and Cicerelli (1980)). Moreover, although observational studies of young children have reported gender effects, these influences appear to become less salient for middle childhood and adolescent samples. For example, Buhrmester and Furman (1990) reported that generally same-sex siblings felt closer to one another than opposite-sex siblings, however, the bulk of their findings were associated with age-related rather than gender-related variables.

It is possible that during this specific stage of development (i.e., middle childhood), gender variables have a less significant impact on relationship qualities and interaction than at other stages. Concepts of gender constancy become

increasingly refined and there is a greater awareness and adherence to societal sex stereotypes during the period of development preceding middle childhood (Huston, 1983). During middle childhood an understanding of culturally defined expectations for males and females increases with age however, both sexes become more flexible in their preference and understanding of sex stereotypes; they recognize that such stereotypes are not absolute and that exceptions are possible. In fact, most studies suggest that girls shift towards preferring masculine activities and personality traits during this period, for example, they become tomboys (Huston, 1983). Therefore, documented changes in the impact of gender roles on behaviour may also be indirectly reflected in the present study's results. This would lend support to the notion that middle childhood is a distinct transitional developmental phase with features that distinguish it from either early childhood or adolescence. This may also be akin to Freud's (1940/1964) postulation of a latent period in psycho-sexual development. In other words, the observed trend in the data regarding the lack of association between gender and qualities of the sibling relationship may point out that middle childhood is a period in which sex-role development and the effects of gender on inter-personal interaction play a lesser role relative to early childhood and the upcoming adolescent years. Therefore, it is possible that the influences of dyad structure on the qualities of the sibling relationship may be part of an age-related developmental process that is not static but rather, changes with each developmental transition.

In summary, perceptions of sibling relationship qualities appear to be influenced by family constellation variables in a complex manner. The influence of structural

variables such as the ones studied and also others more relevant to the family as a whole, such as, family size, socioeconomic status etc. in shaping and directing relations within the family should not be minimized. However, in examining the qualities of the sibling relationship, the structural properties of the dyad are by no means the sole determinants of the experience with sibling (Buhrmester & Furman, 1990; Furman & Buhrmester, 1985a). In the present study, with the exception of relative status and power in which structural variables accounted for 62% of the variance, constellation variables accounted for 19% of the variance on conflict and none on warmth-closeness. Clearly, factors other than just sibship dyad structure must be considered when examining the qualities perceived in the sibling relationship. In particular, other factors must play a role in accounting for the individual differences seen in sibling relationships that have similar, if not identical dyad constellations. Stocker, Dunn, and Plomin (1989) demonstrated that child temperament, maternal behaviour, and child age accounted for more of the variance in the quality of sibling relationship than did family constellation variables. Although researchers, parents and children themselves may automatically define the sibling relationship in terms of the individual structural properties (i.e., "my older brother" or "my younger sister"), the present study's results highlight the necessity of looking beyond the independent effects of age and gender variables and considering other possible influences on the sibling bond.

### Patterns Among the Relationship Qualities.

The pattern of associations among the relationship dimensions is also interesting in several respects. The relative status and power measure was independent of both warmth and closeness and conflict. Consistent with Furman and Buhrmester's (1985a) original analyses of the dimensions of the SRI, children may expect power differences because of age differences and birth order. That is, the family hierarchy of power and responsibility is mirrored in the sibling relationships such that children expect that their older sibling will be more dominant and some one who is a model for behaviour, similarly older siblings typically assume a more dominant and nurturing attitude relative to their younger sibling. The sibling relationship, within the context of the larger family system may be the primary environment in which children learn about social order, others' feelings, intentions and about relationships (Dunn, 1988c). From very early on children are closely attuned to the relative power differences and rules for behaviour in families (e.g., Dunn, 1988c).

Families impart social knowledge and becoming a sibling may be an instance of role acquisition (Mendelson, 1990) in which there may be inherent roles in terms of the status and power each subsequent sibling may attain as well as individual differences in the manner the role is defined. Thus, the findings regarding the child's perceptions of differential status and power within the sibling relationship may in fact be a result of not only structural variables, but the nature of the role inherent in being a sibling, a member of a unique and specialised relationship. The long term psychological impact of status and power differences and the differences in sibling

roles has not been investigated. However, it has been shown that with age the sibling relationship becomes more egalitarian in power and status differences (e.g., Buhrmester & Furman, 1990). Using a school age sample and observing sibling dyads at different ages, Vandell, Minnett and Santrock (1987) reported that as the first born's power and status decreases with age, the second born sibling obtains greater power and status with age. Thus, the roles acquired at the birth of a sibling change along with the developmental transitions of the children in the family.

In their initial study of the SRI, Furman and Buhrmester (1985a) found that positive and negative qualities were also independent of one another. The present results failed to replicate this finding. In fact, perceptions of warmth/closeness and conflict were moderately correlated. Children in this sample appeared unequivocal in their characterization of their sibling relationship choosing descriptions that were either positive or negative but not both.

Bigner (1974a) reported that children's developing sense of their siblings moves from less to more elaboration and from the ego-centric to the abstract and that during middle childhood, the most common modes of description of the sibling involve concrete-nonegocentric constructs. This suggests that with cognitive maturation, children increasingly perceive their siblings as more elaborated individuals, differentiated from the sibling context. Bigner (1974b) also reported that young children only described liked characteristics of their sibling. With increasing cognitive sophistication, children also described the disliked qualities of their sibling indicating an increase in descriptive 'ambivalence.' Thus, the perceptions of the



sibling relationship may be influenced by the cognitive-developmental abilities of the child. Children's responses in this study may reflect this cognitive process. The children's perceptions of their sibling relationship did not involve 'ambivalent' constructs (i.e., they did not utilise positive and negative descriptions). Thus, children in this sample may not have attained a cognitive level from which they could view their sibling in a differentiated light.

The rivalry dimension from the SRI was not used in analyses as this scale had low internal reliability. Although appearing unequivocal in their portrayal of the positive or negative aspects of their sibling relationships, the poor consistency of items of this scale indicated that children were less consistent in reporting perceptions of rivalry. They appeared to be more ambivalent about defining the relationship in terms of rivalry and parent partiality than children in the Furman and Buhrmester study. Perhaps at this age, parent partiality is less clear as children now have other resources for support (e.g., Bryant, 1985) than necessarily relying on their parents for attention. Parental behaviour may continue to play a very important role in the child's sense of self and well-being in comparison to their sibling (e.g., Daniel, 1986), however, the process of parent partiality as an influencing agent on children's perceptions may be less clear cut than it was during early childhood (e.g., Baskett & Johnson, 1982; Belsky, 1981; Brody, Stoneman & Burke, 1987). The fact that during middle childhood children are beginning to develop broader social networks outside of the family (Sullivan, 1953) may also account for this change in the significance of parent partiality as a determinant of sibling relationship quality.

Children are also beginning to individuate themselves and their sibling from the sibling and family context (Bigner, 1974b). Thus, they may be less finely attuned to parent partiality in their sibling relationships than during earlier periods. Perhaps questions regarding more specific circumstances are needed to tap how and when children feel rivalrous or left-out relative to their siblings during middle childhood.

#### Behavioural, Social and Affective Features of Sibling Interaction

Other measures of the inter- and intra-personal features of the sibling relationship and experience were also hypothesized to be related to structural properties of the dyad and the self-reported qualities of the sibling relationship.

#### Perspective-Taking Skills

Following from the literature investigating the indirect influence that mother's communication to her children during early childhood may have on their affective perspective-taking abilities and in turn, may have some influence sibling interaction (e.g., Dunn, 1988a,c; Dunn & Munn, 1986a; Howe & Ross, 1990; Howe, 1991), it was proposed that competence in perspective-taking would be related to positive sibling relations during middle childhood. However, neither structural variables nor perceived relationship qualities predicted the child's level of perspective-taking ability. The notion that perspective-taking contributes to positive sibling interaction is theoretically appealing, however, by late middle childhood the facility with which the child uses these skills may not be salient to the quality of sibling interaction. By this age, children and their siblings have spent most of their lives together and have come to know one another very well. Dunn (1988c) argued that children develop social

knowledge as a family member and it is the special nature of early sibling relations that elicits the development of the ability to understand others' feelings and intentions. It is possible that a ceiling was reached in the usefulness of social perspective-taking skills in understanding or influencing sibling interactions. Piaget (1926; 1965) argued that social exchange with peers is the medium through which egocentrism is overcome. Individual differences in the development of nonegocentric thought can be expected because children vary in their exposure to peer interactions. The research across areas of children's social difficulties suggests that at least one skill which influences the social desirability of an age-mate is adeptness in perspective-taking (e.g., Bryan, 1975; LeMare & Rubin, 1987). A study contrasting only children and those with siblings in China found that only children were more egocentric, whereas sibling children possessed the qualities of persistence, cooperation and were more popular (Jiao, Ji, & Jing, 1986). During middle childhood, perspective-taking competence is a critical determinant of success in establishing peer networks (e.g., Berndt & Bulleit, 1985; Piaget, 1965; Selman, 1980). Thus, the skills that children learn early on (e.g., Howe & Ross, 1990; Howe, 1991) in how to understand another's internal state (i.e., their perspective and feelings) are put to the test as children interact more frequently with peers and other people.

Another slant on these findings was provided by the association between perspective-taking ability and the themes observed on the sibling interaction stories. Children who were adept at recognizing the perspective of others were inclined to use a greater number of affiliative (and conflictual) statements when describing the sibling

interactions. Since neither structural variables nor perceived relationship qualities predicted themes or resolutions to these cards, this finding may not be illustrative of the child's actual experiences with their sibling. However, it may be reflective of a tendency for children with more advanced social understanding skills to be more expressive about the positive and negative aspects about an interaction. In other words, children who are more proficient at adopting the perspective of others may have a fuller or richer understanding of how relationships function and how one verbalises characteristics of interactions (i.e., positive and negative) than children with less developed perspective-taking skills. This is consistent with the work of Bigner (1974a) described earlier regarding the relationship between children's cognitive ability and elaboration of descriptors when describing siblings. Further support for the possibility that children's perspective-taking skills may reflect their understanding of relationships comes from the finding that perspective-taking ability was also related to the use of mature resolutions to the sibling interaction stories. Children who were better perspective-takers ended their stories in a constructive, harmonious manner that addressed the internal feelings of the characters, described an outcome to an external problem situation or presented a solution to conflictual interpersonal relationships.

In summary, perspective-taking ability was related to children's responses on the story-telling task but not to their perceptions of their actual sibling relationship or the structural variables of the sibling dyad. Although other factors that may contribute to enhanced social-cognitive skills such as intelligence may also play a role in the use of perspective-taking skills, the findings of the present study could be argued as

indicating that this ability may reflect social processes rather than being part of an emotional process. That is, social understanding skills during middle childhood may be more related to how the child manages within their social network, rather than contributing to how they feel about, or perceive the qualities of family (i.e., sibling) relationships. The dominant conclusion of these findings is that the social understanding skills the child has developed in the context of their early relations with their sibling and their mother is probably applied to their knowledge of the process and functions of relations with others. Dunn (1988c) argued that social understanding becomes increasingly subtle and differentiates with age following a developmental course. Therefore, although perspective-taking may not have direct effects on the quality of sibling relations during middle childhood, its indirect influences lay the groundwork and are powerful influences on the child's social understanding and interaction with others.

#### Story-Telling Task

The associations between the qualities of the sibling relationship and themes from the projective story-telling task were examined for convergence between the self-reported and projective (affective) conceptualizations of the sibling relationship. It was predicted that children who characterised their sibling relationships as warm and close would also interpret the sibling interaction on the cards as involving more instances of affiliation. Conversely, it was predicted that children with conflictual sibling relations would use more conflict or separation themes in their sibling stories.

