WE ARE FAMILY: SIBLING ATTACHMENT RELATIONSHIPS

AMONG YOUNG ADULTS

by

MARIANA JOSE BRUSSONI

B.A. (Honours), University of Calgary, 1994

M.A., University of British Columbia, 1996

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES

Department of Psychology

We accept this dissertation as conforming

to the required standard

THE UNIVERSITY OF BRITSH COLUMBIA

July 2000

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Abstract

A total of 321 young adult sibling dyads (104 male-female, 108 male-male, and 109 femalefemale) and 131 singletons completed a set of questionnaires examining the sibling relationship from an attachment perspective. Four central research findings are presented: First, attachment to sibling was significantly correlated with parenting, adult attachment self-model, satisfaction with social support, frequency of contact, and personality traits. Specifically, increased independence encouragement and acceptance by parents, decreased maternal rivalry, a more positive self-model, larger and more satisfying social support networks, and greater frequency of contact between siblings were related to greater quality of attachment to sibling. Also, higher levels of NEO Agreeableness, Conscientiousness, Extraversion, and Emotional Stability were positively correlated with attachment to sibling. Second, there was considerable reciprocity in the attachment relationship for all pair types ($\underline{r} = .58$) indicating that siblings' ratings of the quality of their attachment to each other tend to correspond quite highly. Third, more positive self- and other-models were related to increased ratings of positive relationship variables such as affection, emotional support, and satisfaction, and decreased ratings of negative relationship variables such as antagonism, quarreling and alienation. Fourth, concordance rates in attachment self- and other-models were very low, indicating that siblings do not resemble each other in the attachment dimensions. However, siblings appear to describe each other's attachment models relatively accurately, and perceive themselves as having similar self- and other-models to their siblings. Findings are discussed in terms of theoretical advancements for attachment theory and the sibling literature, and practical implications for fostering positive sibling relationships.

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ACKNOWLEDGEMENTS

This project could not have been completed without the participants who graciously shared their time. I appreciate their dedication and honesty.

I would like to thank my advisor, Dan Perlman, who showed such patience and understanding despite my endless questions and concerns. Also, my supervisory committee: Kim Bartholomew and Larry Walker who provided invaluable guidance and advice. These three individuals gave me the support I needed to undertake this project with enthusiasm and intellectual curiosity while allowing me the freedom to choose my own direction. I am very thankful for their time and willingness to share their knowledge.

I would also like to express my sincere appreciation to my family: Nick Sully, who never wavered in his love and support; my parents, Aldo and Rosa Brussoni, who despite being across the world managed to provide valuable words of love and faith; and my siblings, Aldo and Andres, without whom I most certainly would not have become interested in this topic.

Finally, I must share my heartfelt feelings of gratitude to my friends who listened to my concerns, and ensured that I enjoyed the lighter side of life: Monica Landolt, Christine Stager, Jason Carr, Melissa Apprill, Bryan Sokol, Megan Clark, Gudrun Aubertin, Carol Flynn, Allisa Arnold, Pablo Andrada, and Cynthia Sully.

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WE ARE FAMILY: SIBLING ATTACHMENT RELATIONSHIPS AMONG YOUNG ADULTS

Research on siblings has had a rich and varied history, but it is only in more recent years that this research has begun to focus on the sibling relationship. Perhaps due to the relatively recent interest on this topic, much of the research examining it has not relied on a particular theoretical tradition. However, a perspective exists which has in the past proved a valuable framework with which to examine other close relationships, such as parent-child and romantic relationships. The current investigation aims to use this theoretical perspective, attachment theory, to examine the sibling relationship.

Previous Research on the Sibling Relationship

Bank and Kahn (1982) were among the first to look into the sibling bond. They were intrigued by the emotional connection between siblings and undertook extensive examinations of about 100 participants, often interviewing these participants several times over a few weeks or months. Rather than being guided by one theoretical orientation, they used several in their theorizing, including psychodynamic and familysystems theories. As a result of their investigations, they concluded that three conditions were necessary for the development of strong sibling bonds: high access between siblings, the need for the development of a meaningful personal identity, and insufficient parental influence.

The intuitive appeal and ease of measurement of birth order has contributed to making research examining its impact among the most numerous examples of past sibling research. It has been examined in topics ranging from delinquency (Brownfield & Sorenson, 1994) to political leadership (Newman & Taylor, 1994). However, much of this body of literature has been considered either atheoretical, methodologically flawed (Bedford, 1989), or has presented contradictory and nonsignificant results. For example, depending on the study examined, one could find support for any birth position being overrepresented amongst psychiatric patients (Richter, Richter, Eisemann, & Mau, 1997). In terms of the impact of birth order on the sibling relationship, there are some indications that older siblings may resent younger siblings due to past experiences as caretakers of younger siblings (Folwell et al., 1997). However, it appears that birth order does not account for amount of time spent with siblings (Fallon & Bowles, 1997), nor is it related to perpetration of fratricidal behaviour (Marleau & Saucier, 1998).

Another prominent line of research into the sibling relationship attempts to classify siblings into types, according to the patterns in their relationships. In childhood, Brody, Stoneman, and McCoy (1994) developed a typology that includes "typical" siblings who tend to have moderate levels of warmth and conflict in their relationships; "harmonious" siblings, characterized by a greater degree of warmth than conflict, and "conflicted" siblings who have the opposite set of features in their relationship. Stewart, Verbrugge, and Beilfuss (1998) list three relationship types in adults: in the "caretaker" relationship, older siblings act as parent-like figures for younger siblings; "buddy" siblings tend to act as friends, while "casual" siblings tend to prefer other peers to each other. A study of older adults yielded five other categories (Gold, 1989). "Intimate" siblings were highly involved with each other, in terms of physical contact and emotional closeness. "Congenial" relationships were also characterized by friendship and closeness, but to a lesser degree. "Loyal" siblings maintain the relationship, and feel responsibility for each other, but feelings stem from kinship ties, rather than emotional

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closeness. Siblings with "apathetic" relationships are not close or emotionally involved with each other, nor do they appear to have much contact. Finally, "hostile" siblings have little contact with each other and feel considerable resentment and disapproval of each other.

The studies mentioned above are typical of what is conventionally considered "sibling research." There is a tendency for it to be atheoretical, exploratory, and observational rather than theoretically based. One exception is Judy Dunn's (1996) work examining sibling relationships. However, this research is primarily concerned with the development of socio-cognitive skills in the context of the sibling relationship, rather than an analysis of the relationship, per se.

Another example of theoretical sibling research comes from Gene Brody's (1998) research. According to Brody (1998), family processes interact with child temperament to contribute to children's behaviour, socio-emotional coping skills, and attributions and norms regarding aggression and fairness in the sibling relationship. These mediators, in turn, influence the quality of the relationship between siblings. Brody draws from many theoretical traditions to develop this model, including family systems theory, social cognitive theory, attachment theory, and attribution theory. This research, however, is primarily concerned with family processes in childhood, rather than examining the sibling relationship in the young adult stage – a developmental period in which families can be considered to have a decreased influence.

While this research has provided a base on which to build further studies, it is apparent that this area of study would benefit from a further examination of this relationship. It is proposed that attachment theory is an appropriate and well-suited framework from which to approach and examination of the sibling relationship. Sibling researchers have mentioned attachment theory in the past (Bedford, 1989; Brody, 1998), but few have employed it as the "eyes" through which to examine the sibling relationship.

A Brief Description of Attachment Theory

Since John Bowlby's (1969) original writings on attachment theory, a plethora of research has investigated attachment relationships – those relationships that are most fundamental to our feelings of security. Attachment relationships are characterized by a strong emotional tie (whether positive or negative) in which the attachment figure is used as a safe haven in times of stress or anxiety, and as a secure base from which to explore new environments or situations. The individual seeks to maintain proximity to, and protests or mourns separations from the attachment figure.

Through extensive observations of mothers and their infants, Mary Ainsworth and her colleagues (Ainsworth, Bell, & Stayton, 1974) identified three attachment styles in childhood: secure, avoidant, and ambivalent. Children with consistently responsive and sensitive caregivers who effectively respond to their needs are believed to develop a secure pattern. Children with caregivers who consistently reject the child's comfortseeking develop an avoidant attachment pattern. Finally, when caregivers are inconsistent in their responses to the child's comfort-seeking, the child is believed to develop an ambivalent pattern.

Several researchers have extended the study of attachment into adulthood. Among them are Mary Main (George, Kaplan, & Main, 1984), who developed the Adult Attachment Interview (AAI), and Hazan and Shaver (1987), who designed a self-report

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measure for adults with classifications parallel to Ainsworth's childhood attachment classifications. However, these models of adult attachment are typological and recent advances in the attachment literature indicate that a dimensional conceptualization of attachment may present a more accurate picture (Fraley & Waller, 1998). Bartholomew (1990; Bartholomew & Horowitz, 1991) developed a model of adult attachment that describes four attachment patterns defined in terms of the intersection of the self- and other-model dimensions. The secure adult attachment pattern incorporates a positive sense of self and other. Secure individuals see themselves as worthy of being loved and cared for, and view others as trustworthy and caring. As a result of these positive self and other models, it is relatively easy for these individuals to enter into emotionally close relationships. In contrast, the fearful pattern involves a negative impression of self and other. Fearful individuals perceive themselves as unworthy of love, and others as uncaring or rejecting. This combination leads them to have difficulties establishing close relationships because they fear rejection by relationship partners. The preoccupied pattern consists of a negative view of self and a positive view of other. Individuals with this attachment pattern see themselves as being unworthy of care, and tend to have an overly trusting, idealized view of others. This pattern results in enmeshed relationships in which preoccupied individuals continually seek acceptance. The dismissing pattern involves a positive sense of self and a negative sense of other. Dismissing individuals perceive themselves as independent and not in need of care, and others as untrustworthy. Like the fearful pattern, they tend to avoid close relationships, but rather than fearing rejection, their motivation is to remain independent and invulnerable.

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The self- and other-models can also be conceptualized in terms of the dimensions of <u>anxiety</u> and <u>avoidance</u> (Bartholomew, 1990; Griffin & Bartholomew, 1994a). Since the self-model reflects the degree of internalization of self-worth, it indicates one's expectations of how others will respond to one. Therefore, it is associated with feelings of anxiety relating to threats to relationships, and fears of rejection. In other words, a more positive self-model would be associated with higher feelings of self-worth, and lower feelings of anxiety in the context of attachment relationships. The other-model reflects expectations of others' behaviours, thus, one's tendency to approach or avoid intimacy in relationships. A more positive other-model would indicate that others are expected to be available and supportive, thereby decreasing the likelihood one would attempt to avoid closeness. Given the current movement in the field towards conceptualizing attachment in terms of dimensions rather than types (Fraley & Waller, 1998), the self- and other-model dimensions are used in the analyses relating to attachment throughout this dissertation (unless otherwise specified).

Attachment Among Siblings

The bulk of attachment research has been based on parental or romantic relationships while tending to neglect other potential attachment relationships. In particular, explorations of the sibling relationship from an attachment perspective have been notably rare. This is surprising given that the sibling relationship is the longest relationship most individuals will experience in their lifetimes, and has unique status among peer relationships because of common genetic background and familial experiences.

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Attachment theory seems ideally suited to analyzing sibling bonds. A number of studies support the notion that sibling relationships can be considered attachment relationships. For example, Bowlby (1973) noted that in three of four cases of 4-year-old children placed in a nursery with a sibling, children cried less and showed fewer hostile outbursts than their solo counterparts. They also constantly sought each other out and tended to present a united front to outsiders. A study of infants (10-20 months old) with their older siblings (4 years old) in the Strange Situation¹ indicated that older siblings directed caregiving behaviours toward younger siblings when the younger siblings showed attachment behaviours by approaching and maintaining proximity to the older siblings in the mother's absence (Stewart, 1983). Further support for considering this an attachment relationship comes from a finding that infants in an unfamiliar backyard left their mother sooner, explored more, showed less distress, and were more independent when their older sibling was also present (Samuels, 1980).

In adulthood, there is considerable evidence that siblings can be considered attachment figures. In fact, Hazan and Zeifman (1994) found that although siblings were an uncommon source of attachment for children aged 6 to 17 years, they were named more often as fulfilling attachment needs for participants aged 18 to 82 years. Specifically, siblings ranked fourth in a total of five mentioned individual relationships for provision of various attachment components. Trinke and Bartholomew's (1997)

¹ The Strange Situation is a procedure conducted in a laboratory in which children are observed with a caregiver, usually a parent, in a series of departure and reunion episodes claimed to reflect the quality of their relationship (Ainsworth, Bell, & Stayton, 1974). assessment of each relationship to determine if it constituted an attachment relationship indicated that 58% of participants were considered attached to at least one sibling and 8% had their sibling ranked as their primary attachment figure. Indeed, this figure may be an underestimation of the extent of attachment to sibling, as the researchers did not differentiate participants without siblings in their calculation.

Hazan and Zeifman's data (1994) seem to indicate a shift in the importance of siblings from adolescence to adulthood. From a developmental perspective, it is interesting to examine the time of this shift. Early adulthood is a period when individuals are going through a great deal of transition, particularly relating to their family relationships. They are typically leaving home, either to attend university or to begin a career. For the first time they may be living apart from their siblings, and also changing their social network by developing a wide variety of new peer relationships (Rose, 1984). As such, the sibling relationship may decrease in importance for this age group. On the other hand, a robust finding in attachment literature indicates that peers become increasingly important attachment figures in adolescence and early adulthood. Given that the sibling relationship is a special form of the peer relationship may increase in importance for this age group.

Research Ouestions

The current study examines the sibling relationship as an attachment relationship. It is important to note, however, that one can conceptualize the attachment relationship in two different ways. The first considers the <u>strength</u> of the relationship. That is, this is concerned with the degree to which two siblings are attached to each other. This is

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difficult to measure, partly because individuals with predominantly dismissing patterns of attachment would have difficulties reporting attachment-like behaviours since they consider themselves independent and not in need of care.

Another conceptualization of the attachment relationship considers the <u>quality</u> of the relationship. That is, it focuses on the secure aspects of the relationship. For example, it is concerned with the depth of the relationship, and the extent to which siblings turn to each other in times of stress. This is the conceptualization used in the current study.

Ouestion 1

A number of questions are raised when considering the sibling relationship from an attachment perspective. First, what factors influence the quality of the attachment relationship between siblings? Many factors appear to be important and will be explored in the current study. They include:

(1) <u>Parenting</u>. Two separate lines of reasoning regarding the effect of parenting predict opposite outcomes for the sibling relationship. One claims that there is an inverse relationship between the quality of the parent-child and the sibling relationship. In other words, the close sibling bond develops because of unreliable parental care (Bank & Kahn, 1982). This is referred to as the "compensation" hypothesis (Seginer, 1998).

Caya and Liem's (1998) study of adolescents and adults who grew up in low- and high-conflict homes provides support for the compensation hypothesis. They found that, of those in high-conflict homes, participants with a high level of sibling support reported higher self-esteem than did only children and individuals with low sibling support. They

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also reported higher social relationship competence than participants with low sibling support.

However, the majority of research seems to agree with the "similarity" hypothesis (Seginer, 1998), indicating that there is a positive association between parenting and the quality of sibling relationships (Boer, Goedhart, & Treffers, 1992; Brody, 1998; Jenkins, 1992). For example, Brody, Stoneman, and McCoy's (1994) longitudinal study of children's sibling relationships found that for both younger and older siblings positive ratings of their relationship were associated with positive assessments of their relationships with their father. Also, parents of "conflicted" siblings were observed displaying significantly higher rates of negative behaviour than "typical," or "harmonious" siblings in videotaped interactions.

Attachment theory is consistent with the similarity hypothesis. The internal working model of relationships developed in the context of the parent-child relationship should carry over to the sibling relationship. For example, individuals who are securely attached to their caregivers should develop a secure relationship with their siblings while those who have an insecure attachment pattern with their caregiver should in turn be insecurely attached to their siblings (Teti & Ablard, 1989).

Differential treatment by parents has also been noted as a potential influence on the sibling relationship. Dunn and Plomin (1990) report that at least 50% of children in their samples perceived differential treatment by parents and two-thirds of parents confirmed that they feel different intensity of feelings for their children. In line with this, Brody, Stoneman, and McCoy's (1994) study showed only 3 out of 71 families (4%) could be considered to have equal parent-child relationship quality. However, differential treatment is only problematic insofar as children interpret it as indicating differences in feelings of love, affection, or concern. Kowal and Kramer (1997) show that less warmth and closeness, and more conflict characterized relationships between siblings who perceived higher levels of parental differential treatment. Interestingly, most studies seem to indicate that children, regardless of their birth order perceived laterborn siblings as receiving more affection than earlier-born siblings (Dunn & Plomin, 1990; Kowal & Kramer, 1997; McHale, Crouter, McGuire, & Updegraff, 1995).

In terms of the impact on the sibling relationship, it is possible that feelings of resentment and jealousy over perceptions of favoritism on the part of the disfavored sibling, and feelings of guilt and shame on the part of the favored sibling may lead to a deterioration of the sibling relationship. This is supported by a study indicating that younger siblings perceived their relationship with their older sibling as most positive when the siblings experienced equal relationship quality (Brody, Stoneman, & McCoy, 1994). Surprisingly, both older and younger siblings assessed their relationship as less positive and more negative when parents appeared to have a more negative relationship with the younger than older sibling. It is possible that in the case where older siblings were favoured younger siblings were experiencing resentment about the differential treatment, while older siblings were feeling guilty and protective of their younger siblings.