Contrary to expectations, self-reported qualities of the sibling experience did not predict responses to the sibling interaction cards. Perceived relationship qualities were related only to children's stories to the sibling rivalry card. The findings of Radke-Yarrow et al. (1988) using similar projective technique reflected the child's experience in the depicted relationship. In the present study, the sibling rivalry card, showing the mother holding an infant in her arms as the child looks on may be a depiction of an experience that is very close to the awareness and an image of the relationship that the children carry with them. The image portrayed on the card may be stereotypical or representative of a universal moment in sibling relations - the birth of the younger sibling - whereas the sibling interaction cards may have been more amorphous and less typical or representative of typical sibling experiences. It is possible that although children were instructed to view the figures in the sibling interaction cards as siblings, the stories that the children generated may have been more reflective of the child's social/emotional experiences with relationships with others (e.g., peers) rather than specifically related to their sibling interactions.

Findings for the rivalry card revealed that perceptions of greater status and power were positively related to interpretations of this card with themes of jealousy towards the sibling. While there may be benefits from greater status and being more dominant within the sibling dyad, children may also resent the role they must assume as the older sibling (cf. Mendelson, 1990) illustrated by negative feelings directed towards the new sibling. Furthermore, children in such roles may feel displaced and no longer the center of their parents' attention and love (see also Adler, 1928, 1959).

Interestingly, structural properties of the sibling relationship were related to yet another type of card, the family interaction cards. Interpretations of these cards were affected by the child's gender. Girls were more likely to portray the scenes as involving limit-setting (disciplinary) interactions or as family problems and stress, whereas boys usually interpreted the image as involving a plan for a family activity or group outing. These gender differences may reflect an externalizing versus internalizing gender split reflective of socialization differences of males and females (see Huston, 1983; Maccoby & Jacklin, 1974). Girls may be more attuned to the difficulties that may arise in family interactions and that similar to the discussion above, they experienced more negative family interactions? In ending their stories, girls used more immature or fantasy-based, wishful thinking resolutions to their stories. Girls may have used more imagination or fantasy in describing the scenes and in their endings to "make things better." For example, one girl replied:

Well the parents are talking and we're just looking and thinking, um ... well thinking that they're fighting, like maybe they'll split up or something and thinking like maybe he'll live with his father, our father, and I'll live with my mother and we won't see each other or maybe it will be like I'll live with my father and he'll live with my mother and so then they... a couple days later they made up and we still are all together.

Similarly, another girl's interpretation of the picture also involved a sense of catastrophe that magically resolved itself:

The parents are having a discussion and the children are looking at them and the children look real sad because the parents are fighting. Well they're separating and stuff. I hope they won't and stop fighting. The children will say stop fighting and the parents will stop and maybe they will start hugging again then everyone will feel the same again.

Younger children were also more likely to see the family as stressed or involved with a problem than were older children. With age, children may be less sensitive to the negative turns family interactions (including marital interactions) may take and are may also be less likely to describe interactions in a dramatic, unrealistic manner. Researchers have described how siblings begin to distance themselves from one another with age, especially during adolescence, resulting in a less intense bond (e.g., Anderson & Starcher, 1992; Buhrmester & Furman, 1990; cf. Bigner, 1974b). In this light, the finding of age differences in perceiving the family as having problems or engaged in a more neutral activity may reflect a general process of disengagement and increasing independence and individuation from the family that may begin during middle childhood and reach its peak during adolescence. The younger the child is, and the more dependent they are or perceive themselves to be on their family, the more likely instances of family stress would have a negative impact on them. Whether this may be due to greater sensitivity or less proficiency in coping with stressful events and transitions is purely speculative, however, with age and experience, the child may learn to modulate their appraisal and reactions to stress thereby perhaps assuming a more detached, less involved stance vis-à-vis other's problems that may not directly concern them. For example, a young child witnessing their parents arguing may be more fearful of the consequences of this dispute, whereas, a child who has seen arguments followed by periods of reconciliation and renewed positive interaction may better 'weather' such family stress and not attribute as much significance to it as a situation in which their own well-being is jeopardized.



### Rivalrous Versus Nonrivalrous Game Behaviour Between Siblings

It was expected that the behaviour observed during a game in which children could play with the intent to either cooperate or compete with their sibling would be related to the children's perceptions of their sibling relationship and to gender variables of the child and their sibling. The results partially supported the hypotheses. Children demonstrated more non-rivalrous, cooperative behaviour (i.e., taking fewer marbles for themselves) when imagining that they were playing against their sister sibling. Sex of the child playing the game was not a significant predictor of game behaviour. Children who took fewer marbles and did not play to win against their sibling also described their sibling relations as warm and close. Perceptions of conflict within the sibling relationship were unrelated to game behaviour. Cooperative children also used more affiliative and fewer conflictual statements when describing the sibling interaction on the story-telling task.

These results suggest that children whose siblings are girls are more likely to share and not play for exclusive personal gain when in similar game situations regardless of their own sex or birth order vis-à-vis the sibling. This positive behaviour is also related to a relationship context that is perceived as warm and affectionate. In contrast to the literature on sex-typed behaviour of children (Huston, 1983; Maccoby & Jacklin, 1974) there were no sex differences in the child's game behaviour rather, the sex of the sibling was the important determining factor. This result is also consistent with the finding in the literature that girls are more often recipients of prosocial acts (Summers, 1987). Although the situation may have been

artificial and vulnerable to social desirability confounds as the children were instructed to pretend that they were playing with their closest in age sibling while the examiner was recording their scores, a pattern of behaviour similar to that reported for observational studies (e.g., Abramovitch et al., 1979; Brody et al., 1985; Stewart & Marvin, 1984) occurred. Why female siblings are more likely to be a target of prosocial behaviour is still unclear. Sisters were also associated with relationships that were positive and close. These findings appear consistent with a larger pattern of behaviour originating in socialization forces. What is particularly noteworthy is that the socialization forces also characterize sibling relationships and also appear to be associated with the qualities of the sibling experience.

The direction of effects for how the children's game behaviour was related to sibling relationship warmth and closeness remains unclear. It is possible that the warmth and closeness associated with sibling relations with the closest-in-age sibling may be a context that fosters cooperative game behaviour. Conversely, siblings who are not rivalrous or competitive with one another may develop warm and close bonds.

An interesting finding was that game behaviour was not associated with sibling conflict. It was expected that rivalrous behaviour would be associated with conflictual sibling relations. This may indicate that children differentiate behaviour during a game context from the more general qualities experienced in the sibling relationship. The sibling relationship may be a 'safe' context in which to use rivalrous, competitive behaviour without jeopardizing the relationship (e.g., Raffaelli, 1991).

### Interaction Frequency of Children with their Siblings

It was predicted that children with positive sibling relations and those from same-sex dyads would seek out their sibling as a companion more often. Consistent with past research and theory (e.g., Bank & Kahn, 1982; Furman & Buhrmester, 1985a; Sutton-Smith & Rosenberg, 1970), children who reported sibling relationships as warm and close and children from same-sex dyads were more likely to seek out and spend time with their sibling. Although the identified sibling in this study was the one closest-in-age to the child, neither age of the child, age spacing or birth order variables were significant predictors of the interaction frequency the child reported for this sibling. Intuitively, children seek out someone with whom they can share experiences and interactions; someone who is similar to them. Furthermore, those children that sought out one another also reported more warmth and closeness in their sibling relations than those who did not interact as frequently and voluntarily. This finding is best illustrated by the reply of a boy asked who he spends time with,

I spend time with my brother Jeffery, because when I'm at school I play with him and after that he helps me with my homework and then I start playing with him. We are pretty close.

As previously discussed, gender variables (i.e., same-sex pair) were not significant predictors of perceptions of warmth and closeness. This may indicate that gender does not have a direct influence on the positive qualities of the sibling relationship during middle childhood, but may exert its influence indirectly through encouraging greater interaction, mutual play and activities with the sibling.

### Sibling Deidentification

For same-sex, close-in-age siblings, deidentification processes have been proposed as an explanation for differences among siblings (i.e., they strive towards achieving separate identities to minimize conflict and rivalry, Bank & Kahn, 1982; Schacter & Stone, 1987). Behaviour geneticists have also argued that siblings may create different environments for each other, thereby contributing to the differences between them (Rowe & Plomin 1981; Scarr & Grajek, 1982). More researchers have become interested in the theory of deidentification and facets of sibling similarity-dissimilarity, however, empirical study with non-clinical samples is lacking.

Based on the theory and clinical observations of deidentification processes (e.g., Bank & Kahn, 1982; Schacter et al., 1978), it was expected that structural similarity between siblings would be associated with perceptions of similarity. Contrary to expectations, structural characteristics of the sibling dyad did not predict deidentification. Thus, structural variables were not determinants of perceptions of similarity to or difference from siblings during middle childhood. Similar results were presented by Lord and McCarthy (1991) in their study of school age children's motivation to be like their sibling. They reported no direct effects of gender constellation nor age interval on children's desire to be like their sibling.

It was also expected that children would have passed through the process of deidentification and those that perceived themselves as being very different from their sibling would also report less conflict in their relationship with this sibling. Again, counter to predictions and theory, children who perceived themselves to be similar to

their sibling also perceived more warmth and closeness in this relationship.

Correspondingly, perceptions of differences were associated with conflictual sibling relations (also consistent with Lord and McCarthy's (1991) results). When sibling relationships were perceived as positive, there was also less tendency for children to express a wish to change to become like their sibling. Buhrmester and Furman (1990) argued that it is the 'complementary' features of sibling relationships, such as differences in relative status and power, in contrast to 'reciprocal' features such as warmth or conflict, which are more likely to play a role in fostering differences among siblings (see also Dunn, 1983; Rowe & Plomin, 1981). These results are also consistent with the discussion of the association between interaction frequency and sibling relationship warmth and closeness. Therefore, perceived similarity, rather than difference, may promote interaction frequency and these variables are both related to perceptions of warmth and closeness in the sibling relationship.

Interestingly (and consistent with Buhrmester & Furman, 1990), children who perceived that they had more status and power than their sibling expressed the desire to change to become more like their sibling. It is possible that although there are positive features associated with a differential status, perhaps the responsibility for the other sibling that is inherent to the role of being an older sibling is a negative facet of the relationship. Differential experience as a result of parenting factors may also be relevant here. Parents may have higher expectations for the older sibling and encourage more independent and responsible behaviour than from the younger sibling. The finding of a desire to become more like the sibling by children with greater status

and power is similar to the discussion of status and power differences predicting jealousy themes on the story-telling task. Increased status within the family may be a double edged sword as benefits may be outweighed by perceived disadvantages.

Data from the story-telling task provides corroborating evidence for the current study's results although, again, the findings are counter to predictions. Children who perceived themselves as different from their sibling interpreted the images of sibling interaction as conflictual. Therefore, the data indicate that the theory of lessened conflict between deidentified siblings does not hold for either self-report or the internal representations that the children may have regarding sibling relations. Rather, perceived similarity appears related to affectionate bonds.

Buhrmester and Furman (1990) demonstrated that the greatest asymmetry in complementary features of sibling relations occurs in early childhood. They speculated that sibling relationships may contribute more to the development of dissimilarity during that time than during adolescence. Similar to the current findings, Rowe and Plomin (1981) found little evidence that the qualities of the sibling relationship contributed to differences in siblings' personalities during adolescence. Therefore, a possible explanation is that the process of deidentification may occur earlier than middle childhood and children at this age may not be as actively involved in differentiating themselves from their siblings as predicted by the theory. This interpretation is partially consistent with Bigner's (1974b) conclusions regarding cognitive development and experience of the sibling relationship during middle childhood such that children have not fully differentiated themselves from their

siblings at this age. However, following his propositions, cognitive development in the later phase of middle childhood would enhance deidentification processes. Before a definitive explanation for the timing and role of deidentification and sibling interaction can be arrived at, clarification of the developmental phase-related changes in the sibling interaction and perceptions of the relationship is required.

#### Family System Functioning and the Sibling Relationship

In an extension of the literature on sibling relations, the role of family climate as contributing to the qualities of the sibling relationship was explored. Previous research has not examined the environmental (family) influences on the sibling relationship and the challenge to researchers has been to provide insight into the interactions among family members (Radke-Yarrow, Richters, & Wilson, 1988).

Sibling warmth and closeness and family climate. Dimensions of family functioning were predicted to be related to sibling relationship qualities such that positive relations would be observed in families that were balanced in terms of their degree of cohesion and adaptability. Contrary to expectations, parent reports of family functioning (i.e., cohesion and adaptability), failed to predict children's perceptions of the amount of warmth and closeness in their sibling relationship. Rather, the children's own ratings of the family environment (i.e., families high in cooperation and low in stress) predicted positive sibling relations. As both ratings were made by the child it is possible that rater bias may account for the finding.

In explaining the links between the family system and the sibling relationship one must also consider that dimensions of family functioning may not be direct

precipitants of qualities of sibling relations, rather, family functioning may be related to other aspects of the sibling relationship, such as interaction frequency in play, joint household responsibilities, etc., that also determine the quality of the sibling bond. In fact, this was the case for family cohesion which predicted the child's reports of whether they seek out and spend time with their closest-in-age sibling. In this manner, family precepts of togetherness may indirectly affect sibling relationship closeness by providing an environment that encourages siblings to spend time with family members, particularly one another.

Sibling conflict and family climate. On the other hand, child perceptions of sibling conflict were directly predicted by family relationship flexibility (parent ratings) in a curvilinear manner. Specifically, an average level of conflict was predicted by families rated as balanced in terms of their flexibility to change whereas, children in families who fell at the extreme ends of the adaptability dimension reported extremely low amounts of conflict with siblings. This was striking for 'chaotic' families, that is, families with extremely high adaptability scores (see Figure 3). According to Olson et al.'s (1979, 1983) model of family functioning, too much or too little adaptability is seen as dysfunctional to the family system. Family relations rated as balanced in terms of the flexibility between and within relations may provided a model for solving conflicts. Interactions between siblings in balanced families may provide social knowledge not available in other relationships; sibling conflict in particular has been linked to the development of children's understanding or moral and conventional rules (Dunn & Munn, 1985) and to the use of elaborated



reasoning during disputes (Dunn, 1988c). Sibling conflict maintains boundaries, reinforces social rules, contributes to individuation (Shantz & Hobart, 1989) and influences social development through the child's active search and use of solutions to inter-personal problems (e.g., Dunn, 1988c). In normative samples the family, and particularly the sibling relationship, is prone to conflict as a result of certain characteristics, for example, time spent together, necessity of integrating diverging activities and interests, involuntary membership and social norms that make conflict acceptable (Gelles & Straus, 1979; Hobart, 1991; Raffaelli, 1991). Most children rarely deny fighting with sibling and will easily describe their anger and aggression towards siblings (Raffaelli, 1991). Research on children's relationships has focused on high levels of conflict (e.g., Patterson, 1986) and it is unclear if excessively low conflict can be dysfunctional. Children who are very submissive may be the frequent victims of peer aggression (Patterson, Littman & Bricker, 1967) and may not have very effective peer relationships. Similarly, families that do not permit children to disagree with parents would also be considered dysfunctional.

In this study, chaotic or overly permissive family climate was associated with reduced sibling conflict (sibling conflict was also positively correlated with parent-child conflict). Olson et al. (1979) describes such families as using passive-aggressive styles to resolve conflict. There is little defined leadership and discipline is often laissez-faire, arbitrary and very lenient with many implicit and few explicit rules. Problem-solving for these families is very poor and there is often development and maintenance of coercive processes or agonistic behaviour patterns (e.g., Patterson,

1986). The implication from much of the research on sibling conflict is that children may consider fighting with siblings as normative and safe (Bank & Kahn, 1982; Hobart, 1991; Raffaelli, 1991) however, in chaotic families the emotional climate may not permit expressions of anger and aggression towards other family members. Chaotic family functioning does not appear to allow children to work out problems in a healthy normative fashion and develop the social understanding skills already mentioned. Further clarification of the socialization processes involved in non-normative families is necessary to fully understand the links between family adaptability and sibling conflict.

Relative status and power and family climate. Reports of family and household responsibilities for children were associated with perceptions of greater status and power. Therefore, similar to the previous discussion of sibling roles and differences in status and power, the child's perception of being more dominant and admired was in part related to the objective demands placed on her/him by the family and perhaps, the family's manner of delegating responsibilities to family members so that each contributes according to their status and role within the family hierarchy.

Perspective-taking and family climate. Of the multiple measures of behavioural aspects of interaction with the sibling, only perspective-taking abilities were related to family climate variables. Children's reports of family cooperation (and little stress) were correlated with their perspective-taking ability. Although sibling relationship qualities were not directly related to perspective-taking, the family environment may be a context in which these skills are fostered and encouraged (see also Dunn, 1988b;

Howe & Ross, 1990). During middle childhood, the family may act as a socialization agent for the child as s/he broadens their social networks interactions with peers.

Children's stories and family climate. Contrary to expectations, the measures of family functioning were unrelated to stories generated to the family cards. The family interaction images may not have been adequate to pull for 'projections' of the child's experiences within their family. However, children who described their families as high in cooperation and low in stress used more affiliative statements and mature endings in their stories of sibling interaction. Although cohesion was unrelated to sibling interaction stories, adaptability was negatively related to themes of separation in the sibling interaction stories. Children from more 'rigid' (i.e., low on the adaptability dimension) as opposed to chaotic families, described sibling interaction cards as involving separation, moving away or leave-taking.

Drawing together the results of the family system influences on sibling relationship interaction a unifying conclusion is that the manner in which family (system) relationships are managed and perceived may provide a framework or 'paradigm' in which other subsystem relations are directly and/or indirectly influenced. Cohesion and adaptability contribute to sibling relationship qualities in different ways. Family cohesion and family cooperation appear to have effects on the sibling relationship by providing a framework or 'working model' (Reiss, 1981; Reiss & Oliveri, 1983) for the closeness between family members. Such a model might involve acting as a socializing agent and fostering positive relations among family members which in turn promotes prosocial behaviour and sophisticated social

understanding within the broader social networks outside of the family. Adaptability had more direct effects on the sibling relationship. An environment that is balanced in terms of its flexibility for change fosters normative levels of conflict within sibling relations. Presumably children from such families learn appropriate means to solve interpersonal problems or prevent them from escalating. Families without such adaptive relationship flexibility may become involved in coercive and mutual processes that further antisocial and antagonistic behaviour (see Patterson, 1986; Radke-Yarrow, 1986) or engagement in conflict and subsequent conflict resolution is not encouraged between any family members. These results highlight the importance of the notion that the child and the relationships the child is involved in are embedded within the family as a social context (see also Dunn, 1988c). Therefore, the family may indirectly reinforce and nurture positive relations with siblings through its more far-reaching effects on socialization of the child and the influences on how the child manages interpersonal interactions.

#### Parent-Child and Sibling Relationship Qualities

In an attempt to address Adler and Furman's (1988) call for comparisons of the qualities characterising different relations, the qualities of the sibling and parent-child relationship were contrasted. It was expected that similar patterns would be found within each relationship such that, affectionate parent-child relationships would be associated with sibling relationships described as warm and close. As predicted, the pattern of parent-child relationship qualities corresponded to the qualities of the sibling relationship described by the children even though the dimensions were made

up of different subscales. Consistent with systems theory (e.g., Minuchin, 1988; Sroufe & Fleeson, 1988) and Adler and Furman's (1988) framework for conceptualising relationships, warmth between parent and child was associated with perceptions of warmth and closeness in the sibling relationship. Similarly, parent-child relationships described as conflictual and lacking in positive relationship tone were also associated with conflictual sibling relations. Correspondingly, children who reported that they and their sibling were similar to the same parent also stated that they (the siblings) were similar to each other.

While it is possible that rater bias (i.e., variables were rated by the children) may play a role in the consistencies between qualities observed, separate questionnaires were used to examine each of these relationships and they included items and questions thought to be common to all relationships, as well as questions specific to each relationship. A recent study by Barnes and Berghout Austin (1991) showed that perceptions of maternal warmth and positive and negative responsiveness influenced sibling behaviour and interactions, which then had direct impact on the firstborn child's perceptions of self. Their findings highlight how family processes indirectly influence adjustment via the sibling relationship. Similarly, Bryant and Crockenberg (1980) found that parents who are responsive to their children's behaviour are likely to foster prosocial behaviours between their children.

In summary, associations among the qualities of subsystem relations may be a result of the overarching system qualities that promote or inhibit adaptive relationship bonds. Support for this explanation comes from analyses that examined how family

variables predict parent-child relationship qualities. It was observed that greater cohesion, and perceptions of the family environment as cooperative and non-stressful were associated with positive parent-child relations, characterised by few struggles of conflict and power. This appears to be an example of the family system's effects on subsystem relationships described above as being a socializing agent and providing an emotional and social context in which the child learns about relationships and generalises this knowledge to other important relationships that they develop.

#### Parent-Child Relationships and Family Climate

The final research question examined the association between family functioning and parent-child variables. It was expected that positive family climate would be associated with positive parent-child relationship variables and conversely, negative or dysfunctional families would be predictive of negative parent-child relations. Furthermore, based on the notion that the family system influences each subsystem in comparable ways, it was expected that family influences on parent-child relations would be similar to those on the sibling relationship qualities. The expectations were partially supported by the data. Whereas cohesion did not directly influence sibling relations, ratings of connectedness were positively related to positive parent-child relations and negatively related to conflictual parent-child relations. Similar to the results for sibling warmth and closeness, the child's rating of cooperativeness in the family was also related to positive parent-child relations. Adaptability was not related to parent-child relationship variables. It appears that an expectation of similar influences stemming from the larger family system to each of the subsystems was

erroneous and a more complex pattern of effects was revealed. Family cohesion may be a feature of family functioning that binds parents-with their children (e.g., heightening attachment behaviours). In this way cohesion also has indirect effects on sibling relationship warmth and closeness as sibling and parent-child relations were correlated among corresponding qualities. For sibling and parent-child relations, the child's perception of family climate predicted positive relations with family members.

Therefore, these findings provided further supporting evidence for the proposition that family functioning has both direct and indirect effects on sibling relations. Specifically, cohesion appears to exert its influences in a more indirect manner whereas adaptability, in the manner that the family structure functions with its roles and rules, appears to have a more direct influence on the occurrence of sibling conflict without appearing to affect parent-child relations.

### Conclusions

Traditionally, investigators have examined the sibling relationship from the perspective of structural or constellation variables such as birth order. More recently, as social scientists in general have become interested in the qualities of persons' relationship experience, new research on the sibling dyad has begun to look beyond structural properties to other features of this relationship. The current study supports this more recent perspective and indeed, the results of this study extend past findings by investigating how other features of the sibling relationship/interaction may be related to sibling dyad structure and qualities in the sibling relationship. The use of a variety of methodologies to access information on the qualities and features of the

inter and intra-personal experience of the sibling relationship proved to be a fruitful avenue to pursue. Specifically, it was shown that there are multiple ways to measure and examine the sibling relationship ranging from observation to projective assessments, with each providing a look at unique, yet inter-related facets of the sibling experience.

The most important aspect of the current study is the demonstration of how the sibling relationship may be influenced by the environment in which it develops namely, the family system. Aside from studies that have focused on families of divorce, no studies have been conducted to examine the role of the family climate or aspects of family functioning on the sibling experience. Evidence for adopting a systems approach in examining families and sibling relations has been provided by the current results and suggest new avenues of research for investigators interested in examining the causes and consequences of experience in sibling relations.

The model depicted in Figures 1 and in more detail in Figure 2 highlights the embedded nature of the sibling relationship within the family context. This conceptual model guided the main analyses and provided a framework within which to consider the sibling relationship. Results indicated that although structural variables play a significant role in defining the roles, perceptions, and interaction within the sibling relationship, they are not the primary determinants of the individual differences in the qualities of this relationship. Family variables also proved to be influential in explaining differences in sibling relationship quality. Of particular interest to this study was the manner in which family functioning (i.e., family



cohesion and adaptability), affects the relationships within the family subsystems. Family functioning was seen to be an important influence on both parent-child and sibling relationship qualities however, the influences were not identical.