(2) Attachment dimensions. The self- and other-model dimensions described in Bartholomew's (1990) model above are expected to be associated with the sibling relationship as an attachment relationship. As a higher self-model is related to decreased anxiety in close relationships, it is also expected to be positively associated with

attachment to sibling. Likewise, a higher other-model is expected to be positively associated with attachment to sibling, as it is related to decreased avoidance of close relationships.

(3) Social support network. Furman and Buhrmester (1985) argue that individuals may compensate for missing support in one relationship type (e.g., friends) by turning to a relationship that could conceivable fulfill similar functions (e.g., siblings). East and Rook's (1992) study provides support for this model, as isolated children who received high support from a favourite sibling were found to have increased adjustment. Along these lines, it is possible that individuals with fewer members in their social support network may tend to rely more on each member, making their siblings more important than for those who have a large social support network. For example, those without a romantic partner may rely more on their siblings for support. This is illustrated by Hazan and Zeifman's (1994) finding that participants who were not in a romantic relationship, or in one for less than 2 years used parents and siblings as attachment figures more than those who had been in a relationship for 2 years or more. Another study confirming this pattern indicates that among the factors encouraging solidarity amongst adult siblings was having a small inner circle (White & Riedmann, 1992). This was defined as being unmarried, without adult children, and no living parents.

(4) <u>Negative life events</u>. Dunn's (1996) Cambridge Sibling Study found that negative life events increased sibling intimacy, while daily hassles decreased sibling intimacy. Likewise, among the factors that Folwell et al.'s (1997) elderly participants mentioned in accounting for closeness in the sibling relationship were family events or hardships that were dealt with together. However, in the case of divorce and remarriage

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the findings are not as clearly in favor of a positive effect on the sibling relationship. Hetherington's (1989) study on divorce and remarriage indicated that while older girls in divorced families often provided younger sisters with nurturance and support, sibling dyads that included a boy were more troubled in that boys acted more aggressively and refused overtures on the part of their siblings. As such, it is not clear what effect negative life events have on the sibling relationship. It is possible that some types of events increase intimacy, while others decrease it. For example, events relating to family difficulties may lead family members to bond together, whereas those occurring outside the family unit may decrease intimacy.

(5) <u>Birth order</u>. Older siblings are typically given the responsibility of taking care of younger siblings rather than vice versa. This responsibility can be heightened in the case of inadequate parenting, where older siblings are more heavily burdened with caregiving, and may lead to discrepancies in feelings of closeness. Younger siblings may look up to older siblings, but older siblings may resent having to care for younger siblings (Folwell et al., 1997). Another source of envy and resentment on the part of the older sibling towards the younger sibling relates to Dunn and Plomin's (1990) findings indicating prevailing maternal preference for second-borns over first-borns. On the other hand, it may be the case that older siblings in general are more kindly disposed towards younger siblings, especially in cases of differential treatment. This is supported by the abundance of research cited earlier (see "parenting" section above) indicating that the sibling relationship was better when younger rather than older siblings were favored.

(6) <u>Sex of dyad</u>. Dunn (1996) reports that by late middle childhood, older girls have a closer relationship with their siblings than older boys. In Hazan and Zeifman's

(1994) study, females with partners were more likely than males to name their siblings (especially sisters) as the person they would turn to for emotional support. Hetherington (1989) found that sibling dyads that included a boy were more troubled than those between two girls in families that had undergone marital transitions. It is expected that dyads with two sisters will be closer, followed by those with one sister and one brother, with two brothers having the lowest level of closeness.

(7) Spacing between siblings. Bank and Kahn (1982) report that an important factor in developing the sibling bond is high access between siblings, which can be enhanced by age similarity. For example, siblings close in age often attend the same schools, and participate in the same activities. However, another study seems to indicate that the opposite is the case. Male siblings spaced 4 to 5 years apart reported more positive sibling relations than those with greater or lesser age spacing (Kidwell, 1981). Yet a third investigation showed that while young adult siblings who were spaced farther apart did experience less conflict in their relationship, this variable did not seem to be associated with feelings of warmth or rivalry in the relationship (Stocker, Lanthier, & Furman, 1997). It is hoped that the current study will clarify the impact of age spacing on feelings of attachment among siblings.

(8) <u>Personality</u>. Temperament has been found to account for significant variance in children's sibling relationships (Brody, Stoneman, & Gauger, 1996; Stocker, Dunn, & Plomin, 1989). However, contradictory results do not allow a clear assessment of precise impact of temperament. For example, some studies have found that preschool sibling dyads who were more temperamentally dissimilar experienced higher levels of conflict (Munn & Dunn, 1989), yet others have found that siblings who were both highly active experienced the most conflict (Stoneman & Brody, 1993). Regardless of the similarity between siblings in temperamental characteristics, it is fairly clear that difficult temperament is related to more negative sibling relationships. For example, a study by Stocker, Dunn, and Plomin (1989) found that the association between temperament and quality of sibling relationship differed for older and younger siblings. Older siblings who had more frequent emotional upsets also appeared to have a more negative sibling relationship. In turn, an association was found between younger siblings' sociability and a more positive relationship. In line with the previous results, Brody, Stoneman, and McCoy (1994) found that difficult temperament in either older or younger siblings was associated with more negative assessments of the sibling relationship. Interestingly, this association seemed to increase with time.

Temperament is theorized to be predictive of adult personality (Buss & Plomin, 1984). However, there are few studies examining the role of personality on the sibling relationship. One of the few is a study by Furman and Lanthier (1996) on school-aged children; which found that of the five personality traits commonly described in Costa and McCrae's (1989) Five Factor Model, Conscientiousness and Agreeableness appeared to be most consistently associated with sibling relationship dimensions such as warmth and conflict. The current study will extend these findings to look at the Five Factor Model amongst young adult sibling relationships.

(9) <u>Frequency of contact</u>. A study examining young adult sibling relationships (Stocker, Lanthier, & Furman, 1997) found that while the distance that siblings lived apart from each other had little impact on the sibling relationship, amount of contact between siblings was highly positively correlated with warmth ($\underline{r} = .67$) and moderately

negatively correlated with rivalry ($\underline{r} = -.11$). Thus, it is expected that high amounts of contact between siblings will have a positive impact on attachment to sibling.

The second question to be considered in the current study relates to concordance in ratings of attachment to sibling. Dunn and Plomin (1990) report that 77% of their participants were rated by independent raters as feeling <u>different</u> levels of closeness than those reported by their siblings when they were asked to discuss their relationships. This strong result makes it necessary to determine if siblings tend to rate their attachment to each other similarly or if Dunn and Plomin's (1990) findings will translate to attachment between siblings.

Ouestion 3

Ouestion 2

Individual differences in attachment dimensions raise the third question to be addressed in the current study – how are individuals' self- and other-models associated with characteristics of their sibling relationships? There is considerable evidence that security of attachment (i.e., positive self- and other-models) is predictive of romantic relationships characterized by trust and satisfaction (Simpson, 1990). In contrast, avoidant or insecure attachment (i.e., negative self- and other-models) is predictive of relationships characterized by the opposite set of features. It is possible that these same associations hold for the sibling attachment relationship. However, there are aspects unique to the sibling relationship that may decrease the relevance of findings relating to other relationships. For example, unlike the romantic relationship, the sibling relationship is not characterized by sexual intimacy, nor do siblings typically spend as much time in each other's company as romantic partners. In addition, romantic partners do not share the family background and genetic heritage that siblings have in common. These differences highlight the need to examine the associations between attachment models and the characteristics of this relationship.

Ouestion 4

A fourth aspect of this research involves investigating an important theoretical assumption made by attachment theorists – intergenerational transmission of attachment models. Attachment theorists such as Fonagy, Steele, Steele, Moran and Higgit (1990) hypothesize that strong patterns of intergenerational transmission result from the parents' internal working models guiding their expression of attachment through their ability to sensitively respond to their children, thus influencing their children's developing models of self and other. Subsequently, children will differ in their levels of security, tending to mimic their parents' pattern (Steele & Steele, 1994). Indeed, a meta-analysis conducted by van IJzendoorn (1995) combining the results of 18 studies including samples of mothers and/or fathers and their infants (N=854) found the correspondence between parental and infant attachment classifications to be 70%.

Given van IJzendoorn's (1995) impressive results one would expect the concordance rates between siblings on attachment dimensions to be quite high. However, there are several reasons that one could argue against concordance. First, there is the strong evidence reported above that parent do not treat their children similarly (Dunn & Plomin, 1990). Thus, this differential treatment should contribute to differences in siblings' internal working models. Second, a recent adult twin study found significant genetic influence on the secure, fearful, and preoccupied adult attachment styles (Brussoni, Jang, Livesley & MacBeth, in press). However, as siblings share only 50% of their genes, on average, these genetic influences are expected to contribute to differences, in addition to similarities among siblings. Third, this same twin study estimated the influence of nonshared environmental factors to account for a large proportion of the variance in the four attachment styles (.58 to .70). Given that this type of environmental influence is, by definition, not shared between siblings, it would also contribute to differences in their internal working models. In fact, concordance rates between dizygotic twins, who are as genetically similar as regular siblings, were as follows: secure $\underline{r} = .22$; fearful $\underline{r} = .25$, preoccupied $\underline{r} = .03$, and dismissing $\underline{r} = .31$. These results seem to belie the high degree of concordance between parents and children found by van IJzendoorn (1995).

One could argue that the low correlations described above reflect the age of the twin study participants (M age 31.3 years, SD = 13.8, range = 16 - 66 years; Brussoni et al., in press). That is, the participants could have lived apart from their parents and siblings for a number of years, and as such would have had considerable opportunity to alter their internal working models through contact with attachment figures that differ from those of their siblings (e.g., spouses, friends, and children). Implicit in this reasoning is the assumption that siblings should be more concordant on the attachment dimensions at younger ages. In the current study, the sample consists of young adults who may still be living at home, or have recently moved away. According to this interpretation, their "transfer" of attachment from parents to peers may still be in progress, making it relevant to investigate concordance rates to see if patterns of intergenerational transmission appear stronger at this younger age.

Summary

In summary, this study addresses a number of questions:

1. What factors influence the quality of the attachment relationship between siblings? Associations with the following factors are explored: parenting, attachment dimensions, extent of social support, life events, birth order, sex of sibling dyad, spacing between siblings, personality, and frequency of contact.

2. To what degree are there similarities in siblings' ratings of the attachment relationship?

3. What are the associations between attachment dimensions and characteristics of the sibling relationship?

4. What are the concordance rates of adult attachment model dimensions among young adult siblings?

Method

Participants

Participants were recruited from the undergraduate psychology subject pool. Students were eligible to participate if they had at least one sibling who spoke English and was 13 or older. This is because it was felt that participants younger than 13 years would have difficulty completing the questionnaire package. If they had more than one eligible sibling, they were asked to choose the sibling they were emotionally closest to. In some cases students felt closest to one sibling but chose to have the other participate due to convenience (such as living in the same house, or agreeing to participate). The students' siblings were asked to participate as well and given a \$10 honorarium as compensation for their time. A total of 321 sibling pairs and 131 singletons (i.e., pairs in which only one sibling participated) completed the questionnaire package. Participants ranged in age from 13 to 37 years with a mean age of 19.29 years (SD = 3.01 years). Nine sibling pairs were dropped from the majority of statistical analyses. Four (two female-female, and two male-female) were dropped because they reported on disparate siblings, a female-female pair was dropped because it consisted of step-siblings, and another four pairs (three female-female, and one male - female) were excluded because both siblings were over age 25 (this study focuses on young adults). The final sample included 108 male-male, 103 female-female, and 101 male-female sibling pairs. A total of 141 of these pairs had only one sibling, 124 had two siblings, and 46 had three or more siblings.

Participants had a mean of 1.76 siblings (SD = .95), and most lived in the same house as their sibling (70.2%). A total of 11.3% lived in the same city, but not the same house, 7.1% lived in a different city within 100 miles, 3.1% lived within 100 to 500 miles of each other, and 8.3% lived over 500 miles away from their sibling. There were no significant differences between complete sibling pairs and singletons in age, sex, cultural background, number of siblings, and distance living apart from their sibling. A series of <u>t</u>-tests indicated no significant difference between complete sibling pairs and singletons on any demographic variable.

Procedure

Student participants were asked to complete a questionnaire package (Appendix A) on their own without external input. If they had more than one sibling, they were instructed to answer the questions referring to the sibling who also participated in the study. Siblings of student participants were given a questionnaire package identical to

that of the student participant, referring to their relationship with the student who participated in the research study. The questionnaire package took approximately two hours to complete.

<u>Measures</u>

Measures of Attachment to Sibling

Attachment Network Ouestionnaire - Revised (ANO-R). Trinke and Bartholomew's (1997) ANQ-R was slightly adapted for the current study and combined with the Social Support Questionnaire - Short Form (SSQ-R; Sarason et al., 1987), and the WHOTO (i.e., WHO do you turn TO; Hazan & Zeifman, 1994; Fraley & Davis, 1997). The SSO-R asks the respondent to list whom they would turn to for support in a variety of situations. The WHOTO is designed to identify whom the respondent tends to rely on for each of the four attachment components (proximity seeking, safe haven, separation distress, and secure base). The current adaptation of these measures asks participants to list particular people available in six different contexts (e.g., "Who can you really count on to be dependable when you need help?") rather than simply asking for the number of supportive relationships. Like the original, the version used in this study has participants rate the extent to which they are satisfied with their available support on a 6-point scale. Scores are calculated on two scales. The N (number) score is the average number of people listed across the items, and the S (satisfaction) score is the average satisfaction rating across the items. For the purpose of this study, a sibling score will also be calculated which takes the average number of times siblings are listed across the items and divides it by the N score. This is a proportion score that takes into account

the number of individuals mentioned. Internal consistencies for the three subscales for the current sample ranged from alpha .81 for the sibling score to .88 for the N score.

Past research with the SSQ (Sarason et al., 1983), a longer version of the SSQ-R, found no significant correlations between the SSQ-N or SSQ-S scales and the Marlowe-Crowne measure of social desirability (Marlowe & Crowne, 1961). However, the SSQ-R N and S scores are significantly correlated with this measure of social desirability (.23 and .21, respectively), indicating that some care must be taken with the results. In terms of convergent validity, the SSQ-R N and S scales are significantly negatively related to anxiety, depression, and hostility, and loneliness, and significantly positively related to social competence. Three to four-week test-retest correlations were .84 and .85 for the SSQ-R N and S scores, respectively (Sarason et al., 1987).

Inventory of Sibling Attachment (ISA). The ISA was adapted from Armsden and Greenberg's (1987) Inventory of Parent and Peer Attachment (IPPA) by deleting parent items and modifying peer items to refer to the sibling relationship. It taps internal working models of attachment figures by assessing (1) positive affective/cognitive experience of trust in the accessibility and responsiveness of attachment figures, and (2) the negative affective/cognitive experiences of anger and/or hopelessness resulting from unresponsive, or inconsistently responsive attachment figures. Participants indicate how often each statement is true for them on a 5-point Likert scale. The questionnaire yields subscale scores for Trust (e.g., "My sibling understands me."), Communication (e.g., "My sibling senses when I'm upset about something."), and Alienation (e.g., "I feel alone and apart when I am with my sibling."), as well as a summary score of quality of attachment defined as the degree of trust and communication relative to alienation (Trust

+ Communication - Alienation). The authors report a 3-week test-retest reliability of .86. In the current sample, internal consistency alpha coefficients ranged from .63 to .93 for the Trust, Communication, Alienation, and Attachment subscales.

In terms of validity, attachment as assessed by the IPPA is positively related to social self concept, self-esteem, life-satisfaction, affective status, and general family functioning, as well as tendencies toward the use of more problem-solving coping strategies in stressful situations. Attachment is also negatively associated with loneliness, and hopelessness.

Measures of Self- and Other- Model Dimensions

Relationship Questionnaire (RQ). The RQ (Bartholomew & Horowitz, 1991) is an adaptation of the attachment measure developed by Hazan and Shaver (1987). It consists of four short paragraphs describing four attachment patterns (secure, fearful, preoccupied, and dismissing). Participants are instructed to choose the paragraph that best describes them, and then rate the degree to which they resemble each of the four styles on a 7-point scale. The correlation between Bartholomew's interview ratings and the RQ ratings range from .22 to .50 (for the secure and fearful ratings, respectively). Moderate stability has been found over 8 months (Scharfe & Bartholomew, 1994), with 63% of the female participants and 56% of the male participants reporting the same attachment pattern. Internal reliability alpha for the self- and other-models in the current sample was .71.

Scores on the self- and other-model dimensions are generated by entering the scores on the four attachment patterns into the following equations for the self-model: (Secure + Dismissing) - (Preoccupied + Fearful); and the other-model: (Secure +

Preoccupied) - (Dismissing + Fearful). The RQ has comparable predictive validity to the interview measure for the self- and other-models. The self-model was highly related to various measures of self-concept, and unrelated to measures of latent interpersonal orientation. Results were the opposite for the other-model, indicating strong validity for both of these constructs (Griffin & Bartholomew, 1994a).

Three versions of the RQ were included in the current study and presented in the following order. First, participants were asked to rate the way they generally are in close relationships. Second, participants rated the way their closest sibling generally is in close relationships. Third, they considered how they are in their relationship with their closest sibling.

Relationship Scales Questionnaire (RSQ). The RSQ (Griffin & Bartholomew, 1994b) is a 17-item measure of the four adult attachment patterns. Items in the RSQ are drawn from Hazan and Shaver's (1987) attachment measure, the RQ, and Collins and Read's (1990) Adult Attachment Scale. Participants rate the extent to which each statement describes their feelings in close relationships on a 5-point scale. Measures of each of the four attachment patterns (secure, fearful, preoccupied, and dismissing) identified by Bartholomew and Horowitz (1991) are created by summing four or five items from the corresponding prototypic descriptions. Each participant receives a continuous rating for each attachment pattern. In addition, scores for the self- and othermodel dimensions are calculated as described above for the RQ. The RSQ pattern scores show moderate convergent validity with interview ratings, with correlation coefficients ranging from .25 for the secure pattern to .47 for the dismissing pattern. Correlations for the self- and other-models and the interview ratings are .39 and .50, respectively. Alpha coefficients for the attachment scores combining the RQ and RSQ were .67, .75, .59, .35 for the secure, fearful, preoccupied, dismissing attachment patterns, respectively.

Both the RQ and RSQ have been shown to be valid measures. Griffin and Bartholomew (1994a) have found that the Anxiety scale (Collins and Read, 1990) was strongly predicted by the self-model dimension, while the Comfort With Closeness scale was strongly predicted by the other-model. Griffin and Bartholomew (1994a) conclude that the self- and other-model dimensions can be reliably assessed by self-report measures, but they are less confident regarding the assessment of the four attachment patterns.

Sibling Relationship Measures

Adult Sibling Relationship Ouestionnaire (ASRO). The ASRQ (Stocker, Lanthier, & Furman, 1997) assesses perceptions of behaviours and feelings toward the sibling, as well as the participant's impression of the sibling's behaviour and feelings toward them. Participants rate each item on a 5-point Likert scale. Scores are obtained on a total of 14 scales: Intimacy (e.g., "How much do you talk to this sibling about things that are important to you?"), Affection (e.g., "How much do you think of this sibling as a good friend?"), Knowledge (e.g., "How much do you know about this sibling?"), Acceptance (e.g., "How much do you accept this sibling's personality?"), Similarity (e.g., "How much do you and this sibling have in common?"), Admiration (e.g., "How much do you admire this sibling?"), Emotional Support (e.g., "How much does this sibling try to cheer you up when you are feeling down?"), Instrumental Support (e.g., "How much do you go to this sibling for help with non-personal problems?"), Dominance (e.g., "How much are you bossy with this sibling?"), Competition (e.g., "How much do you feel jealous of this sibling?"), Antagonism (e.g., "How much does this sibling irritate you?"), Quarreling (e.g., "How much do you and this sibling argue with each other?"), Maternal Rivalry (e.g., "Do you think your mother favors you or this sibling more?"), and Paternal Rivalry (e.g., "Do you think your father supports you or this sibling more?"). All scores, except those for the rivalry scales, are calculated by taking the average of the relevant items. The rivalry scales are scored as the absolute value of deviations for the mid-point of the scale. One can also combine the scales to form three higher order factors: Warmth, Conflict, and Rivalry.

Socially desirable responding was not found to be a significant problem in Stocker et al.'s (1997) original sample as the Warmth and Rivalry factors were not significantly correlated with the Balanced Inventory of Desirable Responding (Paulhus, 1991). The Conflict factor was significantly correlated, but the magnitude of the correlation was small ($\mathbf{r} = -.16$, $\mathbf{p} < .05$). Two-week test-retest correlations in the authors' sample ranged from .75 to .93. The current sample yielded alpha coefficients ranging from .86 for the Dominance scale, to .91 for Paternal Rivalry.

Quality of Relationships Inventory (QRI). The QRI (Pierce, Sarason, & Sarason, 1991) is a 25-item measure of three dimensions of relationship quality: Support, Depth, and Conflict. Support measures the extent to which the participant can rely on the target person (i.e., sibling) for assistance in a variety of situations. Depth indicates the extent to which individuals believe they and the sibling are committed to the relationship and positively value it, and conflict assesses the extent to which the individual experiences angry or ambivalent feelings regarding their sibling. Participants are asked to rate, on a 4-point scale the extent to which each item describes their relationship with their sibling.

A sample item is "How positive a role does this sibling play in your life?" The Support scale is positively correlated the SPS measure of global perceived availability of social support (Cutrona & Russell, 1987), indicating that participants who perceive high levels of general social support also perceive high levels of support within a specific relationship. Associations between the Depth and Conflict scales and the SPS indicate that perceptions of general support are related to feelings of greater security and positivity and less interpersonal conflict within specific relationships. Alpha coefficients for the scales ranged from .82 to .88.

Relationship Assessment Scale (RAS). The RAS (Hendrick, 1988) is a 7-item measure of relationship satisfaction. The measure was slightly adjusted for the current study by substituting the word "sibling" for "partner." In addition the following sentences were modified from "How often do you wish you hadn't gotten into this relationship?" to "How often do you wish you were not siblings?" and from "To what extent has your relationship met your original expectations?" to "To what extent has your relationship met your expectations of the typical sibling relationship?" Participants rate each statement on a 7-point scale from "T'm not satisfied" to "T'm completely satisfied."

High correlations have been found between the RAS and other measures of marital satisfaction, such as the Dyadic Adjustment Scale (Spanier, 1976; $\underline{r} = .80$) and the Kansas Marital Satisfaction Scale (Schumm et al., 1986; $\underline{r} = .69$). The RAS has also been found effective in distinguishing between clinical and non-clinical samples for relationship satisfaction. Six- to seven-week test retest reliability for the RAS was .85 and item-total correlations ranged from .57 to .76. The current sample yielded an internal consistency alpha coefficient of .79.
Other Measures

Mother-Father-Peer Scale (MFP). The MFP (Epstein, 1983) assesses dimensions of acceptance-rejection (by mother, father and peers), independence-overprotection (by mother and father), and defensive idealization (of mother and father). Each of the mother and father versions consists of 30 items while the peer scale contains 10 items. Participants are asked to indicate on a 5-point scale (from "strongly disagree" to "strongly agree") the extent to which the statements describe their childhood relationships with their mother, father, or peers. A sample item is "When I was a child, my mother encouraged me to try things my own way." Alpha coefficients in the current sample ranged from .68 to .89.

Life Events Ouestionnaire (LEQ). The LEQ was designed for the purpose of this study. It is an amalgamation of the Life Events Checklist (LEC; Johnson & McCutcheon, 1980), and the Life Events Record (LER; Coddington, 1972a, 1972b). These questionnaires were designed to assess events in the last year, including daily hassles. The measure of life events is included in this study to examine the effect of stressful life events on the sibling relationship. It was felt that some normative events and daily hassles would not have a significant impact on the sibling relationship. Therefore, these types of events were eliminated from the questionnaires. For example, "beginning school" was felt to be an inappropriate event as all the participants have presumably experienced it. An additional criterion involved the "life change units" assigned to events contained in the LER. Life change units denote the relative degree of necessary readjustment for children. For example, for senior high school students, the

change units, while the most stressful was "getting married" which was assigned 101 life change units. All events with life change units under 40 were eliminated.

A total of 28 events were included. Similar to the LEC, for the LEQ, participants are asked to put an 'X' beside events that they experienced while living at home. They are also asked to indicate whether they would rate the event as "good" or "bad," and indicate how much the event had an impact on their lives on a four-point scale from "no effect" to "great effect." Participants are provided extra spaces to list events that are not mentioned in the questionnaire. Five different scores are calculated: the LEQ Events score corresponds to the total number of events experienced, the LEQ Family score indicates the total number of family related events (e.g., "serious illness or injury of family member," and "parents separated or divorced"). The Good Events score adds all events that were perceived as good by the participant, while the Bad Events score adds all events that were perceived as bad.

NEO Five-Factor Inventory (NEO-FFI). The NEO-FFI (Costa & McCrae, 1989) was chosen to as a broad measure of personality. It is a 60-item measure providing scores for five dimensions: Emotional Stability (ES; e.g., "I am not a worrier."), Extraversion (E; e.g., "I like to have a lot of people around me."), Openness to experience (O; e.g., "I often try new and foreign foods."), Agreeableness (A; e.g., "I try to be courteous to everyone I meet."), and Conscientiousness (C; "I keep my belonging clean and neat."). The ES scale is essentially what is typically referred to as Neuroticism but reverse coded. Items are answered on a 5-point Likert scale from "not true" to "very true." Internal consistency alphas ranged from .69 to .85. The NEO-FFI is based on Costa and McCrae's (1989) Five-Factor Model (FFM), which explains most of the

common variance among normal personality traits (Digman, 1990). The widespread use of this instrument is a testament to its construct validity. Furthermore, Costa and McCrae (1992) indicate that corrections for socially desirable responding do not appear to affect the validity of the scales, and in some cases may diminish it.

Table 1 provides a summary of the measures and their uses in the current study.

Insert Table 1 about here

Data Analyses

Dyadic Data Analyses

Dyadic data such as sibling data create a unique problem for statistical analysis because of interdependence between the data points. That is, although a sample may consist of 30 participants, it really consists of 15 dyads because they are intercorrelated. Fortunately, recent advances make it possible to deal with interdependent data by taking well-known methods and adjusting significance tests. The present section attempts to cover the basics of dyadic data analysis. For further information, consult Gonzalez and Griffin (1997) for an excellent summary of these methods.

In the case of dyadic data, it is necessary to discuss the distinction between "distinguishable" versus "exchangeable" dyads. Distinguishable dyads are those in which a theoretically meaningful variable can be used to differentiate members within the dyad. Exchangeable dyads are those in which there is no meaningful way to distinguish them. In the current sample, sex is considered such a variable, making malefemale dyads distinguishable, and male-male and female-female dyads exchangeable.

<u>Measures an</u>	d Their Use		
Question	Variable	Measure	Scale(s)
	Parenting	MFP	Acceptance/Rejection (Mother, Father, and Peers)
			Independence/Overprotection (Mother, and Father)
	Favoritism	ASRQ	Maternal and paternal rivalry
	Attachment Dimension	RQ, RSQ	Continuous combined rating
1	Social Support	ANQ-R	N, S
1	Life Events	LEQ	Number of bad events
1	Birth Order	ASRQ	background question
1	Sex of Dyad	ASRQ	background question
1	Spacing of Dyad	ASRQ	background question
1	Personality	NEO-FFI	Global measure
1	Frequency of Contact	ASRQ	background question
1 & 2	Attachment to Sibling	ANQ-R	Proportionate number of times sibling is mentioned

Attachment Among Siblings 31

			· ·
Table 1 (cont	inued)		
Question	Variable	Measure	Scale(s)
1 & 2	Attachment to Sibling	ISA	Global score of quality of attachment
1 & 2	Attachment to Sibling	QRI	Depth
3	Quality of relationship	QRI	Support, depth, conflict
3	Quality of relationship	ASRQ	Intimacy, Acceptance, Affection, Emotional Support, Antagonism
3	Satisfaction	RAS	Global Satisfaction
3	Other relationship variables	ISA	Trust, Communication, Alienation
3 & 4	Attachment pattern	RQ, RSQ	Continuous combined rating

This distinction is important because distinguishable dyads may have means, variances, and covariances that differ according to group membership (Gonzalez & Griffin, 1997). Data files must be constructed differently for dyadic data. Every participant's score appears twice – once in column one, and once in column two. To illustrate, consider a sample of three pairs of brothers measured on variable \underline{X} (e.g., satisfaction with the relationship) and variable \underline{Y} (e.g., self-esteem): Jake and John, Perry and Pat, and Bob and Bill. The data file for these three pairs is symbolically represented in Table 2. It is apparent that with $\underline{N} = 3$ dyads, each column contains $\underline{2N} = 6$ scores (Gonzalez & Griffin, 1997). In the case of distinguishable pairs, there is another column (C) representing the distinguishing variable (e.g., sex where 1 = male and 2 = female).

Insert Table 2 about here

There are several correlations that can be computed using dyadic data. The pairwise intraclass correlation (r_{xx}) is a measure of intra-dyadic similarity. For example, it would indicate the extent to which Jake and John are correlated on their ratings of satisfaction with their relationship. It is calculated as an intraclass correlation between column one (X) and column two (X'). It is not necessary to square this correlation as one would a regular Pearson correlation because it carries a "variance accounted for" interpretation (Gonzalez & Griffin, 1997). However, because it is calculated on <u>2N</u> pairs rather than <u>N</u> dyads, the significance level must be adjusted. The new significance level is tested using the normal distribution and is calculated using the following equation: $\underline{z} = \underline{r}_{xx}$ (SQRT <u>N</u>), where <u>N</u> is the number of dyads. The value of <u>z</u> is compared to critical values in standard tables. Thus, a Type I error rate set at $\alpha = .05$ would

Symbolic Representation for the Pairwise Data Setup

			$\underline{\mathbf{V}}$	ariable		
Dyad #	C	Х	X′	Y	Y'	
1	1	Jake's X	John's X	Jake's Y	John's Y	
	2	John's X	Jake's X	John's Y	Jake's Y	
2	1	Perry's X	Pat's X	Perry's Y	Pat's Y	
	2	Pat's X	Perry's X	Pat's Y	Perry's Y	
3	1	Bob's X	Bill's X	Bob's Y	Bill's Y	
	2	Bill's X	Bob's X	Bill's Y	Bob's Y	

have a critical value of 1.96. In the distinguishable case, it would be necessary to calculate the partial pairwise intraclass correlation controlling for sex ($\underline{\mathbf{r}}_{xx-c}$) and the significance test would accordingly be $\underline{z} = \underline{\mathbf{r}}_{xx-c}$ (SQRT N).

The overall correlation (\underline{r}_{xy}) answers questions such as: "Is Jake's satisfaction associated with his self-esteem?" Returning to our sample data file in Table 2, one would correlate column \underline{X} with column \underline{Y} . In this case, it is necessary to calculate an adjusted sample size value (\underline{N}_{1}^{*}) :

$$\underline{\mathbf{N}}_{1}^{\bullet} = \underline{2\mathbf{N}}_{1 + \underline{\mathbf{r}}_{xx}'\underline{\mathbf{r}}_{yy'} + \underline{\mathbf{r}}_{xy'}^{2}}$$

This new \underline{N}_{1}^{*} is tested using $\underline{z} = \underline{r}_{xy}(\text{SQRT } \underline{N}_{1}^{*})$. With distinguishable data, one would simply calculate the partial overall correlation controlling for sex $(\underline{r}_{xy,c})$ and make the necessary adjustments in the above formula (i.e., $\underline{r}_{xx'}$ becomes $\underline{r}_{xx'c}$; $\underline{r}_{yy'}$ becomes $\underline{r}_{yy'c}$; and $\underline{r}_{xy'}^{2}$ becomes $\underline{r}_{xy'c}^{2}$).

The cross intraclass correlation $\underline{r}_{xy'}^2$ is used to answer questions such as: "Is Jake's trust associated with John's self-esteem?" This would involve correlating column \underline{X} with column \underline{Y}' . Again, an adjusted sample size must be calculated:

$$\underline{\mathbf{N}}_{2}^{*} = \underline{2\mathbf{N}}_{1 + \underline{\mathbf{r}}_{xx'}\underline{\mathbf{r}}_{yy'} + \underline{\mathbf{r}}_{xy}^{2}}$$

This value is used in the following equation: $\underline{z} = \underline{r}_{xy'}(\text{SQRT N}_2)$ to test for significance. As previously mentioned, in the case of distinguishable data, it would be necessary to calculate the partial cross intraclass correlation controlling for sex $(\underline{r}_{xy',c})$ and make adjustments to the above formula.

General Analyses

Dyadic data was used for the majority of the analyses. Singleton data were included only in factor analyses in order to increase reliability. In order to control the family-wise error rate, an alpha level of .05 was divided by the number of tests in each family of comparisons. A

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family of comparisons consisted of the separate set of analyses involved in each question. The adjusted error rates are indicated where appropriate.

<u>Ouestion 1</u>. ANQ-R sibling mentioned, QRI Depth, and ISA attachment scales were combined through principal factor analysis with oblique rotation in order to obtain a more reliable measure of attachment to sibling. Before these measures were combined, a <u>t</u>-test examining mean sex differences determined if the scales required separate factor analysis for each sex. Significant sex differences required mean-deviation² of the scores and the variancecovariance matrices to be tested for significant sex differences using Box's M (K. Barchard, personal communication, January 20, 2000). A significant Box's M test mean that males and females were factor analyzed separately and the resulting pattern matrices were examined to determine if there are sufficient similarities to justify combining the sexes. Given sufficient similarity across factor solutions, the scores for the two sexes were combined and factor analyzed together (R. Hakstian, personal communication, January 25, 2000). These steps were deemed necessary in maximizing the reliability of the scores.

² Mean deviation refers to subtracting each score from the mean.

In order to explore the relevance of each of the variables believed to influence attachment to sibling, an overall correlation was calculated between each relevant variable and the attachment to sibling factor score. To determine the relationship between sex and, more specifically, pair type on attachment to sibling an independent samples <u>t</u>-tests examined meandifferences on the attachment to sibling factor. If mean-deviation was used to generate this factor (thus eliminating sex-differences), then the three separate attachment to sibling measures (ANQ-R sibling mentioned, QRI Depth, and ISA Attachment) were used for this analysis.