Cohesion appeared more important in fostering positive parent-child relations, which then led to warm and close sibling relations. On the other hand, adaptability was not instrumental for parent-child relations but rather, it influenced the degree of sibling conflict, thereby directly influencing the development of social problem-solving skills. The direct and indirect effects of family functioning were observed for other aspects of sibling interaction, too, and these features were also related to sibling relationship qualities (e.g., interaction frequency among siblings). These results confirmed the assumption from the model that sibling relations, while maintaining itself as a unique developmental and social environment within the family is strongly influenced by the larger system as well as structural characteristics that define it.

Although the results of this study are consistent with the idea that the family is a vital socialization context for children, they expand on these notions by indicating how the family influences the sibling relationship. Based on the analyses that examined how sibling relationship qualities affect other measures on sibling and interpersonal interaction (e.g., perspective-taking, play behaviour, and responses to a projective story-telling task that examined perceptions of sibling and family interactions), it seems clear that one role of the sibling relationship is to provide a unique socialization context for the child. The family appears to influence these other measures of social interaction through its influences on the sibling relationship and

also by providing a working model or social paradigm of how complementary and reciprocal relationships function. The specific functions of the sibling relationship at each developmental phase need clarification. Aspects of the sibling relationship change with age and development, however, we are only beginning to understand these changes in qualities and functions. Before exploring future directions that derive from these findings, the limitations of this current project will be discussed.

#### Limitations of the Current Study

Although the children had little difficulty providing a rich source of information of their sibling experiences, it is possible that some of the consistency among the findings using similar methodologies (i.e., comparisons among self-report items) may be a result of a halo effect from having obtained ratings from the same respondent (i.e., relying on child ratings).

A second limitation of this study was the exploratory nature of the research. While this approach led to the use of a multi-trait, multi-method strategy, it was possible that subtle details and interactions among certain variables may have been inadvertently overlooked. It was felt that a more rigorous methodology needed to be sacrificed in order to obtain a broader picture of the variables associated with the sibling relationship qualities.

A third limitation or confound of the current study applies to the use of the story-telling technique. While only variables that were psychometrically sound were retained in the analyses, the original conceptualisation of the story-telling technique may not have applied well to this sample. Unlike Radke-Yarrow et al.'s (1988)

findings that the use of such techniques was a means to tapping the experience the child has had in the interpersonal situation depicted, it was possible that these cards were less salient as portrayals of specific sibling relationship scenarios and experiences for the children in this sample. It appears that the children may not have 'projected' their experience and perceptions directly into their stories about the cards. However, the responses were associated with particular aspects of self-reported features of relationships and may reflect an underlying awareness of relationship processes not tapped by the conceptualisation of this task and the coding scheme.

Finally, the results of this study may not generalise to sibling relations outside of the range sampled (i.e., middle childhood). However, this was not necessarily a limitation on the value of these results. In fact, our knowledge of the sibling relationship would be strengthened if we understood more about how qualities of sibling interaction and experience change with the different developmental challenges associated with different ages and life periods.

#### Future Directions

Many of the future directions have been anticipated in the discussion of limitations of the results. With this broad base of knowledge regarding the associations among, structural, self-report, observable, and affective characteristics of the sibling relationship and the concomitant associations with dimensions of parent-child relations and broader family functioning, future research is now necessary to examine these association in detail. In particular, obtaining information from all members of a family and examining other dimensions of family life may shed more

light on how the family provides a context for fostering or inhibiting sibling relations. Cross-sectional, or preferably longitudinal, studies could also be conducted to examine the developmental changes in sibling relationship qualities, using a common multi-method, multi-trait framework at each period. Finally, the importance of the sibling relationship on child adjustment in terms of how certain qualities might promote adaptive interpersonal functioning is another area that has only recently begun to be explored. However, with the lack of a common framework for defining relationship qualities and diverse methodologies, generalizations about the impact of the sibling relationship on future and concomitant adjustment are limited.

In light of the findings of the present study, it is suggested that investigators turn their attention towards examining the processes that stem from the family and the subsystem relations of the family and influence the child's development and adjustment. The belief guiding this study was that sibling relations, while seemingly forgotten and neglected in our society and theory on personality development, must play an important role in one's evolution as a social being. Further research is needed to explore fully the role of siblings (or lack thereof) in our personality development and perhaps adjustment to life experiences and stresses. Furthermore, because most families suffer and succeed at various points in the family life cycle, and children's social development is influenced by both the regular and the unexpected in family life, research related to child-rearing theory and examinations of family processes is necessary to enrich further our understanding of the mutual roles of the family and sibling relations in development and adjustment. Path analysis may

be a useful technique to address the causal effects of different variables within the family system on the sibling relationship and to also further our understanding of how the sibling relationship affects later adjustment.

### Clinical Implications

A further implication of this work was the clinical ramifications of this research. As researchers become aware of the powerful influences that siblings during different developmental periods might have on each other and how the sibling interaction may in turn affect the family environment or other relationships within the family (e.g., marital or parent-child), it will be necessary to turn our attention to how we might intervene in preventing or arresting negative patterns of interaction. Certainly, these results point to the importance of conceptualising the family as a whole. In this regard, child behaviour problems must be seen as they affect and are affected by the family system. Patterson's (1986) research on coercive processes within families and the contribution of siblings to such patterns of behaviour provide an important starting point for understanding how clinicians might intervene in such situations. Patterson's work is also important because he has applied his model of coercive interactions to both sibling and parent-child relationships. He is one of the few researchers who has attempted to generalize his understanding of one type of relationship to other relationships, and to propose a possible intervention strategy. Rabin (1989) has pointed out the neglect of siblings in analytic therapies and perhaps an understanding of the nature of the sibling bond, beyond traditional theories of sibling rivalry could be fruitful in developing therapeutic techniques that includes discussion with or about

siblings in the search for understanding human behaviour. Certainly research contrasting dysfunctional and normal relationships would be an interesting avenue to follow. One would expect children with several dysfunctional family relationships to be at greater risk than those with an isolated problem (Adler & Furman, 1988). The role of the sibling relationship in a taxonomy of dysfunctional relationships, that is, the sibling relationship as a buffer to the negative influences of other relationships, is also an important area to explore particularly in clinical populations. Finally, paediatric psychology might benefit from a better understanding of how siblings and family systems influence one another, are affected by, and cope with acute and chronic illness.

The study of sibling relations needs to move away from analyses of unitary findings and focus attention on the connections and links among relationships and the causes and consequences of experiences in relationships. The belief guiding this research was that the sibling experience plays a larger role in family adjustment, and child development than has been found or discussed in past research. It is hoped that the present study has contributed to this effort by providing a framework for describing and conceptualising sibling relationships within the family system that can be built upon to further our understanding of this unique relationship.

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Appendix A

Parent and Child Consent Forms



Concordia  
UNIVERSITY

Dear Parents,

I am a professor at Concordia University where I teach courses and do research on children and adolescents. One of the topics I study is the types of relations with siblings children experience. I am writing to tell you about this study and to ask for your permission for your child to participate in it.

As part of the study, we would like to ask you to complete some questionnaires about the ways that members of your family get along with each other and how your child gets along with his/her sibling. This helps us understand how family and sibling relations influence children's adjustment and their relations with their friends at school.

If you have two children participating in our study, please be sure that you complete and return both sets of forms. Return the forms to us in the enclosed self-addressed stamped envelope. We would like to offer each family an honorarium of \$20.00 for each participating child. We will also have a raffle in which all families who return the forms would be eligible to win a \$100.00 prize. On the enclosed form please list the name that should appear on the honorarium cheque.

We would also like to meet individually with each child for 40 minutes at their school for one session. We will ask them to complete three tasks that will give us information about their perceptions of their sibling relations. The tasks are briefly summarized below:

- (1) Story-telling task: Children will be presented with six stimulus cards, each depicting an interpersonal scene involving two siblings. The child will be asked to tell a story about each picture.
- (2) Perspective-taking task: For this task the child hide money under one of two cups. They will then be asked to pretend they are playing with their sibling and to relate which cup the sibling will pick to find the money and to give a rationale for their answer.
- (3) Marble-choice task: Children are presented with choice cards in which marbles have been placed in the holes. The child must choose either the left or right side of the card. They can choose whichever alternative they prefer.

The children will also be interviewed regarding what activities they share with their sibling and what things they have conflicts over. Once the session is complete, children can choose a small reward for their participation from a selection of toys such as pens, balls, whistles, magnets, and puzzles.

This study poses no risks to the children. Because it is not a "treatment study" it is not intended to provide direct benefits to the students who participate. Most children enjoy participating in activities like those we have outlined above. The information collected in the study will be completely confidential, and participation is, of course, entirely voluntary. Your child is not required to take part, in fact, even if you give your permission for him/her to participate you may change your mind at any time. If your child decides that s/he does not want to participate, he or she does not have to.

If you have any questions about this study, please call me at 848-2184 (office) or 489-4497 (home). You should also feel free to call Jasmin Aquan-Assee, who is my assistant on this project, at 848-2849. In addition, either of us can be reached by letter at: Department of Psychology, Concordia University, 1455 de Maisonneuve Blvd. W., Montreal, Quebec, H3G-1M8.

Please fill out the attached form and return it in the stamped, addressed envelope provided. Thank-you for your help and cooperation,

Sincerely,

William M. Bukowski, Ph.D.  
Associate Professor

Jasmin Aquan-Assee, M.A.  
Graduate Student

## PARENT CONSENT FORM

Please read and sign the following:

"Professor Bukowski has described the purposes and procedures of the research study on children's perceptions of their sibling relations that he would like to conduct with the fourth-, fifth- and sixth grade students. I understand that the children who participate in Dr. Bukowski's study will be asked to meet individually with him or his assistant complete three activities (a) a story telling task; (b) a perspective taking task; (c) a marble choice game. I understand that it will take about 40 minutes for the participant to complete these tasks. They will be asked to only do it once. I know that there will be no direct benefits to my child as a result of having participated in this study, Dr. Bukowski has told me that there are no risks except those that children already encounter in their daily lives. I know that participation is voluntary and that even if my child begins to take part in the study, he or she can withdraw at any time. I understand that my child's responses will be confidential, and that no identifying information will be given in results of this research."

Please check one of the following:

\_\_\_\_\_ I give my child permission to participate.

\_\_\_\_\_ I do not give my child permission to participate.

My child's name is \_\_\_\_\_.

Please sign and print your name here:

(Sign) \_\_\_\_\_ Date: \_\_\_\_\_.

(Print) \_\_\_\_\_.

**PLEASE RETURN THIS FORM IN THE STAMPED ENVELOPE PROVIDED.**



### Student Consent Form

Name \_\_\_\_\_

Birthdate \_\_\_\_\_ Age \_\_\_\_\_

Boy \_\_\_\_\_ Girl \_\_\_\_\_

Homeroom Teacher \_\_\_\_\_

### STUDENT PERMISSION FORM FOR RESEARCH STUDY ON BROTHERS AND SISTERS WINTER 1991

Please read and sign the following statement if you wish to be in our study.

I have been asked to be in a research study that Dr. W.M. Bukowski and Jasmin Aquan-Assee are doing on the perceptions that young people like myself have of themselves and their relations with their siblings. I know that if I agree to be in the study I will be asked to make up stories in response to pictures, play a game hiding money, play a marble game and to answer some questions about me and my brother or sister. I know that I can win a prize for my participation.

I know that I do not have to be in the study, and that even if I start to take part in it I can quit if I decide that I do not want to participate any longer. Also I know that my answers will be confidential. That is, I know that no one but Dr. Bukowski, Jasmin Aquan-Assee or their assistant and I will know what I say on the questionnaire. Dr. Bukowski and Jasmin Aquan-Assee have promised me that they will not tell anyone what I say in the questionnaire.

My name is:

(Print) \_\_\_\_\_

Date \_\_\_\_\_

(Sign) \_\_\_\_\_

Appendix B  
Sibling Relationship Inventory  
(SRI)

## ME AND MY SISTER

My name: \_\_\_\_\_ My sister's name: \_\_\_\_\_

For each question, check the answer that is best for you.