<u>Question 2</u>. The factor scores for attachment to sibling calculated in Question 1 were again used in this question. Pairwise intraclass correlations (\underline{r}_{xx}) were calculated between siblings' scores. A significant correlation was considered to indicate reciprocity in the ratings of the attachment relationship. Before these correlations were calculated, a <u>t</u>-test examined if there were sex differences in these factor scores. Sex differences would make it necessary to calculate correlations separately for each pair type, rather than collapsing across pairs. In the case of male-female pairs, one must calculate a partial pairwise intraclass correlation controlling for sex (\underline{r}_{xx}) .

<u>Question 3</u>. The relationship variables of interest were factor analyzed using the same methods described in Question 1. The factor scores were used in two levels of analysis. Individual-level analyses consisted of calculating the overall correlation coefficient (\underline{r}_{xy}) between the two attachment dimensions and the factors resulting from the combination of the relationship variables. Dyad-level analyses consisted of calculating the cross intraclass correlation coefficients $(\underline{r}_{xy'})$ between one sibling's attachment dimension and the other sibling's scores on the relationship factors. As described in Question 2, sex differences in the factor scores and attachment dimensions were examined in order to determine if it was necessary to compute

correlations separately for each pair type. The corresponding analyses for the four adult attachment patterns are presented in Appendix E for readers who are interested in this alternative approach.

To test whether it is possible to predict the characteristics of the sibling relationship using the different attachment dimensions, multiple regression analyses were deemed appropriate. However, given the nature of dyadic data, it was necessary to employ Structural Equation Modeling in order to perform the regression analyses. This is because not only must one sibling's direct path to the dependent variable be considered, but it is also necessary to take into account a cross path to his or her sibling. The modeling program AMOS was used for these analyses.

Degrees of freedom in the Structural Equation Modeling were contained at a reasonable level by inputing missing values. Mean scores were substituted for missing values (Mason, 1999). Structural Equation Modeling was done separately for each sibling pair type. As mentioned earlier, male-female pairs are considered "distinguishable" (through sex), while same-sex pairs are considered "exchangeable." Male-male and female-female pairs were made distinguishable by dividing them into younger versus older siblings. This is necessary because software programs currently available employ the interclass correlational model, not the intraclass model necessary to handle exchangeable data in the case of multiple regression (D. Griffin, personal communication, March 1, 2000).

The first model tested included the self- and other-model dimensions as the predictor variables and the relationship factor as the predicted variable. The model was then progressively simplified. For example, the next simplified model made the path from the brother's self-model to his factor score equal to the path from his sister's self-model 1 to her factor score. Once all

direct paths were tested for equality, the cross paths were examined. In other words, the path between the brother's self-model to his sister's factor score were set equal to the path between sister's self-model and her brother's factor score. At each step of simplification, the new model's chi-square were tested against the old model's chi-square ($\chi^2_B - \chi^2_A$) with degrees of freedom equivalent to the difference between the models ($\underline{df}_B - \underline{df}_A$). The best fitting model is the most parsimonious model that does not cause a significant increase in chi-square. If the factor analysis of the relationship variables described earlier resulted in more than one factor, modeling was conducted on one factor at a time.

<u>Ouestion 4</u>. Gender differences in the two adult attachment model dimensions were tested with independent samples <u>t</u>-tests. Significant differences necessitated separate analyses for each pair type; otherwise all pairs were analyzed together. Pairwise intraclass correlations $(\underline{r}_{xx'})$ were be calculated using the combined standardized ratings to test concordance among siblings on the self- and other-models. The relationship between siblings' ratings of themselves and their siblings were examined by calculating an overall correlation (\underline{r}_{xy}) between RQ selfratings and RQ ratings of sibling. In order to examine the extent to which participant's own ratings corresponded with their siblings' ratings of them, cross intraclass correlation coefficients $(\underline{r}_{xy'})$ were also calculated using the RQ.

Results

Descriptive Results of Key Measures

Scores were checked for normality. ASRQ Competition was slightly positively skewed. However, given the large sample size and the guidelines described by Tabachnick and Fidell (1996), this score was not deemed problematic. It was decided that the scores for ANQ-R S

should be transformed, given the greater degree of negative skew in this case (-1.28, <u>SE</u> = .09). The square root of these scores was used in all subsequent analyses (Skew = .60, <u>SE</u> = .09).

For the Structural Equation Modeling, missing values were replaced with the means for the scale. Fortunately, there were few missing values; the maximum number replaced was 6, for male-male pairs on the other-model. All other scales were missing 4 or fewer values.

Measures of attachment to sibling. The mean scores and standard deviations for all the measures are presented in Table 3.

Insert Table 3 about here

The means for the ANQ-R indicate that on average, participants named approximately four persons as making up their attachment network, and were fairly satisfied with their network. For the ISA, on average participants were fairly trusting of their siblings, their communication level was slightly higher than the midpoint, and their alienation scores indicate moderate to low levels. In addition, their quality of attachment was moderately to fairly high.

<u>Measures of attachment patterns and dimensions</u>. In the first version of the RQ, participants were asked to rate the way they generally are in close relationships. It appears that the current participants rated themselves higher on the secure than the insecure styles. A paired sample <u>t</u>-test on the standardized scores for these scales indicated that participants rated themselves significantly higher on the secure scale than the fearful (<u>t</u> = 8.53, <u>p</u> < .0001), preoccupied (<u>t</u> = 10.70, <u>p</u> < .0001), and dismissing (<u>t</u> = 10.71, <u>p</u> < .0001) scales. However, there were no significant differences between ratings for the insecure scales. Categorically, 43.5% of participants rated themselves as predominantly secure, 21.6% fearful, 18.0% preoccupied, and

Measure	M	<u>SD</u>
Attachment Network Questionnaire (ANQ-R)		
Number	4.06	1.79
Satisfaction	5.04	.71
Sibling Mentioned (proportion score)	.15	.01
Inventory of Sibling Attachment (ISA)		
Trust	3.74	.75
Communication	3.08	.79
Alienation	2.52	.58
Attachment	3.46	.62
Relationship Questionnaire (RQ)		
Self-Rating (RO1)		
Secure	4.47	1.66
Fearful	3.57	1.82
Preoccupied	3.45	1.80
Dismissing	3.47	1.78
Self-Model	.92	4.01
Other-Model	.89	4.00
Rating of Sibling (RQ2)		
Secure	4.53	1.65
Fearful	3.22	1.61

Measure	<u>M</u>	<u>SD</u>
Rating of Sibling (RO2)		
Preoccupied	3.00	1.47
Dismissing	3.77	1.80
Self-Model	2.09	3.60
Other-Model	.54	3.82
Self in Relationship with Sibling (RQ3)		
Secure	4.86	1.79
Fearful	2.56	1.58
Preoccupied	2.91	1.64
Dismissing	3.08	1.79
Self-Model	2.30	2.90
Other-Model	2.13	3.88
Relationship Scales Questionnaire (RSQ)		
Secure	3.25	.58
Fearful	2.72	.77
Preoccupied	2.97	.52
Dismissing	3.26	.52
Self-Model	.83	1.36
Other-Model	.24	1.33

Measure	<u>M</u>	<u>SD</u>			
Adult Sibling Relationship Questionnaire (ASRO)					
Intimacy	2.89	.89			
Affection	3.20	.87			
Knowledge	3.11	.76			
Acceptance	3.52	.68			
Similarity	2.96	.83			
Admiration	3.25	.70			
Emotional Support	2.94	.88			
Instrumental Support	2.81	.74			
Dominance	2.33	.71			
Competition	2.24	.82			
Antagonism	2.43	.80			
Quarrelling	2.72	.78			
Maternal Rivalry	.72	.60			
Paternal Rivalry	.63	.60			
Quality of Relationships Inventory (ORI)					
Support	2.86	.61			
Conflict	2.03	.54			
Depth	2.93	.61			

Measure	<u>M</u>	<u>SD</u>
Relationship Assessment Scale (RAS)		
Satisfaction	3.72	.69
Mother-Father-Peer Scale (MFP)		
Maternal Acceptance vs. Rejection	4.07	.70
Paternal Acceptance vs. Rejection	3.89	.76
Peer Acceptance vs. Rejection	3.89	.67
Maternal Independence Encouragement vs. Overprotection	3.21	.63
Paternal Independence Encouragement vs. Overprotection	3.50	.62
Life Events Questionnaire (LEQ)		
Total Events	6.81	3.40
Family Events	3.71	1.98
Bad Events	5.24	2.99
Good Events	1.45	1.23
NEO-Five Factor Inventory (NEO-FFI)		
Emotional Stability	3.09	.70
Extraversion	3.40	.58
Openness to Experience	3.22	.54
Agreeableness	3.65	.52
Conscientiousness	3.53	.61

17.0% dismissing. Compared to Scharfe and Bartholomew's (1994) sample of young adults in which 54.9% rated themselves secure, 16.7% fearful, 16.0% preoccupied, and 12.5% dismissing, the current sample is somewhat less secure.

The second version of the RQ had participants rate the way their siblings are in their own close relationships. Again, through an examination of mean scores in Table 3 it appears that participants rate their siblings as being higher on the secure than insecure scales. In terms of the insecure patterns, siblings were rated highest on the dismissing scale, then fearful, followed by preoccupied. A <u>t</u>-test indicated all of these mean differences were significant at the .001 level. Categorically, 50.2% rated their siblings as secure, 15.2% fearful, 8.5% preoccupied, and 26.1% dismissing.

The third RQ asked participants to consider how they are in their relationships with their sibling. As seen with the previous two versions of the RQ, the secure scale had the highest mean, followed by the dismissing, preoccupied, and fearful scales. All but the means between the dismissing and preoccupied scales were significantly different as indicated by a t-test (p < .0001). Categorically, 61.8% rated themselves as being secure in their relationship with their sibling, 8.2% fearful, 12.2% preoccupied, and 17.8% dismissing. It is noteworthy that 43.5% of participants had rated themselves secure in their relationships in general, but 61.8% perceived themselves as secure in their relationship with their sibling. This may indicate that the current sample had healthier relationships with their siblings than they did with others in general.

On the second measure of attachment pattern, the RSQ, mean scores for the four attachment scales were $3.25 (\underline{SD} = .58)$, $2.72 (\underline{SD} = .77)$, $2.97 (\underline{SD} = .52)$, and $3.26 (\underline{SD} = .52)$ for the secure, fearful, preoccupied, and dismissing scales, respectively. In this scale, the secure pattern did not have the highest mean. A paired sample <u>t</u>-test indicated significant differences

between all scores ($\underline{p} < .0001$), except for the secure and dismissing patterns. Means for the selfand other-models were .83 ($\underline{SD} = 1.36$) and .24 ($\underline{SD} = 1.33$), respectively.

Sibling relationship measures. The ASRQ yielded the following scale mean scores as specified in Table 3. Stocker, Lanthier, and Furman (1997) validated this instrument on two samples of university students (N = 383). Compared to their sample, the current sample appeared to have lower scores on Intimacy (Stocker et al.'s M = 3.05, SD = .92), Affection (M = 3.51, SD = .95), Knowledge (M = 3.35, SD = .81), Acceptance (M = 3.73, SD = .76), Admiration (M = 3.65, SD = .72), and Emotional support (M = 3.22, SD = .96), and higher scores on Dominance (M = 2.07, SD = .72), and Antagonism (M = 2.11, SD = .84). This pattern of results would appear to suggest that this sample reports less favorable sibling relationships than Stocker et al.'s (1997) sample, possibly because their sample was more heavily weighted with females (n = 255) than males (n = 128), while the current sample had approximately equal numbers of each.

Mean scores for the QRI indicate that participants could rely on their siblings for support "quite a bit," had "a little" conflict in their relationships, and felt "quite a bit" committed to their relationships. As the original sample used to validate the instrument rated their relationships with their friends and parents (Pierce, Sarason, & Sarason, 1991), it is not possible to compare results.

The Satisfaction scale mean of 3.72 on a 7-point scale indicates approximately average levels of satisfaction with the sibling relationship. This instrument has not been validated on a similar sample, however, mean levels of satisfaction for parental couples and dating couples were 4.15 (SD = .88) and 4.32 (SD = .64), respectively (Hendrick, Dicke, & Hendrick, 1998). It appears that ratings in this sample were somewhat lower.

<u>Other measures</u>. The mean scores for MFP acceptance versus rejection dimensions are listed in Table 3. Epstein's (1983) original sample of 1048 participants had means of 4.13 (SD = .86), 3.85 (SD = .94), and 3.86 (SD = .84) on these same scales. It is evident that participants in the present sample recalled similar levels of acceptance and rejection. In order to decipher these scores, means were examined for the acceptance and rejection scales independently. For mothers, participants appeared to recall fairly high levels of acceptance (M = 4.06, SD = .75) and low levels of rejection (M = 1.91, SD = .78). Results were similar, although not as pronounced for fathers' acceptance (M = 3.88, SD = .79) and rejection (M = 2.11, SD = .84), and peers' acceptance (M = 3.91, SD = .70), and rejection (M = 2.13, SD = .79). That is, for fathers and peers, it appears that participants recalled lesser levels of acceptance, and higher levels of rejection than for mothers.

Compared to Epstein's (1983) original sample means of $3.62 (\underline{SD} = .75)$ and $3.54 (\underline{SD} = .64)$ for mothers and fathers, respectively, the current sample had higher levels for mothers and similar levels for fathers in the present sample. An examination of individual scales indicated that, for mothers, levels of independence encouragement ($\underline{M} = 3.45$) were somewhat higher than overprotection ($\underline{M} = 3.07$). This pattern was more pronounced for fathers in that the mean for independence encouragement ($\underline{M} = 3.68$) was considerably higher than the mean for overprotection ($\underline{M} = 3.07$).

Means for the LEQ are listed in Table 3. It is not possible to compare them with past research as this measure was created for the current sample,.

The NEO-FFI means indicate ES at approximately the mid-point of the scale, while E, O, A, and C are a bit above the mid-point. Lower scores on these scales have been associated with increased levels of psychological disturbance (Costa & McCrae, 1989). Costa and McCrae

(1989) do not report a reliability sample separate from their NEO-PI measure, rendering comparison difficult.

The ASRQ includes some background questions that will be included in the analyses. One of these is spacing of siblings in terms of the number of years that separate them. Participants had a mean of 3.67 years separating them and their sibling. Another aspect of their background that will be explored is birth order. A total of 39.2% were firstborns, 20.1% were middleborns, and 40.6% were third or laterborns³. A final variable of interest is frequency of contact (i.e., how much do the siblings see each other?). The current sample consisted of fairly high contact siblings given that 36.8% saw each other "extremely much," 30.5% "very much," 21.4% "somewhat," 8.8% "a little," and only 2.5% "hardly at all."

Analyses of Research Ouestions

Ouestion 1

Question 1 explores the relation of a variety of variables on the quality of the sibling attachment relationship. Appendix B shows the factor analysis of the attachment to sibling measures. Principal component analysis extracted one factor, with an eigenvalue of 1.91, accounting for 64% of the variance. Factor loadings for the three scales were .63 for the ANQ-R Sibling Mentioned scale, .87 for the QRI Depth scale, and .86 for the ISA Attachment scale. Internal reliability of this factor was .90. Subsequent analyses examining attachment to sibling were conducted using the factor scores derived from this analysis.

Pearson's overall correlations were calculated between the hypothesized scales shown in Table 1 and the attachment to sibling factor for all pair types combined. Table 4 shows these

³ Only 4.4% of the sample were fourth or laterborns. Thus the laterborn category is equivalent to "lastborns."

correlations, as well as indicating the correlations for each pair type separately. With the type I family-wise error rate set at .002 (an alpha level of .05 was divided by the 26 correlations performed), attachment to sibling was significantly correlated with all of the MFP scales, except Maternal Independence Encouragement versus Overprotection, the ASRQ Maternal Rivalry scale, the ANQ-R Satisfaction scale, all NEO scales, except for NEO Openness to Experience, the self-model dimension⁴, and the frequency of contact (See) variable for all pair types, indicating that these variables may be important in determining whether siblings develop an attachment relationship.

Insert Table 4 about here

An examination of each of these correlations showed that increased parental independence encouragement was moderately related to greater quality of attachment to sibling. Also, increased acceptance by parents and peers was considerably positively related to attachment to sibling. Greater maternal rivalry was negatively associated with attachment to sibling. The positive relationship between the self-model and attachment to sibling indicates that a more positive self-model (decreased anxiety) was related to attachment to sibling, although the magnitude of this relationship was modest. The considerably positive correlations for the satisfaction with social support variable implies that greater satisfaction with one's social support network was related to greater quality of attachment to sibling. More contact with one's sibling was also related to quality of attachment towards that sibling. Finally, a number of personality

⁴ The significance level for the self-model dimension is p < .002, which falls outside the restriction of the Bonferroni adjustment.