- =====
1. Some sisters do nice things for each other a lot, while other sisters do nice things for each other only a little. How much do both you and your sister do nice things for each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
  2. Who usually gets treated better by your mother, you or your sister?  
☐ My sister almost always gets treated better  
☐ My sister often gets treated better  
☐ We get treated about the same  
☐ I often get treated better  
☐ I almost always get treated better
  3. How much do you show your sister how to do things she doesn't know how to do?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
  4. How much does your sister show you how to do things you don't know how to do?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
  5. How much do you tell your sister what to do?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much

6. How much does your sister tell you what to do?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
7. Who usually gets treated better by your father, you or your sister?  
☐ My sister almost always gets treated better  
☐ My sister often gets treated better  
☐ We get treated about the same  
☐ I often get treated better  
☐ I almost always get treated better
8. Some sisters care about each other a lot while other sisters don't care about each other that much. How much do you and your sister care about each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
9. How much do you and your sister go places and do things together?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
10. How much do you and your sister insult and call each other names?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
11. How much do you and your sister like the same things?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much

12. How much do you and your sister tell each other everything?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
13. Some sisters try to out-do or beat each other at things a lot, while other sisters try to out-do or beat each other only a little. How much do you and your sister try to out-do or beat each other at things?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
14. How much do you admire and respect your sister?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
15. How much does your sister admire and respect you?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
16. How much do you and your sister disagree and quarrel with each other?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
17. Some sisters cooperate a lot, while other sisters cooperate only a little. How much do you and your sister cooperate with each other?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much

18. Who gets more positive attention from your mother, you or your sister?  
( ) My sister almost always gets more positive attention  
( ) My sister often gets more positive attention  
( ) We get about the same amount of positive attention  
( ) I often get more positive attention  
( ) I almost always get more positive attention
19. How much do you help your sister with things she can't do by herself?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
20. How much does your sister help you with things you can't do by yourself?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
21. How much do you make your sister do things?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
22. How much does your sister make you do things?  
( ) Hardly at all  
( ) Not too much  
( ) Somewhat  
( ) Very much  
( ) EXTREMELY much
23. Who gets more positive attention from your father, you or your sister?  
( ) My sister almost always gets more positive attention  
( ) My sister often gets more positive attention  
( ) We get about the same amount of positive attention  
( ) I often get more positive attention  
( ) I almost always get more positive attention

24. How much do you and your sister love each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
25. Some sisters play around and have fun with each other a lot, while other sisters play around and have fun with each other only a little. How much do you and your sister play around and have fun with each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
26. How mean are you and your sister to each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
27. How much do you and your sister have in common?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
28. How much do you and your sister share secrets and private feelings?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
29. How much do you and your sister compete with each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much

30. How much do you look up to and feel proud of this sister?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
31. How much does your sister look up to and feel proud of you?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
32. How much do you and your sister get mad at and get into arguments with each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
33. How much do both you and your sister share with each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
34. Who does your mother usually favour, you or your sister?  
☐ My sister almost always is favoured  
☐ My sister often is favoured  
☐ Neither of us is favoured  
☐ I am often favoured  
☐ I almost always am favoured
35. How much do you teach your sister things that she doesn't know?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much



36. How much does your sister teach you things that you don't know?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
37. How much do you order your sister around?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
38. How much does your sister order you around?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
39. Who does your father usually favour, you or your sister?  
☐ My sister almost always is favoured  
☐ My sister often is favoured  
☐ Neither of us is favoured  
☐ I often am favoured  
☐ I almost always am favoured
40. How much is there a strong feeling between you and this sister?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
41. Some kids spend lots of time with their sisters, while others don't spend so much. How much free time do you and this sister spend together?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much

42. How much do you and your sister bug and pick on each other in mean ways?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
43. How much are you and your sister alike?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
44. How much do you and your sister tell each other things you don't want other people to know?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
45. How much do you and your sister try to do things better than each other?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
46. How much do you think highly of your sister?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much
47. How much does your sister think highly of you?  
☐ Hardly at all  
☐ Not too much  
☐ Somewhat  
☐ Very much  
☐ EXTREMELY much

48. How much do you and your sister argue with each other?

- ☐ Hardly at all
- ☐ Not too much
- ☐ Somewhat
- ☐ Very much
- ☐ EXTREMELY much

Appendix C

Sibling Inventory of Differential Experience

(SIDE)

### **Sibling Inventory of Differential Experience**

Please answer the following questions using the scales provided.

IN OUR FAMILY.....

- |  |     |    |
|--|-----|----|
| 1. Family life is relaxed and easy going.                                    | YES | NO |
| 2. Family life is sharing and cooperative.                                   | YES | NO |
| 3. Family life is well organized.  | YES | NO |
| 4. Family life is complicated and complex.                                   | YES | NO |
| 5. Family life is tense and stressful.                                       | YES | NO |
| 6. Family life is disorganized and unpredictable.                            | YES | NO |
| 7. We have rules regarding children letting parents know where they will be. | YES | NO |
| 8. We have rules regarding homework.   | YES | NO |
| 9. We have rules regarding television watching.                              | YES | NO |
| 10. I am expected to help straighten my room.                                | YES | NO |
| My sister is expected to help straighten her room.                           | YES | NO |
| 11. I am expected to help clean the house.                                   | YES | NO |
| My sister is expected to help clean the house.                               | YES | NO |
| 12. I am expected to help with the dishes.                                   | YES | NO |
| My sister is expected to help with the dishes.                               | YES | NO |
| 13. I am expected to help cook.  | YES | NO |
| My sister is expected to help cook.  | YES | NO |

14. How close are you to your mother?

- ☐ not very close
- ☐ fairly close
- ☐ quite close
- ☐ extremely close

How close is your sister to her mother?

- ☐ not very close
- ☐ fairly close
- ☐ quite close
- ☐ extremely close

15. How close are you to your father?

- ☐ not very close
- ☐ fairly close
- ☐ quite close
- ☐ extremely close

How close is your sister to her father?

- ☐ not very close
- ☐ fairly close
- ☐ quite close
- ☐ extremely close

16. How much say do you have in family decisions?

- ☐ no say in family rules
- ☐ a little say in family rules
- ☐ some say in family rules
- ☐ a lot of say in family rules

How much say does your sister have in family decisions?

- ☐ no say in family rules
- ☐ a little say in family rules
- ☐ some say in family rules
- ☐ a lot of say in family rules

17. I get along with my sister...

- ☐ much worse than most children my age
- ☐ about the same as other children my age
- ☐ better than other children my age
- ☐ much better than other children my age

My sister gets along with me...

- ☐ much worse than most children her age
- ☐ about the same as other children her age
- ☐ better than other children her age
- ☐ much better than other children her age

18. I get along with my friends...

- ☐ much worse than most children my age
- ☐ about the same as other children my age
- ☐ better than other children my age
- ☐ much better than other children my age

My sister gets along with her friends...

- ☐ much worse than most children her age
- ☐ about the same as other children her age
- ☐ better than other children her age
- ☐ much better than other children her age

Appendix D  
Network of Relationships Inventory  
(NRI)



## ME AND MY PARENTS

The next questions ask you about your relationships with: (1) your mother or step-mother (if you have both, describe your relationship with the one you live with) and, (2) your father or step-father (if you have both, describe your relationship with the one you live with). Sometimes the answers for different people may be the same, but often they are different.

For each question, circle a number for your mother and a number for your father.

Little or none	Somewhat	Very much	Extremely much	The most
1	2	3	4	5

=====

1. How much free time do you spend with this person?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

2. How much do you and this person get upset with or mad at each other?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

3. How much does this person teach you how to do things that you don't know?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

4. How satisfied are you with your relationship with this person?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

5. How much do you tell this person everything?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

6. How much do you help this person with things s/he can't do by him/herself?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

7. How much does this person like or love you?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

8. How much does this person treat you like you're admired and respected?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

9. Who tells the other people what to do more often, you or this person?

	He/she almost always does	I almost always do
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

10. How sure are you that this relationship will last no matter what?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

11. How much do you play around and have fun with this person?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

12. How much do you and this person disagree and quarrel?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

13. How much does this person help you figure out or fix things?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

14. How happy are you with the way things are between you and this person?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

15. How much do you share your secrets and private feelings with this person?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

16. How much do you protect and look out for this person?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

17. How much does this person really care about you?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

18. How much does this person treat you like you're good at many things?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

19. Between you and this person, who tends to be boss in this relationship?

	He/She almost always does	I almost always do
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

20. How sure are you that your relationship will last in spite of fights?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

21. How often do you go places and do enjoyable things with this person?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

22. How often do you and this person argue with each other?

	Little or none	The most
Mother	1----2----3----4----5	
Father	1----2----3----4----5	

23. How often does this person help you when you need to get something done?

	Little or none	The most
Mother	1-----2-----3-----4-----5	
Father	1-----2-----3-----4-----5	

24. How good is your relationship with this person?

	Little or none	The most
Mother	1-----2-----3-----4-----5	
Father	1-----2-----3-----4-----5	

25. How much do you talk to this person about things that you don't want others to know?

	Little or none	The most
Mother	1-----2-----3-----4-----5	
Father	1-----2-----3-----4-----5	

26. How much do you take care of this person?

	Little or none	The most
Mother	1-----2-----3-----4-----5	
Father	1-----2-----3-----4-----5	

27. How much does this person have a strong feeling of affection (love or liking) toward you?

	Little or none	The most
Mother	1-----2-----3-----4-----5	
Father	1-----2-----3-----4-----5	

28. How much does this person like or approve of the things you do?

	Little or none	The most
Mother	1-----2-----3-----4-----5	
Father	1-----2-----3-----4-----5	

29. In your relationship with this person, who tends to take charge and decides what should be done?

	He/she almost always does	I almost always do
Mother	1-----2-----3-----4-----5	
Father	1-----2-----3-----4-----5	

30. How sure are you that your relationship will continue in the years to come?

	Little or none	The most
Mother	1-----2-----3-----4-----5	
Father	1-----2-----3-----4-----5	

Appendix E  
Sibling Deidentification Questionnaire  
(SDID)

## YOUR RELATIONSHIPS

Everyone has a number of important people in their lives, including their parents and their sisters and brothers. In this questionnaire, we ask how you get along with these people. First we want to know a few things about your family...

1. Circle the parents you have who are living.

Natural Mother	Step-Mother	Natural Father	Step-Father
----------------	-------------	----------------	-------------

- |                               |     |    |
|-------------------------------|-----|----|
| 2. Are your parents divorced? | Yes | No |
| Are your parents separated?   | Yes | No |

3. Who do you live with right now?

Natural Mother	Step-Mother	Natural Father	Step-Father
----------------	-------------	----------------	-------------

4. What are the names of your brothers and sisters? and how old are they? Do they live with you?

### **BROTHERS**

NAME: _____	AGE _____	LIVES: with me (circle 1)	away
-------------	-----------	------------------------------	------

NAME: _____	AGE _____	LIVES: with me (circle 1)	away
-------------	-----------	------------------------------	------

NAME: _____	AGE _____	LIVES: with me (circle 1)	away
-------------	-----------	------------------------------	------

NAME: _____	AGE _____	LIVES: with me (circle 1)	away
-------------	-----------	------------------------------	------

### **SISTERS**

NAME: _____	AGE _____	LIVES: with me (circle 1)	away
-------------	-----------	------------------------------	------

NAME: _____	AGE _____	LIVES: with me (circle 1)	away
-------------	-----------	------------------------------	------

NAME: _____	AGE _____	LIVES: with me (circle 1)	away
-------------	-----------	------------------------------	------

NAME: _____	AGE _____	LIVES: with me	away
-------------	-----------	----------------	------



5. Please write the name of a sibling (brother or sister) close in age to you? (pick one) If you only have one sibling write their name here.

Write their first name here: \_\_\_\_\_

The next questions are trying to find out how different or similar you are to your sibling. Please circle the word that best describes your relationship with your brother or sister.