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Predictor	M-M ^a	F-F⁵	M-F ^{cd}	All Pairs
PARENTING				
Mother-Father-Peer Scale (MFP)				
MFP Maternal Independence	.18*	.13	.15*	.15***
Encouragement vs. Overprotection				
MFP Paternal Independence	.20*	.23**	.11	.17***
Encouragement vs. Overprotection				
MFP Maternal Acceptance vs. Rejection	.38****	.19*	.24**	.26****
MFP Paternal Acceptance vs. Rejection	.29***	.31***	.32****	.29****
MFP Peer Acceptance vs. Rejection	.15*	.19*	.15*	.16***
Adult Sibling Relationship Questionnaire	(ASRO)			
ASRQ Maternal Rivalry	09	25**	17*	17***
ASRQ Paternal Rivalry	06	18*	10	11*
ADULT ATTACHMENT DIMENSIONS				
Relationship Questionnaire (RQ) & Relation	onship Scales	Questionnaire	<u>(RSQ)</u>	
Self-Model	.21**	.10	.11	.13**
Other-Model	.24**	.01	.02	.09*

<u>Note.</u> ****p < .0001, two-tailed; ***p < .001, two-tailed; **p < .01, two-tailed; *p < .05, twotailed. * M-M = Male-Male Sibling Pairs; * F-F = Female-Female Sibling Pairs; * M-F = Male-Female Sibling Pairs; * Partial overall correlation partialling out sex. Table 4 (continued)

Predictor	M-M ^a	F-F ^b	$M-F^{cd}$	All Pairs
SOCIAL SUPPORT				
Attachment Network Questionnaire-Re-	vised (ANQ-R)			
ANQ-R Number	.09	.03	.26***	.12**
ANQ-R Satisfaction	.15*	.19*	.22**	.18****
<u>LIFE EVENTS</u>				
Life Events Questionnaire				
LEQ Events	01	12	.06	01
LEQ Good Events	.02	10	.14*	.02
LEQ Bad Events	03	08	01	03
LEQ Family Events	05	09	.09	.03
BIRTH ORDER				
Birth Order	16*	02	10	08
FREQUENCY OF CONTACT				
See	.23**	.21*	.19*	.20****
SPACING BETWEEN SIBLINGS				
Spacing (in years)	03°	.05°	04°	01°

<u>Note.</u> ****p < .0001, two-tailed; ***p < .001, two-tailed; **p < .01, two-tailed; *p < .05, twotailed. * M-M = Male-Male Sibling Pairs; * F-F = Female-Female Sibling Pairs; * M-F = Male-Female Sibling Pairs; ^d Partial overall correlation partialling out sex; * It is not possible to determine the significance level of these correlations due to a lack of pairwise intraclass correlations.

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Table 4 (continued)				
Predictor	M-M ^a	F-F⁵	$M-F^{\text{cd}}$	All Pairs
PERSONALITY				
NEO-Five Factor Inventory (NEC	<u>)-FFI)</u>			
NEOA	.16*	.16*	.12	.14***
NEOC	.16*	.13	.22**	.16***
NEOE	.26***	.04	.33****	.21****
NEOO	.09	.00	.21**	.10*
NEOES	.22**	.14*	.16*	.17***
<u>Note.</u> **** <u>p</u> <.0001, two-tailed; *	** <u>p</u> < .001, two-tailed	l; ** <u>p</u> < .01, tv	wo-tailed; * $\underline{p} < .$	05, two-
tailed. ^a M-M = Male-Male Siblin	ng Pairs; ^b F-F = Fema	lle-Female Sib	oling Pairs; ° M-I	F = Male-
Female Sibling Pairs; ^d Partial over	erall correlation partia	lling out sex;	° It is not possib	le to
determine the significance level o	f these correlations du	e to a lack of	pairwise intracl	ass

(.

correlations.

variables appear to be relevant. Increased levels of Agreeableness, Extraversion,

Conscientiousness, and Emotional Stability were related to more positive reports of attachment to sibling.

The life events scales and birth order were not significantly correlated to attachment to sibling. It was not possible to calculate the correlation significance levels for spacing between sibling because there is no variance between siblings. However, a visual examination seems to indicate that spacing is not very correlated to attachment to sibling.

Turning to an examination of the correlational patterns for the three sibling pair types separately, it appears that male-male pairs have more overall significant correlations than the other two with a total of 14 in contrast to female-female pairs' 9 significant correlations, and 13 for male-female pairs. However, using Fisher's test (Ferguson, 1966), it was determined that there were no significant differences in the magnitude of the correlations for the different pair types. It should be noted that the Fisher's test might not be the most appropriate method of testing the difference between these correlations, as the sample size is not corrected for dyadic data. It represents a very conservative test, since the N used was the number of dyads rather than including each participant separately. In any case, the lack of differences would seem to indicate that the degree of relationship between the different variables and attachment to sibling does not differ for the three pair types.

Significant differences were found between the different pair types on mean ratings of attachment to sibling. A <u>t</u>-test examining mean differences between female-female pairs as compared to male-male and male-female pairs on the attachment to sibling measures indicated significantly higher means for female-female pairs on two of the three measures (QRI Depth <u>t</u> = 4.70, p < .0001; ISA Attachment <u>t</u> = 3.36, p < .001). However, there were no significant mean

differences between male-male and male-female pairs (QRI Depth $\underline{t} = -.98$, $\underline{p} > .10$; ISA Attachment $\underline{t} = .60$, $\underline{p} > .10$). In brief, while it appears that female-female pairs have higher levels of quality of attachment to sibling than the other pair types, there is no difference between levels of quality of attachment for male-male and male-female pairs.

Summary. For all pair types, significant correlations with the attachment to sibling factor were found for the MFP scales, the ASRQ Maternal Rivalry scale, the self-model dimensions, ANQ-R Satisfaction scale, frequency of contact, and four of the five NEO personality traits. The pattern of correlations was similar for the three pair types. However, significant differences were found between the pairs in their overall attachment to sibling ratings, with female-female pairs having the highest quality of attachment, followed by the other two pair types.

Ouestion 2

Question 2 looks at the degree of similarity in ratings of quality of the attachment relationship. The mean-deviation adjustment of the scores eliminated mean differences between the sexes; therefore analyses were not performed separately according to sibling pair type for the attachment to sibling factor. The pairwise intraclass correlation coefficient was .58 (p < .0001), indicating considerable reciprocity in ratings of quality of attachment in the relationship.

In order to better comprehend whether there were differences between the pair types in reciprocity in the attachment relationship, pairwise intraclass correlations were calculated for the three measures that made up the attachment to sibling factor. Results are presented in Table 5. For the most part, no significant differences between the correlations were found using Fisher's test (Ferguson, 1966). However, there was a significant difference between male-male pairs and male-female pairs on the ANQ Sibling Mentioned score (z = 11.19, p < .0001). It appears that

predominantly there are no differences in reciprocity of attachment for the different pair types, except that male-female pairs appear to be more similar in their mentioning of their siblings than male-male pairs.

Insert Table 5 about here

<u>Summary</u>. There is considerably reciprocity in quality of attachment between siblings. That is, when one sibling is attached, the other tends to be as well. This finding held for all three sibling pair types.

Ouestion 3

Question 3 is concerned with the associations between the attachment model dimensions and characteristics of the sibling relationship. Appendix C shows the steps taken in factor analyzing the relationship variables measures. Principal component analysis with oblique rotation extracted two factors with eigenvalues of 7.03 and 2.33, accounting for 72% of the variance. Factor loadings are also shown in Table 6. Factor 1 appears to encompass positive relationship variables such as acceptance, affection, emotional support, intimacy, communication, trust, depth, and satisfaction, while Factor 2 seems to be more heavily loaded with negative relationship variables such as antagonism, alienation, and conflict. Internal reliabilities for Factors 1 and 2 were .98 and .32, respectively.

Insert Table 6 about here

Pairwise Intraclass Correlation Coefficients Between Siblings on Attachment to Sibling

Measures

Scale	M-M ^a	F-F [▶]	M-F ^{cd}
ANQ Sib Mentioned	.26**	.45****	.53****
QRI Depth	.48****	.52****	.43****
ISA Attachment	.56****	.64****	.57****

<u>Note.</u> ****p < .0001, two-tailed; ***p < .001, two-tailed; **p < .01, two-tailed.

^a M-M = Male-Male Sibling Pairs; ^b F-F = Female-Female Sibling Pairs; ^c M-F = Male-Female Sibling Pairs; ^d Partial pairwise intraclass correlation partialling out sex.

Relationship Variables Pattern Matrix

	Factor		
Scale	. 1	2	
ASRQ Acceptance	.56	35	
ASRQ Affection	.90	.07	
ASRQ Antagonism	.03	.89	
ASRQ Emotional Support	.90	.09	
ASRQ Intimacy	.92	.15	
ASRQ Quarrelling	.13	.93	
ISA Alienation	37	.51	
ISA Communication	.88	01	
ISA Trust	.76	30	
QRI Depth	.83	.07	
QRI Support	.86	.03	
QRI Conflict	05	.88	
RAS Satisfaction	.68	23	

The mean-deviation adjustment of the scores eliminated mean differences between the sexes; therefore analyses were not performed separately according to sibling pair type. Two levels of analyses were completed. Individual-level analyses consisted of calculating an overall correlation coefficient between the self- and other-models and the two relationship variables factors. With an adjusted alpha level of .01, all overall correlations were significant. The overall correlation coefficients for the self- and other-models with the relationship factor scores were as follows: Factor 1 had a correlation of .20 (p < .0001) with the self-model, and .14 (p < .001) with the other model; Factor 2 had a correlation of -.28 (p < .0001) with the self-model, and .14 (p < .001) with the other-model. These correlations indicate that having more positive self- and other-models are related to increased levels of the positive relationship variables, and decreased levels of the negative relationship variables, as one would expect.

Dyad-level analyses consisted of calculating the cross intraclass correlation coefficients between one sibling's attachment dimension and the other sibling's scores on the two factors. For all sibling pairs, the cross intraclass correlation coefficients for the self-model were .15 (p < .001) with Factor 1, and -.11 (p > .01) with Factor 2. For the other-model correlations were .13 (p < .01) and -.08 (p > .01) with Factors 1 and 2, respectively. This parallels the individual-level analyses in that as participants' self- and other-models increased, their sibling's positive relationship variable scores increased as well.

Structural Equation Modeling was done separately for each sibling pair type. Figure 1 and 2 show the models tested.

Insert Figures 1 and 2 about here



Figure 1

Model 1: Attachment Dimensions Predicting Positive Relationship Variables



Figure 2

Model 2: Attachment Dimensions Predicting Negative Relationship Variables

For male-female pairs, Structural Equation Modeling examining the value of the selfand other-models in predicting relationship variables Factor 1 resulted in a model that accounted for 13.5% and 3.2% of the variance for males and females, respectively ($\chi^2 = 2.85$, $\underline{df} = 3$, $\underline{p} >$.10). The self-model direct path was significantly different for males and females at the .01 level but all other paths were set equal. Using an adjusted significance level of .006 (an alpha level of .05 divided by the eight paths tested for this model), the only significant predictive path in the final model (Table 7) was that between male's self-model and their own Factor 1 variable. This positive path indicates that male siblings' positive self-models predicted their own ratings of positive relationship variables. In using the self- and other-models to independently predict relationship variables Factor 2, it was found that more positive self-models for male and female siblings predicted lower scores on the negative relationship variables factor (i.e., less indication of negative aspects in their sibling relationships). In this model ($\chi^2 = 3.73$, $\underline{df} = 4$, $\underline{p} > .10$; Table 6), no sex differences were found on any of the direct and cross paths. It accounted for 8.7% and 9.6% of the variance for males and females, respectively.

Insert Table 7 about here

For male-male pairs, results indicate a Model 1 that accounted for 7.8% and 18.9% of the variance for older and younger siblings, respectively ($\chi^2 = 2.93$, df = 2, p > .10). The other-model direct path and the self-model cross path were significantly different for younger and older siblings (p < .05 for both). All other paths were set equal. Using an adjusted significance level of .006, significant predictive paths were found between younger and older siblings' self-models and their own Factor 1 scores, and between older siblings' self-models and younger

Regression Weights of Paths from the Self- and Other-Models to Relationship Variables Factors for Male – Female Pairs

		Model 1		Model 2	
Predictors	Factor Path	B	ß	<u>B</u>	<u>β</u>
Female Self-Model	Female	.014	.03	134***	28
Male Self-Model	Female	.050	.11	051	09
Female Self-Model	Male	.050	.11	051	11
Male Self-Model	Male	.146***	.29	134***	26
Female Other-Model	Female	.035	.08	010	02
Male Other-Model	Female	.019	.04	.022	.04
Female Other-Model	Male	.019	.04	.022	.05
Male Other-Model	Male	.035	.07	010	02

<u>Note.</u> *** \underline{p} < .001, two-tailed.

siblings' Factor 1 scores (Table 8). These positive paths indicate that as siblings' self-models became more positive, their relationships increased in positive relationship attributes. Also, older siblings' positive self-models predicted their younger siblings' ratings of positive relationship variables. When the value of the self- and other-models in predicting relationship variables Factor 2 was evaluated, it was found that a more positive self-model predicted lower scores on the negative relationship variables, but only for younger siblings. In this model ($\chi^2 =$ 2.38, <u>df</u> = 3, **p** > .10; Table 8), significant differences were found on the self-model direct path. It accounted for 7.9% and 19.9% of the variance for older and younger siblings, respectively.

Insert Table 8 about here

When the value of the self- and other-models in predicting relationship variables factor 1 was examined for female-female pairs, the final model accounted for 1.8% and 5.8% of the variance for older and younger siblings, respectively ($\chi^2 = 1.896$, df = 4, p > .10). There were no significant differences between older and younger siblings on the direct or cross paths. Using an adjusted significance level of .006, no significant predictive paths were found (Table 9). An examination of the predictive value of the self- and other-models on factor 2 also resulted in no significant paths, nor significant differences between younger and older siblings in direct or cross paths ($\chi^2 = 3.49$, df = 4, p > .10). This model accounted for 5.1% and 4.1% of the variance for older and younger siblings, respectively.

Insert Table 9 about here

Table 8

Regression Weights of Paths from the Self- and Other-Models to Relationship Variables Factors for Male – Male Pairs

		Model 1		Model 2		
Predictors	Factor Path	B	<u>β</u>	<u>B</u>	β	
Younger Self-Model	Younger	.103***	.20	238****	43	
Older Self-Model	Younger	.132**	.26	002	00	
Younger Self-Model	Older	.014	.04	002	01	
Older Self-Model	Older	.103***	.27	.094	.23	
Younger Other-Model	Younger	.117	.20	039	06	
Older Other-Model	Younger	015	06	012	04	
Younger Other-Model	Older	015	03	012	03	
Older Other-Model	Older	019	10	039	19	

<u>Note.</u> ***<u>p</u> < .001, two-tailed; **<u>p</u> < .006, two-tailed.

Table 9

<u>Regression Weights of Paths from the Self- and Other-Models to Relationship Variables Factors</u> <u>for Female – Female Pairs</u>

Model 1		Model 2		
<u>B</u>	ß	. <u>B</u>	ß	
.110	.23	073	16	
.023	.02	.101	.08	
.023	.05	.101	.22	
.110	.09	073	06	
.038	07	032	06	
.021	.04	047	09	
.021	.04	047	09	
038	08	032	06	
	<u>B</u> .110 .023 .023 .110 .038 .021 .021 .038	Β β .110 .23 .023 .02 .023 .05 .110 .09 .038 07 .021 .04 .038 08	\underline{B} $\underline{\beta}$ \underline{B} .110.23073.023.02.101.023.05.101.110.09073.03807032.021.04047.023.05.021	

Note. All paths are non-significant.

Summary. Generally, the correlations indicate that more positive self-models are related with higher scores on the positive relationship variables factor and lower scores on the negative relationship variables factor. Structural Equation Modeling showed that for male-female pairs more positive self-models lead to higher scores on the positive relationship variables (Factor 1), but only for males. For both males and females, more negative self-models lead to an increase in negative attributes of their relationships with their siblings (increased Factor 2 scores). Similar results were found for male-male pairs. For both siblings, increased self-models lead to more positive assessments of their relationships. A significant cross path indicated that this was also the case for older siblings' positive self-models predicting younger siblings' higher ratings of the positive attributes of their relationships. Increased negative assessments of the relationships. No significant paths were found for female-female pairs.

Ouestion 4

Question 4 examines concordance rates amongst siblings on the attachment model dimensions. The interested reader is referred to Appendix E for the parallel analyses using the attachment patterns. Before concordance rates were calculated, gender differences on the self- and othermodel dimensions were tested in order to determine if the pair types had to be divided for the calculations involved in this question (Table 10). No significant gender differences were found.

Insert Table 10 about here

Pairwise intraclass correlations between siblings' ratings of themselves on the combined (RQ and RSQ) rating were .13 and .06 for the self- and other-model, respectively. Neither of

Table 10

Gender Differences in Ratings of Adult Attachment Dimensions

Dimensions	ns <u>M</u>		<u>t</u>	<u>df</u>	
	Males	<u>Females</u>			
Combined Self-Ratings (RQ & RSQ)					
Self-Model	.22	08	1.89	611	
Other-Model	.01	02	.24	611	
<u>Self-Ratings (RQ)</u>					
Self-Model	.31	12	2.36	611	
Other-Model	06	.06	74	611	
Ratings of Sibling (RQ)	·				
Self-Model	05	.04	52	601	
Other-Model	.06	06	.76	601	

Note. All <u>t</u>-tests were non-significant.

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these was significant, indicating a lack of concordance amongst siblings for self-ratings on the attachment dimensions.

In order to examine the extent to which participant's own ratings corresponded with their siblings' ratings of them, cross intraclass correlation coefficients were calculated using the RQ. They were .22 (p < .0001) and .25 (p < .0001) for the self- and other-model, respectively. These highly significant correlations show that there is considerable correspondence between sibling's rating of themselves and their siblings' rating of them.

The overall correlations between the RQ self-ratings and ratings of sibling would indicate the relationship between individuals' rating of themselves and how they rate their sibling. That is, it would provide some information as to how similar individuals perceive themselves to be to their siblings. In the current sample, this correlation was .30 (p < .0001) for the self-model, and .18 (p < .0001) for the other-model. These moderate to large correlations show that there is considerable perception of similarity with one's sibling.