\*\*\* Remember!! Think of the brother or sister whose name you wrote down!! \*\*\*

1. Are you and your brother or sister alike or different?

SIMILAR      DIFFERENT

2. If you could become your brother or sister, would you want to change?

YES              NO

3. In general, who are you most like? Circle one answer below.

MOTHER      FATHER      NEITHER      BOTH

4. In general, who is your sibling most like? Circle your answer below.

MOTHER      FATHER      NEITHER      BOTH

5. How satisfied are you with your relationship with your brother or sister?  
Please circle your answer on the scale below.

not satisfied                      most satisfied

1----2----3----4----5

6. How important is your relationship with your brother or sister to you?

hardly at all                      extremely important

1----2----3----4----5

Appendix F

Family Adaptability and Cohesion Evaluation Scales-II

(FACES-II)

## FAMILY INTERACTION SCALE

On these pages we have listed 30 sentences that say something about how the members of a family might interact with each other. Read each sentence and using the following guide, circle the number that indicates if the sentence describes your family. There are no right or wrong answers to any of these questions, and keep in mind that we will protect the confidentiality of your answers.

- |   |   |                 |
|---|---|-----------------|
| 1 | = | almost never    |
| 2 | = | once in a while |
| 3 | = | sometimes       |
| 4 | = | frequently      |
| 5 | = | almost always   |

- |  |  |   |
|--|--|---|
| 1. Family members are supportive of each other during difficult times.                             | Almost<br>never<br>1----2----3----4----5 | Almost<br>always<br>1----2----3----4----5 |
| 2. In our family, it is easy for everyone to express his/her opinion.                              | Almost<br>never<br>1----2----3----4----5 | Almost<br>always<br>1----2----3----4----5 |
| 3. It is easier to discuss problems with people outside the family than with other family members. | Almost<br>never<br>1----2----3----4----5 | Almost<br>always<br>1----2----3----4----5 |
| 4. Each family member has input in major family decisions.   | Almost<br>never<br>1 ---2----3----4----5 | Almost<br>always<br>1 ---2----3----4----5 |
| 5. Our family gathers together in the same room.   | Almost<br>never<br>1----2----3----4----5 | Almost<br>always<br>1----2----3----4----5 |
| 6. Children have a say in their discipline.  | Almost<br>never<br>1----2----3----4----5 | Almost<br>always<br>1----2----3----4----5 |
| 7. Our family does things together.  | Almost<br>never<br>1----2----3----4----5 | Almost<br>always<br>1----2----3----4----5 |
| 8. Family members discuss problems and feel good about solutions.                                  | Almost<br>never<br>1----2----3----4----5 | Almost<br>always<br>1----2----3----4----5 |

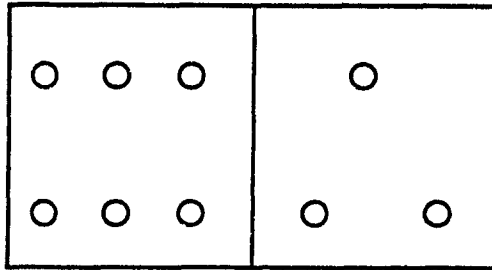
- |   |  |                  |
|---|--|------------------|
| 9. In our family, everyone goes their own way.  | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 10. We shift household responsibilities from person to person.                            | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 11. Family members know each other's close friends.                                       | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 12. It is hard to know what the rules are in our family.                                  | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 13. Family members consult other family members on their decisions.                       | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 14. Family members say what they want.  | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 15. We have difficulty thinking of things to do as a family.                              | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 16. In solving problems, the children's suggestions are followed.                         | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 17. Family members feel very close to each other.   | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 18. Discipline is fair in our family.   | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 19. Family members feel closer to people outside the family than to other family members. | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |

- |   |  |                  |
|---|--|------------------|
| 20. Our family tries new ways of dealing with problems.           | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 21. Family members go along with what the family decides to do.   | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 22. In our family, everyone shares responsibilities.              | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 23. Family members like to spend their free time with each other. | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 24. It is difficult to get a rule changed in our family.          | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 25. Family members avoid each other at home.                      | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 26. When problems arise, we compromise.                           | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 27. We approve of each other's friends.                           | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 28. Family members are afraid to say what is on their minds.      | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 29. Family members pair up rather than do things as a family.     | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |
| 30. Family members share interests and hobbies with each other.   | Almost<br>never<br>1----2----3----4----5 | Almost<br>always |

## Appendix G

### Marble Choice Cards

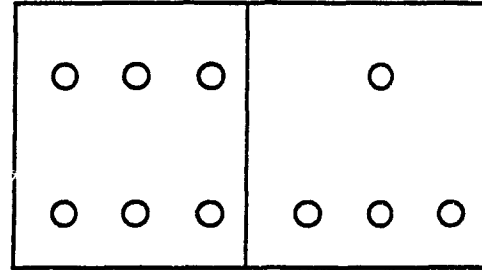
Card 1



Nonrivalrous

Rivalrous

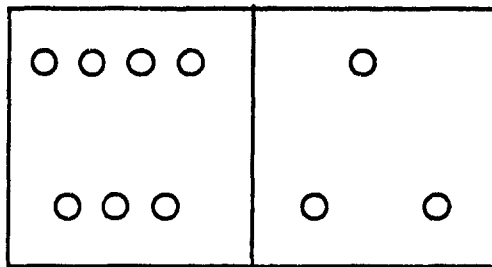
Card 2



Nonrivalrous

Rivalrous

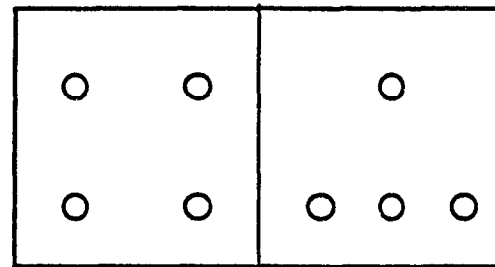
Card 3



Nonrivalrous

Rivalrous

Card 4



Nonrivalrous

Rivalrous

## Appendix H

### Presentation Order of Marble Choice Cards



### Marble-Choice Task

Child name: \_\_\_\_\_  
Birthdate: \_\_\_\_\_  
Sibling: \_\_\_\_\_  
Sibling Age: \_\_\_\_\_

Date tested: \_\_\_\_\_  
School: \_\_\_\_\_  
Class: \_\_\_\_\_

Make a mark under the heading for the observed behaviour for each card presented.

	Rivalrous	Non-rivalrous
=====		
<u>Trial 1</u> Card 1		

_____	2r
_____	3
_____	4r

=====		
<u>Trial 2</u> Card 2		

_____	3r
_____	4
_____	1r

=====		
<u>Trial 3</u> Card 3		

_____	4r
_____	1
_____	2r

=====		
<u>Trial 4</u> Card 4		

_____	1r
_____	2
_____	3r
_____	4

=====		
Note: r = use the reversed card for this condition choice		

Appendix I

Marble Choice Task Instructions

### Instructions for the Marble Choice Game

The researcher says to the child:

"We are going to play a game with marbles. You see this card with the marbles in it? I'll show you how the game works.

"Let's pretend that your brother/sister (name) is sitting across the table from you. You can choose to take marbles from either the right or left side of this card. Once you have picked the side that you want, you can put the marbles that are nearest to you into your jar (point to the jar), and we'll put the marbles closest to your brother/sister into their jar."

(The researcher demonstrates with the first card. If the child has no other questions, they are presented with the rest of the cards one after the other.)

## Appendix J

### Coding Categories of Responses for the Marble Choice Game.

### Coding of Responses for the Marble Choice Game

After having completed the marble choice game, children were asked what they had been thinking while making their choices of marbles. Coding of these responses involves assigning a score to categorize the type of plan the children describe. The categories are:

- 0 - no organized plan to win or choose the marbles in a systematic fashion that takes the other person s/he is playing with into account OR no memory of having thought of anything during the task;
- 1 - any plan of action in which the child works towards his/her own personal gain i.e., to obtain the most marbles;
- 2 - any response that indicates a sense of "playing fair" or giving the other person a chance to equalize the scores.
- 9 - scored when there is missing data

## Appendix K

### Instructions for the Flavell Perspective-Taking Task

### **Flavell's Perspective-Taking Task**

The researcher places two cups, upside down, in front of the child with one nickel taped on the top of one cup and two nickels taped on the top of the other. Each cup has the corresponding number of nickels underneath. The researcher says to the child:

"We are going to play a guessing game. You see these two cups? One has one nickel on top and the other one has two nickels on top (points). Now the money on top tells you how much money there is inside. You see (lifts cup), one nickel under here and two nickels under here. I'll show you how the game works.

"Let's pretend that we have your sister/brother with us. You need to figure out which cup he/she'd pick to get the money if we took the money out from under one of the cups. (The researcher removes the money from a cup randomly selected). If he/she chooses the one with money under it, he/she will get to keep the money. If he/she picks the one with no money under it he/she wouldn't get any money to keep. Say he/she picks this one (researcher randomly selects cup and points). It has a nickel(s) under it/has no money under it, so he/she'd get to keep the money/would not get to keep the money. What would happen if he/she picked the other one? (If child responds incorrectly, the researcher shows him/her.) You see how to play the game? Good.

"Now, imagine that your sister/brother leaves the room. You and I are going to play this game with them. We'll take the money out of either the two-nickel cup or the one-nickel cup. Then we'll pretend that your sister/brother comes back in and chooses and if he/she chooses right, s/he'll get some money to keep, either one nickel or two nickels, and if s/he chooses wrong, s/he won't get any money. Now we'll try to fool him/her - we'll try to guess which cup he/she will choose and take the money out of that one. Now think hard for a minute and see if you can guess which one s/he'll choose. Of course, s/he knows that we'll try to fool him/her, s/he knows we're going to try to figure out which one s/he'll choose. Which one do you think s/he'll choose - think hard!"

(After selection): "Why do you think s/he would pick that one?"

From: Flavell, J. (1968). The Development of Role-Taking and Communication Skills in Children. John Wiley & Sons, Inc.



## Appendix L

### Coding Criteria for Flavell's Perspective-Taking Task

### Coding Criteria for Flavell's Perspective-Taking Task

#### CODING SHORT FORMS:

S = subject

O = other (sibling whose behaviour is predicted in the task)

X = data - cups or nickels

Coding involves assigning a score to the child's response on the task. Scoring categories describe a game strategy imputed to O, i.e., a strategy which leads O to select one cup rather than the other. The categories are scored as 0, 1, 2, 3, in order of increasing strategic complexity.

#### CRITERIA:

1 - S asserts that O will choose a particular cup for one of two reasons: monetary or other. The former simply attributes a straight-forward greatest-financial-gain motive to O and always predicts the choice of the two nickel cup. The latter covers all other strategies of the same general level.

e.g., S-O-X      ("I think he'd choose the one with the most money under it  
because if he gets it he gets more money.")

2 - S goes on to attribute additional cognitions to O, i.e., the recognition that S may have predicted precisely these intentions and that he, O, had therefore better change his choice, for example from the two-nickel cup to the less remunerative, but perhaps surer one-nickel cup.

e.g., S-O-S-X ("One nickel, because that wouldn't have more money under it and then he'd think we'd take the money out of that because we'd have more money and then he'd only have five cents.")

3 - Includes all imputed S strategies which are analogous to strategy 2, but are carried one or more steps further. Having reasoned according to strategy 2, for instance, S might make the further inference that O will predict this reasoning too, and will consequently shift back again to his initial choice in order to combat it (for example, pick the two-nickel cup after all).

e.g., S-O-S-O-X ("He'd think that we wouldn't want him to get more money, so he'd probably think we'd probably think that we'd take it out of the two nickel cup. He'd pick the one nickel cup because he'd think we don't want him to have more money.")

0 - Includes all S protocols which cannot be assigned to any of the three preceding categories. Of either one or two types: (a) S cannot or will not impute a choice to O; (b) S attributes a choice to O but is unable to offer any rationale for it.

From: Flavell, J. (1968). The Development of Role-Taking and Communication Skills in Children. John Wiley & Sons, Inc.