Summary. Concordance rates between siblings on the self- and other-model dimensions appear to be quite low. However, it appears that siblings view themselves similarly to their siblings' perceptions of them, as significant correlations were found between one sibling's selfrating and their sibling's rating of them. Siblings also viewed themselves similarly to the way they viewed their siblings as evidenced by the significant correlations between self-ratings and ratings of sibling.

Summary of Results

<u>Question 1</u>. This question examined the relationship between a variety of different variables and the quality of attachment to sibling. Significant correlations were found between the attachment to sibling factor and the MFP scales, Maternal Rivalry, the adult attachment selfmodel dimension, the satisfaction with social support scale, the frequency of contact variable, and four of the five NEO personality traits. Also, female-female pairs were found to have higher means on the attachment to sibling measures than either male-male or male-female pairs.

<u>Question 2</u>. This question explored reciprocity in attachment to sibling. High reciprocity was found in attachment to sibling. That is, siblings tend to rate the quality of their attachment similarly. This result generalized to all three pair types.

<u>Question 3</u>. This question asked about the influence of the self- and other-model dimensions on various positive and negative relationship variables. Overall correlations indicated that increasingly positive self- and other-models were associated with higher scores on the relationship variables Factor 1. The scales that loaded on this factor were the positive relationship variables such as acceptance, affection, emotional support, intimacy, communication, trust, depth, and satisfaction. In contrast, increased levels of the self- and othermodels were associated with lower scores on Factor 2. Factor 2 was loaded with the negative relationship variables such as antagonism, quarrelling, and alienation. Although weaker, these patterns were essentially replicated on the dyadic level. For example, one sibling's more positive self-model was associated with an increased score in the other sibling's relationship variables factor 1 score.

Structural Equation Modeling confirmed the correlational patterns. In general, for malefemale and male-male pairs more positive self-models lead to increased positive attributes and decreased negative attributes of the sibling relationship. No significant paths were found for female-female pairs.

<u>Question 4</u>. This question looked at concordance rates amongst siblings in their adult attachment self- and other-models. Concordance rates were low and non-significant. Significant

correlations were found between one siblings' rating of themselves and their siblings' rating of them for both the self- and other-model. In short, participants were reasonably accurate in describing their siblings' attachment models. Despite the low concordance rates seen earlier, participants <u>perceived</u> their own attachment models as fairly similar to their siblings, as evidenced by the significant correlations between self-ratings and ratings of sibling.

Discussion

Ouestion 1

It was proposed that several factors may have an influence on the quality of the sibling relationship. I will go through each of these in turn and discuss the findings.

(1) <u>Parenting</u>. Two aspects of parenting were discussed: quality of parenting and differential treatment. Quality of parenting was significantly related to attachment to sibling. In particular, the pattern of correlations between the MFP scales and the attachment to sibling factor would seem to suggest that maternal and paternal acceptance versus rejection are particularly important. For all sibling pairs, the positive correlations indicate that as maternal, paternal, and peer acceptance increase, so does the quality of attachment to sibling. This is in line with the "similarity" hypothesis discussed earlier, and with what attachment theorists would predict. In other words, internal working models developed through interaction with parenting figures do appear to generalize to the sibling relationship.

Differential treatment was also found to be significantly associated with attachment to sibling but only maternal differential treatment. In particular, perceptions of maternal differential treatment were negatively related to attachment to sibling. This is consistent with past research showing less positive sibling relationships amongst those who perceived higher levels of differential treatment (Kowal & Kramer, 1997). However, paternal differential

treatment was not as strongly related to attachment to sibling. This may be because mothers tend to be the primary caregivers, thus rendering their behaviour more influential than fathers'.

(2) <u>Attachment model dimensions</u>. An examination of the correlations between the two model dimensions and the attachment to sibling factor indicates a significant but moderate to low correlation for the self-model. The correlation was in the direction hypothesized. That is, a more positive self-model was positively related to quality of attachment to sibling. However, the other-model was not significantly related to attachment to sibling. The small magnitude of both the correlations is somewhat surprising since the self- and other-models are expected to guide an individual's thoughts and behaviours in close relationships. It is possible that this weak finding is partly related to the low reliability of the self-report measures. Bartholomew's interview method of assessing attachment has been found to be more reliable than the self-report measures (Scharfe & Bartholomew, 1994) and may have resulted in more robust findings.

(3) <u>Social support</u>. A significant positive correlation was found between attachment to sibling and the satisfaction with one's social support network. Greater satisfaction with one's social support network was positively related to attachment to sibling. It appears that feelings regarding one's network are more important than the actual size of that network. The size of one's social support network was positively, though not significantly, related to attachment to sibling. This is contrary to the hypothesis forwarded earlier that individuals with fewer members in their social support network may turn to those relationships they do have to compensate for missing support. It is possible that the associations between social support and attachment to sibling result from individuals who are more satisfied with and have more members in their network experiencing a greater facility in developing close relationships in general, thus impacting their relationships with their siblings.

(4) <u>Negative life events</u>. There was a surprising lack of relationship between life events, whether negative or positive, and attachment to sibling. This is in stark contrast to previous research, which seems to indicate the importance of these events in precipitating feelings of intimacy. One possible explanation is that the current sample, being primarily middle- to upper-middle class university students, had not experienced many life events. In fact, the average number of total events experienced was 6.81 out of a possible 28. A total of 5.24 of those were bad and 1.45 were good events. Another sample of older children and adolescents found an average of 12.34 events (Johnson & McCutcheon, 1980). An additional reason may be that there is a U-shaped relationship between life events and attachment to sibling that varies with age. As siblings age and spend less time with family, they may experience fewer family events in common, making it less likely that they would turn to each other for support when these events occur. But once they reach mid- to late- adulthood they must again turn to each other for support when it is necessary to take care of and cope with the death of elderly parents (Bedford, 1998).

(5) <u>Birth order</u>. The correlation between birth order and attachment to sibling was nonsignificant. This implies that either older siblings do not experience feelings of envy and resentment towards younger siblings, or that these feelings, if they do occur, do not affect the relationship. The lack of relationship was confirmed by a <u>t</u>-test that indicated no significant mean differences in attachment to sibling for older and younger siblings ($\underline{t} = .76$, $\underline{p} > .10$).

(6) <u>Sex of dyad</u>. Sex differences confirmed past research. Female-female dyads displayed higher ratings on the attachment to sibling measures than male-male and male-female dyads in the current study. However, there were no significant differences in attachment to sibling between male-male and male-female dyads. This could be a finding particular to this age

group. For example, while childhood male-male pairs have been found to be closer than malefemale pairs, it is the opposite in older adulthood (Cicirelli, 1989). Perhaps the young adult stage is the point at which this transition is occurring, leading to this lack of difference.

(7) Spacing between siblings. The remarkably low correlation ($\mathbf{r} = -.01$) between spacing of dyad and attachment to sibling seems to indicate that this is not an important variable for this sample. It is possible that difference in age has a bigger impact on siblings in childhood who are likely to have more contact with each other (e.g., attending the same school, being enrolled in the same extra-curricular activities, sharing friends). With age, differences in developmental levels decrease, making age spacing a less relevant variable. It is also possible that, like Stocker, Lanthier and Furman's (1997) study, the findings in the current sample reflect that increases in spacing positively affected some aspects of attachment to sibling (e.g., support) but did not have any impact or possibly had a negative impact on other aspects (e.g., confiding in each other). An examination of the overall correlations between spacing and the ASRQ scales provides some support for this possibility in that as age spacing increased instrumental support decreased ($\mathbf{r} = -.11$, $\mathbf{p} < .01$), but so did antagonism ($\mathbf{r} = -.12$, $\mathbf{p} < .01$).

(8) <u>Personality</u>. There does appear to be a considerable relationship between personality and attachment to sibling. Similar to Furman and Lanthier's (1996) study with school-age children, it was found that Conscientiousness and Agreeableness were associated with attachment to sibling. Furthermore, the current study also found that NEO Extraversion and Emotional Stability were significantly related. The importance of these additional traits may extend Stocker, Dunn and Plomin's (1989) findings indicating that children who experienced more frequent emotional upsets and decreased sociability were more likely to have more negative sibling relationships. One could argue that emotional upsets are negatively related to the trait of Emotional Stability, while sociability finds its counterpart in Extraversion. Given these assumptions, the current study reflects and extends sibling research with children in that similar traits are found to be relevant to the sibling relationship in young adulthood as are important in childhood.

(9) <u>Frequency of contact</u>. The significant correlation between frequency of contact and attachment to sibling ($\mathbf{r} = .20$, $\mathbf{p} < .001$) seems to indicate that this is an important variable in influencing quality of attachment to sibling. In fact, because the current sample consisted of fairly high-contact siblings (67.3% described seeing their siblings from "very much" to "extremely much), it is possible that this correlation would be higher with a different sample. <u>Ouestion 2</u>

The second question examined similarities in perceptions of the attachment relationship. The high intraclass correlation between siblings' attachment factor scores ($\underline{r}_{xx'} = .58$) indicates that there is considerable reciprocity in ratings of the quality of the attachment relationship. That is, both siblings tend to rate the quality of their attachment very similarly. This is in contrast to Dunn and Plomin's (1990) results indicating different ratings of closeness for 77% of their sibling pairs. The disparity could relate to the different age groups under investigation for the two studies. Dunn and Plomin (1990) were examining children, while the current study focuses on young adults. This provides support for the idea that the dynamics of the sibling relationship changes as siblings mature. There appears to be more mutuality in the relationship as siblings reach late adolescence and young adulthood. Differences in reciprocity of attachment for the different pair types were not found, indicating that this shift in mutuality of the relationship appears to occur for all siblings.

Ouestion 3

The third question concerns the characteristics of the sibling relationship associated with the self- and other-models. Overall correlations were in the directions expected. That is, Factor 1, which encompassed positive relationship variables, was related to more positive self- and other-models. In turn, higher scores on the negative relationship variables Factor 2 were related to more negative self- and other-models. This implies that individuals with high self- and othermodels tend to have relationships characterized by acceptance, affection, emotional support, intimacy, communication, trust, depth, support, satisfaction, and a relative lack of antagonism, quarreling, and alienation. Those with decreased self- and other-models tend to have relationships characterized by the opposite set of features. Thus, it appears that the associations between the attachment dimensions and relationship variables for sibling relationships are similar to those for other types of relationships, such as romantic relationships (Simpson, 1990).

On the level of the dyad, the results were similar, but less significant. Factor 1 was significantly positively correlated with the self- and other models. Factor 2 was significantly negatively correlated with the self- and other-models. This implies that one sibling's positive self- and other-models are significantly related to the other sibling's increased ratings of positive relationship variables and decreased ratings of negative relationship variables.

The results outlined in the pattern of correlations were confirmed when the independent predictive power of the two attachment model dimensions was examined. For male-female pairs, a direct path was found between the self-model and Factor 1, but for males only. That is, male siblings' positive self-models independently predicted their own ratings of the positive relationship variables. For both males and females, more positive self-models predicted lower ratings of negative relationship variables. However, the proportion of variance this model accounted for was not substantial (8.7% for males, and 9.6% for females), and therefore, it appears that other factors may be important in predicting characteristics of the relationship. These may include interpersonal functioning, or personality traits. Indeed, correlations between the NEO personality traits and Factors 1 and 2 range from -.37 to .44 for male-female pairs.

For male-male pairs the correlational patterns were also confirmed. An increased selfmodel independently predicted higher ratings on the positive relationship variables, and older siblings' self-models predicted younger siblings' ratings of positive relationship variables. A more positive self-model predicted lower scores on the negative relationship variables for younger siblings.

The models for female-female pairs accounted for a very small proportion of the variance (between 1.8% and 5.8%). In addition, no significant predictive paths were found. It is possible that the reason for this finding is simply that sister pairs tend to have better and closer relationships to begin with. In fact, one of the most robust findings in the sibling literature is that female-female pairs tend to have the closest relationships. To examine whether this was the case in the current sample, an independent samples test was calculated. Female-female pairs had significantly higher means on ASRQ Affection (t = -2.64, df = 414, p < .01), ASRQ Emotional Support (t = -5.25, df = 416, p < .0001), ASRQ Intimacy (t = -4.69, df = 415, p < .0001), ISA Communication (t = -4.67, df = 415, p < .0001), QRI Support (t = -5.15, df = 418, p < .0001), and QRI Depth (t = -4.54, df = 418, p < .0001) than male-male pairs; and significantly higher means on ASRQ Intimacy (t = 4.05, p < .0001), ISA Communication (t = -2.50, df = 405, p < .0001), than male-male pairs; and significantly higher means on ASRQ Intimacy (t = 4.23, df = 405, p < .0001), ISA Communication (t = -4.54, df = 418, p < .0001) than male-male pairs; and significantly higher means on ASRQ Intimacy (t = 4.23, df = 405, p < .0001), ISA Communication (t = -4.50, df = 405, p < .0001), ISA Communication (t = -4.50, df = 405, p < .0001), ISA Communication (t = -4.50, df = 405, p < .0001), ISA Communication (t = -4.69, df = 405, p < .0001), ISA Communication (t = -4.23, df = 405, p < .0001), ISA Communication (t = 4.86, df = 405, p < .0001), IA Trust (t = 3.09, df = 405, p < .001), QRI Support (t = 4.92, df = 406, p < .0001), and QRI Depth (t = 3.67, df = 406, p < .0001) than male-female pairs.

Therefore, there appears to be a ceiling effect for the positive relationship variables, rendering them difficult to predict. However, the same argument does not apply for the negative relationship variables, as there were no significant differences for the three pair types.

<u>Ouestion 4</u>

Concordance rates for the self- and other-models between siblings were very low. In fact, no significant correlations were found. There are two ways to interpret this result. First, while intergenerational transmission from parents to children may be substantial (van IJzendoorn, 1995), it does not translate between siblings. Thus, it may be that there are mechanisms other than parents' internal working models operating to cause this parent-child transmission. In fact, van IJzendoorn (1995) found that parents' attachment security explained only about 12% of the variation in their responsiveness to their children. The largest part of the relationship between parents' attachment classifications and their children's attachment classifications remained unexplained. Further, Brussoni et al. (in press) have already indicated that genetic and nonshared environmental influences appear to be important. Perhaps attachment theorists such as Fonagy et al. (1990) should reconsider the mechanisms behind intergenerational transmission.

Another interpretation of the results would argue that the low concordance rates in the current sample may indicate that the "transfer" of attachment from parents to peers has already occurred, despite the fact that most (70.2%) of these siblings still live in the parental home together. That is, peers may have already become primary attachment figures, decreasing the importance of parents and since siblings tend to have different friends, it is not unusual that their attachment models would reflect these differences. If this interpretation is to be accepted, it

becomes important to demonstrate stronger rates of concordance between siblings at younger ages.

Remarkably, while there are low concordance rates when examining siblings' ratings of themselves, there are fairly high rates of <u>perceived</u> concordance. Participants rated their own attachment dimensions similarly to how they rated their siblings'. In addition, the significant cross intraclass correlations between self-ratings and sibling ratings of self suggest that siblings are fairly accurate at rating each other's attachment models. This is interesting because siblings may be in an ideal position to understand each other. Conceivably, they have more background knowledge of their sibling than friends would, and are not hampered by positive illusions as romantic partners may be. However, the moderate to low magnitude of the correlations would suggest that there are still barriers to understanding each other.

General Conclusions

A summary answer is provided for each of the questions asked:

1. What factors influence the quality of the attachment relationship between siblings?

It appears that for all pair types it is important to have parents who encourage independence, rather than overprotect. Acceptance by parents and peers is also important, as is a lack of differential treatment, particularly on the part of mothers. A positive self-model, which guides expectations in the sibling relationship, is also significant variables. Likewise, more satisfying social support networks and greater frequency of contact between siblings may have some influence on this relationship. Finally, each sibling's personality traits are relevant. In general, higher levels of Agreeableness, Conscientiousness, Extraversion, and Emotional Stability are positively related to attachment to sibling.

2. To what degree are there similarities in siblings' ratings of the attachment relationship?

There is considerable reciprocity in the ratings of the attachment relationship for all pair types.

3. What are the associations between attachment patterns and degree of attachment to sibling?

It appears, that for the most part, more positive self- and other-models are related to increased acceptance, affection, emotional support, intimacy, communication, trust, depth, and satisfaction; while more negative self- and other-models are related to antagonism, quarrelling and alienation.

4. What are the concordance rates of adult attachment models among young adult siblings?

Concordance rates amongst adult siblings are fairly low.

Young Adults as Siblings

An aspect of this study worth noting relates to the age group used. Past sibling research has tended to focus on children or elderly adults, while neglecting young adults. This study provides some important and interesting insights that seem to be particularly relevant to young adult sibling relationships. First, it is possible that peers play an increasingly important role with a corresponding decrease in the importance of parental relationships for this age group. Second, negative life events appear to have a larger impact on the sibling relationships of children and older adults than young adults. Third, birth order and spacing between sibling may have decreased relevance as siblings age, perhaps because increased age narrows the developmental gap between siblings, making these variables inconsequential. Fourth, in childhood same-sex siblings are closer than male-female pairs (Dunn, 1996), while in older adulthood male-female pairs are closer than male-male pairs (Cicirelli, 1989). It appears that this transition in closeness occurs around the young adulthood stage. Fifth, frequency of contact appears to be different for this age group than younger or older groups. Children have a higher frequency of contact

because they reside in the same house and many of their activities are family-centered. Middleaged adults have less contact because they have their own families to focus on. In between these two extremes are young adults; many of whom are still living at home but their primary focus of activities are peers rather than family members. Sixth, while there appears to be little reciprocity in levels of closeness in childhood (Dunn & Plomin, 1990), there is considerable reciprocity for young adults. Finally, while children's primary attachment figures tend to be parents, it is possible that peers and romantic partners become more important with age. In brief, one cannot generalize findings from other age groups to young adult siblings, as different factors can have an impact on the sibling relationship.