Appendix M

Development of the Sibling Story-Telling Task

### Development of the Sibling Story-Telling Task

To gather information about the affective properties of the sibling relationship, it was felt that data gathered from structured self-report questionnaires would be best complemented by information derived from an unstructured projective task. Very few researchers use such techniques and sibling research has relied exclusively on self-report data. Only a few studies have used more involved procedures such as multiple interviews (Bank & Kahn, 1982), group discussions (Ross & Milgram, 1982), and repeated observations (Abarbanel, 1983). The drawback of these techniques is that they are difficult to standardize, control and are costly.

As an alternative a few researchers have used projective techniques with children (Radke-Yarrow et al 1988) and adults (Bedford, 1986) to sample perceptions of relationships. Bedford's (1986) development of a 'Sibling Thematic Apperception Task' was an adaptation of Henry Murray's TAT (1943). The TAT was used as the basis for her task as it gives insights into the dynamics of interpersonal relationships.

Bedford (1986) compared her subject's responses on the underlying dimensions of separation, affiliation and conflict. She stated that these dimensions were chosen because they appear as recurrent sibling themes in empirical studies, clinical reports, folklore and literature (Bedford, 1989). Personality theorists have also described three similar interpersonal tendencies. Horney (1945) described three interpersonal orientations as: "toward," "against," and "away from" others. Similarly, Murray (1938) proposed three general needs: "adient," "contrient," and "abient" needs that

lead to movement toward a liked other, toward a disliked other and away from others.

In Bedford's (1986, 1989) study, she described her descriptive categories as follows. "An orientation toward siblings referred to an attraction based upon positive feelings, attitudes, and identifications. It was demonstrated by apperceptions of affiliation such as affection, admiration, concern and worry, desire to help, instances of help enjoyment and sharing. An orientation against siblings referred to a clashing of temperaments, interests or desires, negative feelings and tensions. It was demonstrated by apperceptions of jealousy, envy, resentment, conflict such as fighting, arguing, competition, dominance when not well intentioned and aggression in the sense of inflicting harm or transgressing another. An orientation away from siblings referred to functional, emotional and attitudinal independence from, or disinterest in, the affairs and well-being of siblings, and it was demonstrated by apperceptions of separation, such as leave-taking, different lifestyles, aloofness and trait oppositeness" (p. 56, Bedford, 1989).

For the present study Bedford's (1986, 1989) descriptive categories and rationale for the development of the Sibling Thematic Apperceptions task were followed, however, instead of using TAT cards, images from the Roberts' Apperception Test for Children (McArthur & Roberts, 1982) were used as they were more relevant for children. Seven cards were chosen that could illustrate sibling interaction (one card was chosen from the TAT, card 4), two family interaction cards and the sibling rivalry card was selected as the stimuli from the Roberts' test. Various modifications were made to assure that the thematic apperceptions described respondents'

relationships to their target sibling. In order to maximize the opportunity for respondents to identify with one of the figures and to project their attitudes and feelings about the targeted sibling into their stories, pictures were redrawn to maintain visual consistency among the images and instructions specified that the figures were pairs of sisters (or brothers) of roughly the same age and the figures (including a version for each gender) were drawn accordingly.

To ensure that the seven sibling interaction cards pulled equally for the three dimensions of thematic apperceptions, the cards were presented to a sample of 30 adults (graduate students and professors in psychology). These pilot subjects were asked to rate how well they felt the theme was depicted by the drawing on a 5 point Likert scale ranging from "not at all" to "very much." To control for presentation effects and to ensure that each card was rated for each of the three descriptive categories, three different presentation orders of the cards were used and randomly given to each of the subjects.

A oneway (rating by card (1,7)) analysis of variance was conducted for each theme to examine if there were differences among the cards for the themes depicted. Findings indicated that in general, each of the three themes were accessible from all the cards. Results for the theme of separation indicated no significant differences among the cards for this theme ( $F = .81, p > .05$ ). There were individual differences among the cards for the interpretation of the card as involving warmth and closeness ( $F = 9.64, p < .00001$ ). In particular, one card (card 2 on the Roberts) was interpreted as involving themes of affiliation more often than the other pictures

although there were no significant differences between ratings of affiliation among the other cards. In terms of apperceptions of conflict in general the cards were similar in the ratings of conflict perceived in the images with the exception of card 2 ( $F = 9.75$ ,  $p < .00001$ ). Again, card 2 was significantly different from the other cards in that it was less often rated as involving themes of conflict than the other cards.

These analyses indicated that while some individual differences among the cards, in particular the unique properties of card 2 existed, by in large the cards were equivalent in their ability to elicit each of the three themes. Thus, the construct validity of the task was supported without detracting from the 'ambiguous' nature of the stimuli.



Appendix N

Administration Procedure for the Sibling Story-Telling Task

### Sibling Story-Telling Task

The task is introduced as a story-telling or imagination task. The following standard directions should be used with each child to maximize reliability and validity:

"I have a number of pictures that I am going to show you one at a time. Most of the pictures are about two brothers or sisters (depending upon the sex of the child) doing something and other pictures are about a family. I want you to make up a story about each picture. Please tell me what is happening in the picture, what led up to this scene, and how the story ends. Tell me about what the people are talking about and feeling. Use your imagination and remember that there are no right or wrong answers for the picture."

For most children these instructions will be clear and self-explanatory. If the child needs further clarification repeat that the story should have a beginning, middle and an end. When a child tells an incomplete story or omits certain aspects, such as how the people are feeling, additional inquiry may be necessary to obtain a complete response. Examiner inquiry should be limited to five basic questions:

- (1) What is happening?
- (2) What happened before?
- (3) What is s/he feeling?
- (4) What is s/he talking about?
- (5) How does the story end? What happens next?

A different type of inquiry may be necessary to clarify a response that is confusing or difficult to understand. It is always appropriate for the examiner to ask the child to be more explicit in identifying a character or to clarify the meaning of an ambiguous word or phrase. For example, if a child refers to a person in the stimulus card as "he," it is appropriate to ask "Who is he?" Sometimes a child will end a story with an ambiguous phrase such as "It ended okay." In this case, it would be important to clarify what the child means by "okay."

An anxious or insecure child may feel unable to "tell a story" but may be willing to "say something about the picture." On other occasions, the child may stare at the card, look uncomfortable and not respond for more than a minute. The examiner can then clarify what is going on by saying, "Are you still thinking about the story or would you like to go on to the next card?"

Try to avoid having the child reject any cards. If necessary, come back to the picture after all the other cards have been presented.

Appendix O

Coding Criteria for Establishing Sibling Interaction Frequency

### Coding criteria for establishing sibling interaction frequency

From the interview a score for the interaction frequency between the sibling will be obtained based on the child's answer to the question "Who do you spend the most time with at home?" Score the response using the following categories:

- "1" if the child states they spend time alone
- "2" if the child states they spend time with mother
- "3" if the child states they spend time with father
- "4" if the child states they spend time with friends
- "5" if the child states they spend time with their closest-in-age sibling
- "6" if the child states they spend time with other siblings
- "9" none of the above

If the child spends time with two or more of the persons above, indicate both categories on the coding sheet. For example: if the child states that they spend time with both their mother and their friends, both "2" and "4" should be indicated.

Appendix P

Coding Manual for the Sibling Story-Telling Task

## CODING MANUAL

### Coding for the Sibling Story-Telling Task

The following coding manual has been adapted, in whole, with permission from V.H. Bedford, (1986) Themes of Affiliation, Conflict, and Separation in Adults' TAT Stories about Siblings at Two Life Periods. Unpublished Doctoral Dissertation, Rutgers University, New Brunswick, New Jersey.

These instructions set forth the rules for the coders of the projective sibling drawings. The data consist of stories that the child told in response to pictures of sibling pairs and family interactions. Of the ten pictures shown to the children seven exclusively involved two sibling figures. Two other pictures involving a family scene were included to elicit stories that may relate to the child's perceptions of family relationships. A third picture was used to tap the child's feelings about having a new sibling. Instructions for coding the seven sibling relationship pictures will be discussed first, followed by criteria for scoring the family and sibling rivalry stories.

### Unit of Analysis

The units of analysis, or coding units, are segments of the stories that refer to the sibling relationship. Each coding unit is a single, discrete idea that in some way takes both sibling partners into account. Only those units that meet the specific criteria set forth in these instructions will actually receive a score. The relationship segment can refer to the two sibling partners either explicitly ("the younger brother just hit or did something to his older brother"), or by implication ("this sister got more attention

[than the other sister] from her parents"). Reference to a sibling can also be inferred from categories that subsume the sibling such as "family" or "home" ("...young boy running away from home").

The length of the segment is the minimal number of words required to convey one discrete idea or thought. A segment can be as brief as one or two words (such as the following underlined segment "They don't want anything from each other - except comradeship - ..."), or it can require several phrases or sentences ("...and he wants to go and play football, but he wants to read with him...").

Segments can take both sibling partners into account in a variety of ways. Typical examples are comparisons and contrasts ("this brother is tougher and bigger"), statements about the relationship ("these two sisters are close"), the quality of the interaction ("They are into a big fight"), the content of interaction in general terms ("this sister usually reads to her"), the specific content of interaction ("he's angry at [the other brother] for stealing his stuff"), statements about how the partners feel about each other ("they have never really liked each other"), what they think about each other ("The older is thinking 'I wish I had as good grades as my younger sister'"), and what they desire concerning one another ("She doesn't want to have anything to do with the other sister").

The perspective of a segment can be that of the narrator of the story, of one or both of the characters who are sibling partners in the story, or of another character outside of the sibship, such as a parent or teacher.

Although the coding unit consists of a single, discrete idea or message, it does not



have to be unique. Whenever an idea is repeated, whether in the meaning it conveys or in the exact wording, each repetition is treated as a separate segment. There is one exception to this rule; when the repeated segment is used to index a character in the story repeatedly, only the first case should be analyzed (e.g., "the meaner sister").

### Thematic Analysis

The thematic content of each relationship segment is assessed as to whether it is an example of Affiliation, Conflict, Separation, or none of the above. A segment is assigned a single code. When a segment appears to meet the criteria of more than one theme, the assignment should be made according to which theme is most explicit or superficial. For instance, if a girl is restraining her sister who is trying to do something foolish, the restraining action is coded "conflict" (conflict of wills; see definitions to follow) even though this person is trying to be helpful ("affiliative"). Code assignment is determined by whether or not the relationship segment satisfies specific criteria to be set forth shortly. Under the following circumstances a relationship segment should not be scored: if it pertains to some other theme (e.g., confusion, anticipation of sibling's thoughts); if it conveys a neutral description ("one is thinner"); if it has insufficient data for making a judgement ("They are not unhappy", "they are watching TV"); or if it refers to hypothetical siblings rather than those depicted in the card, as in rhetorical statements. It should be stressed that only relationship segments are candidates for coding, and only those relationship segments that are examples of the three codes are scored. A rule of thumb is: "When in doubt, do not code."

Affiliation. In general, the affiliation code should be assigned to segments that show a positive sibling relationship, or regard for a sibling in terms of feelings, actions, thoughts, and desires. Most specific expressions of affiliation seem to fall into one of five categories. They are: (1) positive affect/regard, (2) physical proximity/interaction of a positive nature, (3) dependability, (4) positive attention to or interest in sibling, and (5) a sense of "we-ness" or belonging with respect to sibling. Examples within these categories include evidence of affection, admiration, respect, gift-giving, visiting, enjoyment, congeniality, forgiving, apologizing, improving the relationship, working out problems, resolution of conflict, companionship (engaging in parallel activities), consultation, relating well, friendly interaction, sharing concerns/joys, reuniting, feeling comfortable together, being helpful, providing aid, support, nurturance, advice, acceptance, consolation, worry about sibling, compassion, benign interest in other's activities, emotional closeness, intimacy, trust, depth of feelings.