Unique Properties and Strengths

The current study presents a unique contribution to the sibling literature, as it is one of the few to include sibling dyads, rather than just individuals. In addition, while dyadic data is notoriously difficult to obtain from male-male pairs (Lykken, Tellegen, & DeRubeis, 1978), this study sampled roughly 100 pairs from each type. The use of dyads allowed different and novel questions to be examined. Importantly, it enabled an understanding of variables impacting the sibling relationship that encompassed the perspective of both members of the dyad, rather than simply considering the input of one member. Also, it enabled the determination of reciprocity in attachment between the dyad; an examination of the associations between the self- and othermodels and characteristics of the sibling relationship from a dyadic, as well as an individual level; and a determination of concordance on the attachment model dimensions – information crucial to understanding intergenerational transmission of attachment models.

This study is distinctive in its use of attachment theory as a theoretical framework from which to examine the sibling relationship. This theory provided unique insights into the sibling

relationship including its conceptualization as an attachment relationship. It appears that siblings do have strong emotional ties to each other, use each other as a safe haven in times of stress, and mourn separations. Furthermore, there is not a unilateral perception of the quality of the sibling attachment relationship since reciprocity was considerable. Not only did this contribute to sibling literature, but it also added to the attachment literature. It enabled the extension of findings relating to the effect of attachment self- and other-models on positive and negative characteristics of relationships that had previously been limited to romantic relationships (Simpson, 1990). This study also provided insight into intergenerational transmission of attachment and may present some evidence for the necessity of modifying mechanisms proposed in explaining this phenomenon.

Limitations, Implications and Future Directions

There are some aspects of the sample that may limit the generalizability of the results. First, the sample was taken from a university population. Thus, it may not be representative of siblings from other demographic backgrounds. Second, not all participants completed the questionnaire package referring to their closest sibling. Third, participants chose the sibling they did not feel the closest to, and information was not available on the levels of closeness for 110 pairs.

Another limitation relates to a problem inherent in self-report measures – socially desirable responding. This problem is particularly salient since, for the most part, the variables that were significantly correlated with the attachment to sibling factor (described in Question 1) are value-laden. For example, one would be more inclined to report that one's parents were more accepting than rejecting. However, there are some indications that this may not have affected the results as strongly as one would fear. One indication is the fact that the ASRQ

Rivalry scales are not significantly correlated with socially desirable responding (Stocker, Lanthier, & Furman, 1997) and yet these scales were significantly associated with attachment to sibling. Furthermore, the NEO personality measure does not appear to be affected by socially desirable responding (Costa & McCrae, 1992) and yet the NEO scales were prominent in their relationship with attachment to sibling. Another indication is the significant correlation between the frequency of contact variable, which does not have a positive or negative value associated with it, and attachment to sibling. A fourth source of evidence relates to the measures of the self- and other-models. Analyses for Question 4 showed considerable correlation between selfand sibling-reports of these attachment dimensions, providing independent observer validation for these scales, and increasing confidence in the results. In any case, self-report bias should be taken into account when interpreting the results.

A point of consideration concerns the direction of influence examined in this study. The variables reviewed in Question 1 were discussed primarily in terms of unidirectional impact. In other words, their influence on the sibling relationship was considered rather than the other way around. For example, it is possible that the quality of the sibling relationship impacts frequency of contact between siblings. It is likely that many of the effects of the variables considered are bi-directional and cannot be limited to one direction of influence.

Another point of consideration concerns an alternative theoretical perspective that has been examined in the context of family relationships – family systems theory (Minuchin, 1988). This tradition believes that as family members are part of an interactive, interdependent network, the behaviour of one individual will affect the other individuals in that system. This perspective is useful in its examination of relationships in the context of families as it considers "ripple effects" and multi-directional processes. For instance, as was indicated in this study, parent-

child relationship quality can contribute positively or negatively to sibling relationship quality. Certainly, this seems an important and valuable theory for childhood sibling relationships. These are undoubtedly developed in the context of a family and the family environment must be considered to gain an accurate picture. Furthermore, childhood sibling relationships provide the foundation for adulthood sibling relationships. However, adults (including young adults) tend to spend a great deal of time outside the family context, and thus, one can expect the influence of these outside experiences to become more significant with age. Therefore, family systems theory seems less applicable to the sibling relationship at this later stage. In turn, attachment theory allows for changing relationships and considers these important in modifying individuals' internal working models, and thus, approaches to other close interpersonal relationships.

There are a number of practical implications of these findings. Parents and mental health practitioners wanting to encourage positive sibling relationships should attempt to foster feelings of acceptance in their children and allow an appropriate amount of independence, as well as ensuring that siblings spend time together. Parents, and particularly mothers, should also attempt to limit differential treatment. These and other positive parenting practices will help increase the self-model that is important in guiding expectations in the sibling relationship. Positive peer relationships and adequate social support are also important to cultivate. Fortunately, for all sibling types, when one sibling is attached, the other tends to be as well.

Positive parenting and peer relationship also come into play in determining the characteristics of the sibling relationship through their influences on internal working models (Teti & Ablard, 1989). More positive self- and other-models tend to be associated with sibling relationships characterized primarily by positive aspects such as satisfaction, affection, trust, and

acceptance, and not negative aspects such as antagonism and conflict. More negative self- and other-models are related to the opposite set of features.

This study raises several future avenues for research. First, concordance rates on attachment patterns between young adult siblings were low. In order to better understand whether this is a result of a shift in primary attachment figures from parents to peers, or whether other mechanisms may be affecting intergenerational transmission, it is crucial to examine concordance rates amongst siblings at a variety of different ages.

Second, while this and other studies provide a cross-sectional view of sibling relationships across the lifespan, it is important to conduct a longitudinal study to examine whether the differences that have been attributed to age-related effects are correctly identified. For example, while reciprocity in closeness of the relationship appears to be low for younger siblings, it was found to be considerable in the current study. Is this simply an artifact of the different samples used (Dunn & Plomin's sample was British) or are there developmental changes in this variable? Furthermore, can other developmental changes be tracked across the lifespan? There is some evidence to suggest that siblings increasingly turn to each other in older adulthood as other relationships disappear through divorce, death, and distance (Bedford, 1998). Perhaps the sibling attachment relationship increases in importance with age.

Third, the current study did not examine the impact of family structure on the sibling relationship. There is some research that indicates this may be an important variable to explore. For example, Hetherington's (1989) study indicated that divorce was related to more troubled siblings relationships for dyads that included boys. As such, this would be an important variable to include in future examinations of the sibling relationship. Related to this is the fourth suggested avenue for future research. One of the most interesting and increasingly relevant

avenues under investigation relates to blended families. The dynamics of step- and half-sibling relationships are a fascinating area to explore. It is possible that the same factors play a role in these sibling relationships as biological siblings, but it is more likely that their unique situations lead to different variables impacting on their relationships. For example, they do not necessarily have the shared family history that biological siblings have, but at the same time they may be required to cohabit with each other. It is important to examine these relationships in their own right.

Research questions relating to the sibling relationship are far from exhausted. Each new advance brings some answers but more questions. Given the importance of the sibling relationship as the longest relationship most individuals will experience in their lifetimes, it is unlikely that interest in it will diminish any time soon.

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APPENDIX A

ADULT SIBLING RELATIONSHIP QUESTIONNAIRE (ASRQ)

Instructions and Basic Information

This questionnaire is concerned with your relationship with the <u>sibling you feel closest to now</u>. Each question asks you to rate how much different behaviours and feelings occur in your relationship. Try and answer each question as quickly and accurately as you can. Try and answer the questions as your relationship is now, not how it was in the past, nor how you think it might be in the future. In the remainder of the questionnaire, whenever you see **THIS SIBLING** or **YOUR SIBLING** we are talking about the specific sibling you are completing the study about. We begin by asking you some general questions about your sibling and yourself. Please fill in or circle the correct response.

1a) Your age			1b) This sibling's age			
2a) Your gender	Male	Female	2b) This sibling's gen	der: Male Female		
3a) Your birth order:		1 = firstborn, 2 = sec	ondborn, 3 = thirdborn, 4	= fourthborn, 5= laterborn		
3b) Your sibling's birth	n order:	1 = firstborn, 2 = seco	ondborn, 3 = thirdborn, 4	= fourthborn, 5= laterborn		
4) What country were	you born i	n?	If ap	blicable, what year did you		
move to Canada?						
5) Please indicate you	ur cultural e	ethnic background. S	ome examples are Scott	ish, Japanese, Japanese-		
Canadian, Indones	ian, etc	·······				
How far does this sibli	ng live fror	n you? (circle the co	rrect response)			
1) same house			5) between 200 and 5	00 miles		
2) same city		6) between 500 and 1	000 miles			
3) different city, less than 100 miles		7) more than 1,000 m	7) more than 1,000 miles			
4) between 10	00 & 200 m	niles				
How much do you and	this sibling	g see each other				
1 Hardly At All	🗆 2 A Lii	tle 🛛 3 Somewh	at 🛛 4 Very Much	5 Extremely Much		
How much does this s	ibling phon	e you?				
1 Hardly At All	🗆 2 A Lii	tle 🖞 3 Somewh	at 🛛 4 Very Much	□ 5 Extremely Much		
How much do you pho	ne this sib	ling?				
1 Hardly At All	🗆 2 A Li	tle 🛛 3 Somewh	at 🛛 4 Very Much	5 Extremely Much		
How much do you and	this sibling	g see each other for l	nolidays and family gathe	rings?		
1 Hardly At All	🗆 2 A Lii	ttle 🛛 3 Somewh	at 🛛 🛛 4 Very Much	□ 5 Extremely Much		

Now we would like some information about all your siblings

Age Geno	der Relationship (bio, half, st	ep, twin)	Age Ge	nder Relatio (bio, h	nship alf, step, twin)
Sib #1 M Sib #2 M Sib #3 M Sib #4 M	F F F F		Sib #5 Sib #6 Sib #7 Sib #8	M F M F M F M F	
1) How much do you and this sibling have in common?					
I Hardly Anything	2 A Little	3 Somewhat	🗆 4 Very M	luch 🛛 5 Ext	remely Much
2) How much do yo	ou talk to this sibl	ling about thing	s that are i	mportant to	you?
1 Hardly At All	🗆 2 A Little	3 Somewhat		ry Much	5 Extremely Much
3) How much does	this sibling talk t	o you about thi	ngs that are	ə important	to him or her?
1 Hardly At All	□ 2 A Little	3 Somewhat	🗆 4 Vei	ry Much	5 Extremely Much
4) How much do yo	ou and this sibling	g argue with eac	ch other?		
I Hardly At All	🗆 2 A Little	3 Somewhat	🗆 4 Vei	ry Much	5 Extremely Much
5) How much does	this sibling think	of you as a goo	od friend?		
1 Hardly At All	🗆 2 A Little	3 Somewhat	🗆 4 Vei	ry Much	5 Extremely Much
6) How much do yo	ou think of this si	bling as a good	friend?		
1 Hardly At All	□ 2 A Little	□ 3 Somewhat		ry Much	5 Extremely Much
7) How much do yo	ou irritate this sib	ling?			
1 Hardly At All	□ 2 A Little	3 Somewhat	🗆 4 Vei	ry Much	5 Extremely Much
8) How much does this sibling irritate you?					
I Hardly At All	D 2 A Little	3 Somewhat	🗆 4 Vei	ry Much	5 Extremely Much
9) How much does this sibling admire you?					
I Hardly At All	🗆 2 A Little	3 Somewhat	🗆 4 Vei	ry Much	5 Extremely Much
10) How much do y	ou admire this sil	bling?			
1 Hardly At All	🗆 2 A Little	3 Somewhat	🗆 4 Vei	ry Much	5 Extremely Much
11) Do you think yo	our mother favors	you or this sibl	ing more?		
□ 1 I am usually	favored				
□ 2 I am sometin	nes favored				
□ 3 Neither of us is favored					
□ 4 This sibling is somewhat favored					
□ 5 This sibling is	s usually favored				

12) Does this sibling think your mother favors him/her or you more?

□ 1 I am usually favored

□ 2 I am sometimes favored

□ 3 Neither of us is favored

□ 4 This sibling is somewhat favored

□ 5 This sibling is usually favored

13) How much does this sibling try to cheer you up when you are feeling down?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

14) How much do you try to cheer this sibling up when he or she is feeling down?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

15) How competitive are you with this sibling?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 16) How competitive is this sibling with you?

☐ 1 Hardly At All
 ☐ 2 A Little
 ☐ 3 Somewhat
 ☐ 4 Very Much
 ☐ 5 Extremely Much
 17) How much does this sibling go to you for help with non-personal problems?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

18) How much do you go to this sibling for help with non-personal problems?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

19) How much do you dominate this sibling?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

20) How much does this sibling dominate you?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

21) How much does this sibling accept your personality?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

22) How much do you accept this sibling's personality?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

23) Do you think your father favors you or this sibling more?

□ 1 I am usually favored

□ 2 I am sometimes favored

□ 3 Neither of us is favored

□ 4 This sibling is somewhat favored

□ 5 This sibling is usually favored
□ 1 I am usually favored

□ 2 I am sometimes favored

□ 3 Neither of us is favored

□ 4 This sibling is somewhat favored

□ 5 This sibling is usually favored

25) How much does this sibling know about you?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

26) How much do you know about this sibling?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

27) How much do you and this sibling have similar personalities?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 28) How much do you discuss your feelings or personal issues with this sibling?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

29) How much does this sibling discuss his or her feelings or personal issues with you?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 30) How often does this sibling criticize you?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 31) How often do you criticize this sibling?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

32) How close do you feel to this sibling?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 33) How close does this sibling feel to you?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

34) How often does this sibling do things to make you mad?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 35) How often do you do things to make this sibling mad?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

36) How much do you think that this sibling has accomplished a great deal in life?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

37) How much does this sibling think that you have accomplished a great deal in life?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

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- □ 1 I usually get more support
- □ 2 I sometimes get more support
- □ 3 We are supported equally
- □ 4 This sibling sometimes gets more support
- 5 This sibling usually gets more support

39) Do you think your mother supports you or this sibling more?

- □ 1 I usually get more support
- □ 2 I sometimes get more support
- □ 3 We are supported equally
- □ 4 This sibling sometimes gets more support
- 5 This sibling usually gets more support

40) How much can you count on this sibling to be supportive when you are feeling stressed?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

41) How much can this sibling count on you to be supportive when he or she is feeling stressed?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

42) How much does this sibling feel jealous of you?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

43) How much doe you feel jealous of this sibling?

- 1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much
- 44) How much do you give this sibling practical advice? (e.g., household or car advice)
- □ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much
- 45) How much does this sibling give you practical advice?
- 1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much
- 46) How much is this sibling bossy with you?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

47) How much are you bossy with this sibling?

- □ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 48) How much do you accept this sibling's lifestyle?
- □ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 49) How much does this sibling accept your lifestyle?
- 1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

- □ 1 I usually get more support
- □ 2 I sometimes get more support
- □ 3 We are supported equally
- □ 4 This sibling sometimes gets more support
- <u>D 5 This sibling usually gets more support</u>

51) Do you think your father supports you or this sibling more?

- □ 1 I usually get more support
- □ 2 I sometimes get more support
- □ 3 We are supported equally
- □ 4 This sibling sometimes gets more support
- <u>
 5 This sibling usually gets more support</u>

52) How much do you know about this sibling's relationships?

1 Hardly At All
 2 A Little
 3 Somewhat
 4 Very Much
 5 Extremely Much

53) How much does this sibling know about your relationships?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

54) How much do you and this sibling think alike?

I Hardly At All I 2 A Little I 3 Somewhat I 4 Very Much I 5 Extremely Much

55) How much do you really understand this sibling?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

- *56) How much does this sibling understand you?*
- □ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much
- *57) How much does this sibling disagree with you about things?*
- □ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much 58)How much do you disagree with this sibling about things?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

59) How much do you let this sibling know you care about him or her?

□ 1 Hardly At All
□ 2 A Little
□ 3 Somewhat
□ 4 Very Much
□ 5 Extremely Much
60) How much does this sibling let you know he or she cares about you?

□ 1 Hardly At All
 □ 2 A Little
 □ 3 Somewhat
 □ 4 Very Much
 □ 5 Extremely Much
 61) How much does this sibling put you down?

□ 1 Hardly At All
 □ 2 A Little
 □ 3 Somewhat
 □ 4 Very Much
 □ 5 Extremely Much
 62) How much do you put this sibling down?