"Conflict or clashes". In general, the conflict code should be assigned to segments in which sibling interaction and proximity, thoughts, desires and feelings about the sibling are generally negative. They are characterized by hostilities, clashes, challenges, and incompatibilities, although sometimes expressed in a joking or playful manner. Specific examples include expressions of anger, dislike, disdain, resentment, distrust, suspicion, deceit, betrayal, being upset with the other, embarrassed by the other, envy (awareness of superior attributes of the sibling, or urge to possess what the sibling has), jealousy (resentment of the love or privilege

received by the sibling) rivalry (competitive acts), tension, irritation, discomfort, arguments, confrontation, recriminations, criticism, strife, touchiness, discord, violence, misunderstandings, lack of cooperation, a falling out, unwanted domination (including help), forcing one's will on the other, coercion, obstructing the other, refusing, denying, or rejecting the other, cheating, scheming against, harming (physical or emotional), spying on, bribing, "telling on", stubbornness, uncompromising, conflict of wills, of interests, of desires, dissatisfaction with relationship, and evaluative comparisons (e.g., better, happier, prettier, smarter) when not stressing trait oppositeness (a "separation" theme).

Separation. In general, the separation code should be assigned to segments that convey differences between siblings (trait oppositeness, lack of commonalities), the state, desire or feeling of distance (emotional or physical) between siblings, or the process of becoming distant or different from the sibling. Specific expressions of separation include physically separating self from the sibling, departure, death, leave-taking, embarking on activities that remove self from the sibling (as when two people go their separate ways), breaking away from the sibling or from sibling influences, functional independence (such as managing their own affairs, making their own decisions), being distinctly different (having opposite opinions, goals, desires, lifestyles, personality traits), aloofness, uninvolvedness, emotional barriers, inhibitions, references to privacy and withholding with respect to the sibling, lack of interaction or communication, inability to express the self to the sibling, or to express feelings about the sibling to him or her.

## Resolutions.

In addition to the above three themes, a score will be assigned to each story based on the type of resolution the child generates for their story.

Resolution 1 The resolution 1 (RES-1) scale reflects a child's tendency to seek easy or unrealistic solutions to problems. RES-1 would be scored if a story: (1) moves quickly from a problem to a resolution without mention of the appropriate mediating steps; (2) describes unrealistic wish fulfilment; or (3) states that a problem suddenly no longer exists. Common themes include wish-fulfilment endings, magical solutions, suddenly not having a problem, and living happily ever after. Although Resolution is most easily defined within the context of a problem, the resolution to stories involving positive affect and situations should also be coded. In this sense, RES-1 would involve stories that include an ending but one that does not involve intermediary steps i.e., an ending that may seem somewhat out of place with the context of the prior story.

e.g., "The girl just woke up from a nightmare, she's afraid to go to sleep 'cause she heard sounds. **She'll go back to sleep.**"

e.g., "She's trying to figure out her work for a test. She can't do it. She doesn't want to study. **She passes the test.**"

Resolution 2 The resolution 2 (RES-2) scale indicates a constructive resolution of a problem either external or intrapsychic. The resolution, however, is limited to the present situation. RES-2 is scored if the child: (1) states constructive resolution of internal feelings; (2) describes constructive outcome to external problem situation; or

(3) describes harmonious solution to conflictual interpersonal relationships. Similarly to RES-1, RES-2 can also be coded for positive stories. RES-2 is coded when the story ends with any action that is constructive or harmonious and involves both parties in the ending of the story.

e.g., "Girl fell down and hit her head and her sister came to see what was wrong. She feels sad for the one that fell. **She'll go get help and to make sure she's okay.**"

e.g., "The brothers want to play with each other and they decide to play cowboys and Indians and he's sad because he's an Indian and alone. **And then the brothers say let's play something else.**"

e.g., "...well she's reading the book ... this one is really interested and **they'll probably change books and the other one will start reading and they'll feel like they're sharing.**"

Unresolved (UNR) is scored when the child states a problem which the characters in the story are unable to resolve. Thus, it is scored when there is an emotional reaction left hanging or no outcome for the story. If the story does not involve a problem, the resolution is still unresolved if there is no ending to the story, i.e., the interaction is static and does not involve a change or conclusion.

e.g., "Children did something wrong, bothering him, bouncing all over the living room and he's really a sour man. He wants to tell mother to punish those kids and he's really mad because they are her children. **He's mad 'cause he can't do anything about it.**"

e.g., "it looks like these guys are being mean to him and **he's just standing there speechless.** Um...that's it."

Maladaptive (MAL) is scored when the child describes an outcome in which the characters: (1) act in socially disapproved ways; (2) contribute to an unresolved conflict; (3) resolve a problem by withdrawing or by taking over autocratically; (4) act out, manipulate or deceive others; or (5) are physically destructive.

e.g., "The girl hit the little girl and says 'I'm sorry,' and the other girl says, '**O.K., I'm gonna hit you again.' They're gonna fight.**"

e.g., "Mother and father are talking. Boy feels left out. **Boy runs away, never to be found, feeling hurt and sad while mother and father live happily ever after.**"

#### Further Comments on Code Assignments.

Thought versus Action. What characters think, wish for, actually do or intend to do should be treated equally. In other words no distinction should be made between these modes of experience.

Past, Present, and Future. Whether acts, thoughts and feelings refer to the past, present or future should not influence the code assignment of any segment. For instance, in the case of separation, the characters can be anticipating separation, in the process of separating, or already separated.

Indecisiveness. When segments are modified by expressions such as "seems", "perhaps", "maybe", statements posed as questions, alternative suggestions, and any other terms that convey doubt, ambivalence, or uncertainty in a story, these

terms should be ignored and the segment coded as though it were an affirmative statement. In the case of alternative statements (separated by "or") each one should be analyzed individually.

Manifest and latent content. Code assignments are based upon manifest content only. No interpretations of what might be meant are appropriate. Coders have a tendency to want to code everything, especially statements that appear to be important parts of the stories. Care should be taken not to rationalize ways to make them satisfy the coding criteria. Whenever interpretation is required, the segments should not receive codes.

Autonomy of segments. Segments should be treated as autonomous units whenever possible. Most segments contain all the information necessary to code them. However, segments sometimes leave out information that is easily clarified when the immediate context is considered. For example, the segment, "whatever [brother on the left] suggests will be done [by brother on the right]", is too ambiguous to code as is. However, the sentences that precede this segment convey that brother right is worried about and takes no pleasure in what brother left has suggested. Therefore, this segment should be coded "conflict", as an example of unwanted domination.

Mutuality and Consistency. Code assignment of a segment does not require mutuality by the partners with respect to any theme. Nor does it require that the behaviours of one partner toward the sibling be consistent. The score assigned to any one segment should be independent of the scores assigned to other segments in the

same story. This allows for the possibility that contradictions exist in the relationship.

#### Special Codes for Cards 1, 4, and 2

For the two family cards (#1, #4) and the sibling rivalry card (#2), themes specific to the scene depicted on the card will be coded.

Cards: 1 and 4. The family cards will be scored using a similar method to the previous sibling cards. For each story as a whole, three categories of thematic content and the resolution will be scored.

Limit setting. This scale (LMS) is scored when stories contain thematic content that includes scolding, punishment, telling the child(ren) what they did wrong, sending the child(ren) to bed, making the child(ren) pay for something broken.

Family activities. This scale (FMA) is scored when stories involve themes of the family planning to do an activity together. For example, go shopping, go on a picnic, plan a vacation or another such positive outing with the children.

Family problems. Family problems (FMP) is scored when stories are generated that indicate anxiety about the family. This is scored when stories contain thematic content that includes discussing a death, a family member planning to go away, discussing divorce, parents arguing in front of the child(ren).

Resolution. Similar to the sibling cards, the type of resolution to each story will be coded using the same criteria outlined above.



Card: 2

Card #2 will be scored by examining the story for the following criteria. The instructions regarding coding of repeating themes and mutuality of themes above also applies to the coding for this story. The three themes to be coded are: (1) jealousy (towards the new sibling - JEAL); (2) curiosity or wanting to care for the new baby, i.e., a wish to be involved with the sibling - CUR; and (3) concern for the mother's love and availability, also other concerns about mother's parenting - ATTN. The quality of the resolution will also be scored for stories elicited to this card.

### Reference Guide for the Coder

Cards: 3, 5, 6, 7, 8, 9, 10

1. Examine the first statement.
2. Does it in some way address both the sibling partners?
3. If no, skip to no. 15.
4. If yes, list it as a relationship segment.
5. Is this segment an example of affiliation? Does it refer to any of the examples given above?
6. If yes, score "1" in the "A" column, and go to no. 14.
7. If no, score "0" and go to no. 8.
8. Is it an example of conflict? Does it refer to any of the examples given above?
9. If yes, score "1" in the "C" column and go on to no. 14.
10. If no, score "0" and go to no. 11.
11. Is it an example of separation? Does it refer to any of the examples given above?
12. If yes, score "1" in the "S" column and go on to no. 14.
13. If no, score "0" and go to no. 15.
14. Proceed to the next statement. If there are no more statements, add up each of the three columns. You should now have a single 3-vector score for the complete story.
15. What kind of resolution is present in the story (i.e., RES-1; RES-2; UNR; MAL)? Place a check under the appropriate heading, proceed to the next story.

## Appendix Q

### Coded Examples of Training Stories

### Sibling Interaction Stories

Themes: A - affiliation C - conflict S - separation

Example 1: This is two sisters and one of them are going to camp, going away to camp (S). They don't want to leave (A) because they don't want to, like they're close (A) and they're thinking "I wish I could go with her (A), I wish she could stay with me" (A). And next when the other goes away its going to be sad and the other sister will be sad because she couldn't go with her (A).

A	C	S	Resolution
5	0	1	unresolved (UNR)

Example 2: These sisters are mad at each other (C) but, one of them is happy that they're mad or something so she doesn't have to talk to her (C) or something. She feels mad but she feels glad that they can't talk because she hated her (C) or something. Next what will happen is, maybe they'll be better friends than they are now (A). And then so, they'll be better friends than that there (A).

A	C	S	Resolution
2	3	0	immature (RES-1)

Example 3: Well, they're, something must have happened (C). Now they said sorry (A), and they're apologizing (A) and they're feeling sorry (A). Well they must of had a fight (C) and now they're saying sorry to each other (A). After they say sorry they'll probably play a game or something like that and feel happy (A).

A	C	S	Resolution
5	2	0	mature (RES-2)

### Family Interaction Stories

#### Example: Family problem

The parents are having a discussion and the children are looking at them and the children look real sad because the parents are fighting. Well that they're separating and stuff. I hope they won't and stop fighting. The children will say "stop fighting" and the parents will stop and maybe they will start hugging again. Then things will be the same again.

Resolution: immature (RES-1)

#### Example: Family activity

These brother and sister are standing in front of their parents and their father is going away to work and she's telling them what to do when she comes back in case she isn't here. She's going shopping. The parents, they, the kids are standing there so when he leaves that can, like, when he goes to work, they stand there so they can say bye and everything.

Resolution: mature (RES-2)

#### Example: Limit-setting

Well, like the dad is telling something to the daughter and if she did something bad he's telling her a lesson, not to do it again, so she can correct that. She did something wrong, she didn't like it, it wasn't right. She's feeling sort of mad because she got punishment, and sad in a way. Well she might go to her room and she's going to cry, or her dad's going to say just don't do it again and she'll be okay.

Resolution: immature (RES-1)

### Sibling Rivalry Card

#### Example: Jealousy

Well her mother must of had a baby and she's paying more attention to the baby than to the little girl and the little girl was feeling like they don't want her anymore and like left out because the baby was getting more attention and afterwards her mother probably told her that "you're grown up and like you can take care of yourself better than the baby can" so she felt better that she knew that.

Resolution:     mature (RES-2)

#### Example: Attention

There's a new baby that's born and then well I feel that I'm left out. My mother is paying more attention to the baby than to me and then later on she asks me to help her with the baby and I don't feel left out anymore, I'm happy.

Resolution:     mature (RES-2)

#### Example: Curiosity

Okay, well the mom, she's got a baby and the sister is looking at the baby. Well she's thinking, like, that's her little baby sister or brother. She must like him a lot. She must ask where he comes from, cause she's young. The mom is going to feed the baby and the sister is going to help. She's feeling happy and helpful.

Resolution:     mature (RES-2)