□ 1 Hardly At All □ 2 A Little □ 3 Somewhat □ 4 Very Much □ 5 Extremely Much

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63) How much do you feel proud of this sibling? □ 1 Hardly At All □ 2 A Little □ 3 Somewhat 4 Very Much □ 5 Extremely Much 64) How much does this sibling feel proud of you? 1 Hardly At All □ 2 A Little □ 3 Somewhat 4 Very Much □ 5 Extremely Much 65) Does this sibling think your mother is closer to him/her or you? Our mother is usually closer to me **1** □ 2 Our mother is sometimes closer to me □ 3 Our mother is equally close to both of us □ 4 Our mother is sometimes closer to this sibling □ 5 Our mother is usually closer to this sibling 66) Do you think your mother is closer to you or this sibling? □ 1 Our mother is usually closer to me □ 2 Our mother is sometimes closer to me □.3 Our mother is equally close to both of us □ 4 Our mother is sometimes closer to this sibling Our mother is usually closer to this sibling 67) How much do you discuss important personal decisions with this sibling? 1 Hardly At All 2 A Little
 3 Somewhat 4 Very Much □ 5 Extremely Much 68) How much does this sibling discuss important personal decisions with you? 2 A Little 3 Somewhat 4 Very Much □ 5 Extremely Much □ 1 Hardly At All 69) How much does this sibling try to perform better than you? 2 A Little
 3 Somewhat 1 Hardly At All 4 Very Much □ 5 Extremely Much 70) How much do you try to perform better than this sibling? 2 A Little 3 Somewhat 4 Very Much □ 5 Extremely Much □ 1 Hardly At All 71) How likely is it you would go to this sibling if you needed financial assistance? □ 1 Hardly At All 2 A Little 3 Somewhat 4 Very Much □ <u>5 Extremely Much</u> 72) How likely is it this sibling would go to you if he or she needed financial assistance? 1 Hardly At All 2 A Little
 3 Somewhat 4 Very Much □ 5 Extremely Much 73) How much does this sibling act in superior ways to you? 2 A Little 1 Hardly At All 3 Somewhat 4 Very Much □ 5 Extremely Much 74) How much do you act in superior ways to this sibling? □ 2 A Little 3 Somewhat 4 Very Much □ 5 Extremely Much D 1 Hardly At All 75) How much do you accept this sibling's ideas? 1 Hardly At All 2 A Little 3 Somewhat 4 Very Much □ 5 Extremely Much

76) How much does this sibling accept your ideas? □ 1 Hardly At All □ 2 A Little □ 3 Somewhat 4 Very Much □ 5 Extremely Much 77) Does this sibling think your father is closer to him/her or you? **□ 1** Our father is usually closer to me □ 2 Our father is sometimes closer to me □ 3 Our father is equally close to both of us □ 4 Our father is sometimes closer to this sibling □ 5 Our father is usually closer to this sibling 78) Do you think your father is closer to you or this sibling? Our father is usually closer to me □ 2 Our father is sometimes closer to me □ 3 Our father is equally close to both of us □ 4 Our father is sometimes closer to this sibling Our father is usually closer to this sibling □ 5 79) How much do you know about this sibling's ideas? D 2 A Little 1 Hardly At All 3 Somewhat 4 Very Much 5 Extremely Much 80) How much does this sibling know about your ideas? 2 A Little
 3 Somewhat □ 1 Hardly At All □ 4 Very Much □ 5 Extremely Much 81) How much do you and this sibling lead similar lifestyles? 2 A Little 3 Somewhat □ 4 Very Much 1 Hardly At All □ 5 Extremely Much

MOTHER-FATHER-PEER SCALE (MFP)

Indicate the extent to which the following statements describe your childhood relationship with the people indicated by using the following scale:

-							
	1	2	3		4		5
	Strongly	Somewhat	Uncertain	S	omewhat		Strongly
	Disagree with	Disagree with	About	A	gree with	Ag	gree with
	Statement	Statement	Statement	S	tatement	S	Statement
	WHEN I WAS A CHIL	D, <u>MY MOTHER</u> (or m	other substitu	ite):			
	1) encouraged me to	make my own decisio	ns. 1	2	3	4	5
	2) helped me learn to	be independent.	1	2	3	4	5
Maria	 felt she had to figh I had a disagreement 	t my battles for me wh ent with a teacher or a	ien 1 friend.	2	3	4	5
	4) was close to a per	fect parent.	, 1 ,	2	3	4	5
	5) was overprotective	of me.	1	2	3	4	5
	6) encouraged me to	do things for myself.	1	2	3	4	5
	7) encouraged me to	try things my way.	1	2	3	4	5
	8) had not a single fa	ult that I can think of.	1	2	3	4	5
	9) did not let me do th my age were allow	hings that other kids ed to do.	1	2	3	4	5
	10) sometimes disapp but never gave me disliked me as a p	proved of specific thing the impression that s erson.	ıs I did, 1 :he	2	3	4	5
land a	11) enjoyed being with	n me.	1	2	3	4	5
	12) was an ideal pers	on in every way.	1	2	3	4	5
	13) was someone I fo	und very difficult to ple	ease. 1	2	3	4	5
	14) usually supported new and exciting t	me when I wanted to hings.	do 1	2	3	4	5
	15) worried too much or get sick.	that I would hurt myse	lf 1	2	3	4	5
	16) was never angry v	vith me.	1	2	3	4	5

1 Strongly Disagree with	2 Somewhat Disagree with	3 Uncertain About		4 Somewhat Agree with		5 Strongly Agree with	
17) was often rude to) me.	1	2	3	4	5	
18) rarely did things	with me.	1	2	3	4	5	
19) didn't like to have	e me around the house.	1	2	3	4	5	
20) and I never disag	preed.	1	2	3	4	5	
21) would often do th do for myself.	nings for me that I could	1	2	3	4	5	
22) let me handle my	v own money.	1	2	3	4	5	
23) could always be really needed he	depended upon when I r help and trust.	1	2	3	4	5	
24) gave me the bes could ever have.	t upbringing anyone	1	2	3	4	5	
25) did not want me	to grow up.	1	2	3	4	5	
26) tried to make me I was unhappy.	feel better when	1	2	3	4	5	
27) encouraged me t	o express my own opinio	n. 1	2	3	4	5	
28) never disappoint	ed me.	1	2	3	4	5	
29) made me feel tha	at I was a burden to her.	1	2	3	4	5	
30) gave me the feel she didn't feel sh into someone els	ing that she liked me as I e had to make me over e.	was; 1	2	3	4	5	
WHEN I WAS A CHILD, <u>MY FATHER</u> (or father substitute):							
31) encouraged me t	o make my own decisions	s. 1	2	3	4	5	
32) helped me learn	to be independent.	1	2	3	4	5	
33) felt he had to figh had a disagreem	nt my battles for me when ent with a teacher or a frie	I 1 end.	2	3	4	5	
34) was close to a pe	erfect parent.	1	2	3	4	5	
35) was overprotectiv	ve of me.	1	2	3	4	5	

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1 Strongly Disagree with	2 Somewhat Disagree with	3 Uncertain About	S A	4 Somewhat gree with		5 Strongly Agree with
36) encouraged me t	o do things for myself.	1	2	3	4	5
37) encouraged me t	o try things my way.	1	2	3	4	5
38) had not a single f	ault that I can think of.	1	2	3	4	5
39) did not let me do my age were allo	things that other kids wed to do.	1	2	3	4	5
40) sometimes disap but never gave m he disliked me as	did, 1	2	3	4	5	
41) enjoyed being wi	th me.	1	2	3.	4	5
42) was an ideal pers	son in every way.	1	2	3	4	5
43) was someone I fo	ound very difficult to pleas	se. 1	2	3	4	5
44) usually supported new and exciting	I me when I wanted to do things.	1	2	3	4	5
45) worried too much or get sick.	that I would hurt myself	1	2	3	4	5
46) was never angry	with me.	1	2	3	4	5
47) was often rude to	me.	1	2	3	4	5
48) rarely did things v	with me.	1	2	3	4	5
49) didn't like to have	e me around the house.	1	2	3	4	5
50) and I never disag	reed.	1	2	3	4	5
51) would often do th do for myself.	ings for me that I could	1	2	3	4	5
52) let me handle my	own money.	1	2	3	4	5
53) could always be o really needed his	depended upon when I help and trust.	1	2	3	4	5
54) gave me the best could ever have.	upbringing anyone	. 1	2	3	4	5

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1 Strongly Disagree with	2 Somewhat Disagree with	3 Uncertain About		4 Somewhat Agree with		5 Strongly Agree with
55) did not want me to) grow up.	1	2	3	4	5
56) tried to make me f	eel better when I was u	unhappy.1	2	3	4	5
57) encouraged me to	express my own opini	on. 1	2	3	4	5
58) never disappointe	d me.	1	2	3	4	5
59) made me feel that	I was a burden to him	. 1	2	3	4	5
60) gave me the feelir he didn't feel he ha into someone else.	ng that he liked me as I ad to make me over	was; 1	2	3	4	5
WHEN I WAS A CHIL	D, <u>OTHER CHILDREN</u>	:				
61) liked to play with r	ne.	1	2	3	4	5
62) were always critici	zing me.	1	2	3	4	5
63) often shared thing	s with me.	1	2	3	4	5
64) often picked on m	e and teased me.	1	2	3	4	5
65) were usually friend	dly with me.	1	2	3	4	5
66) would usually stick	c up for me.	1	2	3	4	5
67) liked to ask me to	go along with them.	1	2	3	4	5
68) wouldn't listen who	en I tried to say someth	ning. 1	2	3	4	5
69) were often unfair t	o me.	1	2	3	4	5
70) would often try to	hurt my feelings.	1	2	3	4	5

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QUALITY OF RELATIONSHIPS INVENTORY (QRI)

Please use the scale below to describe your relationship with the **sibling you feel closest to now:**

	Not at all A	A little B	Quite C	a bit		Very r D	nuch	
1.	To what extent can you turn about problems?	to this sibling for ac	lvice	A	в	С	D	
2.	How often do you have to w with this sibling?	ork hard to avoid co	nflict	A	в	С	D	
3.	To what extent could you co with a problem?	ount on this sibling fo	or help	A	В	С	D	
4.	How upset does this sibling	sometimes make yo	ou feel?	Α	В	С	Ð	
5.	To what extent can you cou honest feedback, even if yo	nt on this sibling to u might not want to	give you hear it?	A	В	С	D	
6.	How much does this sibling	make you feel guilty	/?	Α	В	С	D	
7.	How much do you have to "	give in" on this relati	onship?	Α	В	С	D	
8.	To what extent could you co if a family member very close	ount on this sibling to se to you died?	o help you	A	В	С	D	
9.	How much does this sibling	want you to change	?	Α	В	С	D	
10	. How positive a role does th	is sibling play in you	ır life?	Α	В	С	D	
11	. How significant is this relati	ionship in your life?		Α	В	С	D	
12	. How close will your relation in 10 years?	ship be with this sib	ling	A	В	С	D	
13	. How much would you miss could not see or talk to eac	this sibling if the two h other for a month?	o of you	A	В	С	D	
14	. How critical of you is this si	bling?		Α	В	С	Ð	
15	. If you wanted to go out and how confident are you that to do something with you?	do something this e this sibling would be	evening, e willing	Α	в	С	D	
16	. How responsible do vou fe	el for this siblina's w	ell-being?	A	B	C	D	

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Not at all A	A little B	Quite a bit C		Very D	much
17. How much do you depend	А	В	Ċ	D	
18. To what extent can you con to you when you are very a	unt on this sibling to angry at someone el	listen se? A	В	С	D
19. How much would you like t	his sibling to change	? A	В	С	D
20. How angry does this sibling	g make you feel?	А	В	С	D
21. How much do you argue w	ith this sibling?	А	В	С	D
22. To what extent can you readistract you from your worr	ally count on this siblines when you feel ur	ing to der stress? A	В	С	D
23. How often does this sibling	make you feel angr	y? A	В	С	D
24. How often does this sibling influence your life?	try to control or	A	В	С	D
25. How much more do you giv this relationship?	ve than you get from	A	В	С	D

ATTACHMENT NETWORK QUESTIONNAIRE - REVISED (ANQ - R)

The following questions ask about people in your environment who provide you with help or support. Each question has two parts. For the first part, list all the people you know, excluding yourself, whom you can count on for help or support in the manner described. Give the person's initials and their relationship to you. Do not list more than one person next to each of the letters beneath the question.

For the second part circle how satisfied you are with the overall support you have (if applicable).

If you have no support for a question, check the word "No one," but still rate your level of satisfaction. Do not list more than nine persons per question.

Please answer all questions as best you can. All your responses will be kept confidential.

EXAMPLE:

Who do you know whom you can trust with information that could get you in trouble?

No one	1) T.N. (brother)	4) T.N. (father)	7)
	2) L.M. (friend)	5) L.P. (employer)	8)
	3) R.S. (friend)	6)	9)

How satisfied?

6 - very 5 - fairly 4 - a little satisfied satisfied	3 - a little	2 - fairly	1 - very
	dissatisfied	dissatisfied	dissatisfied

1. Whom can you really count on to be dependable when you need help?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

How satisfied?

6 - very	5 - fairly	4 - a little	3 - a little	2 - fairly	1 - very
satisfied	satisfied	satisfied	dissatisfied	dissatisfied	dissatisfied

2. Whom do you feel you could count on to always be there for you and care about you no matter what?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

How satisfied?

6 - very	5 - fairly	4 - a little	3 - a little	2 - fairly	1 - very
satisfied	satisfied	satisfied	dissatisfied	dissatisfied	dissatisfied

3. Who accepts you totally, including both your worst and your best points? No one 7) 1) 4) 2) 8) 5) 3) 6) 9) How satisfied? 6 - very 4 - a little 5 - fairly 3 - a little 2 - fairly 1 - very satisfied satisfied satisfied dissatisfied dissatisfied dissatisfied 4. Whom can you really count on to help you feel better when you are feeling generally down-in-the dumps? 4) 7) No one 1) 5) 8) 2) 3) 9) 6) How satisfied? 4 - a little 6 - very 5 - fairly 3 - a little 2 - fairly 1 - very satisfied satisfied satisfied dissatisfied dissatisfied dissatisfied Whom is it important for you to see or talk with regularly? 5. No one 1) 4) 7) 2) 5) 8) 3) 6) 9) How satisfied? 6 - very 4 - a little 3 - a little 2 - fairly 1 - verv 5 - fairly satisfied satisfied dissatisfied dissatisfied satisfied dissatisfied 6. Whom can you count on to console you when you are very upset? 7) No one 1) 4) 2) 8) 5) 3) 6) 9) How satisfied?

6 - very 5 - fairly 4 - a little 3 - a little 2 - fairly 1 - very satisfied satisfied dissatisfied dissatisfied dissatisfied

7. Whom can you really count on to help you feel more relaxed when you are under pressure or tense?

No	one 1) 2) 3)		4) 5) 6)		7) 8) 9)
How	v satisfied?				
6 - very satisfied	5 - fairly satisfied	4 - a little satisfied	3 - a little dissatisfied	2 - fairly dissatisfied	1 - very dissatisfied

8. Whose death would have the greatest impact or effect on you, regardless of what the effect may be?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

9. Who can make you feel upset?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

INVENTORY OF ATTACHMENT

This questionnaire asks about your relationships with the **sibling you feel closest to now**. Please read the directions to each part carefully.

Almost Never or Never True	Not Very Often True	Sometimes True		Often True	Almost Always or Always True	
1	2	3		4		5
1. I like to get my concerned abo	sibling's point of view on ut.	things I'm 1	2	3	4	5
2. My sibling sens	es when I'm upset about	something. 1	2	3	4	5
3. When we discumy point of view	iss things, my sibling con w.	siders 1	2	3	4	5
4. Talking over m feel ashamed o	y problems with my siblin r foolish.	g makes me 1	2	3	4	5
5. I wish I had a d	ifferent sibling.	1	2	3	4	5
6. My sibling unde	erstands me.	· 1	2	3	4	5
7. My sibling enco	ourages me to talk about	my difficulties. 1	2	3	4	5
8. My sibling acce	pts me as I am.	1	2	3	4	5
9. I feel the need	to be in touch with my sit	oling more often. 1	2	3	4	5
10. My sibling doe through these	sn't understand what l'm days.	going 1	2	3	4	5
11. I feel alone or	apart when I am with my	sibling. 1	2	3	4	5
12. My sibling liste	ns to what I have to say.	· 1	2	3	4	5
13. I feel my siblin	g is a good sibling.	1	2	3	4	5
14. My sibling is fa	irly easy to talk to.	1	2	3	4	5
15. When I am and tries to be und	gry about something, my erstanding.	sibling 1	2	3	4	5
16. My sibling help	es me to understand myse	elf better.1	2	3	4	5
17. My siblina is co	oncerned about my well-t	peina. 1	2	3	4	5

Almost Never or Never True	Not Very Often True	Sometimes True	Sometimes True			Almost Always or Always True	
1	2	3		4		5	
18. I feel angry with	n my sibling.	1	2	3	4	5	
19. I can count on n something off r	ny sibling when I need ny chest.	d to get 1	2	3	4	5	
20. I trust my siblin	g.	1	2	3	4	5	
21. My sibling resp	ects my feelings.	1	2	3	4	5	
22. I get upset a lo	t more than my sibling	y knows about. 1	2	3	4	5	
23. It seems as if n	ny sibling is irritated w	ith me for no reas 1	son. 2	3	4	5	
24. I tell my sibling	about my problems a	nd troubles.1	2	3	4	5	
25. If my sibling kn s/he asks me a	ows something is both bout it.	nering me, 1	2	3	4	5	

RELATIONSHIP ASSESSMENT SCALE (RAS)

Please rate the following statements according to what best describes your relationship with the sibling you feel closest to now.

		I'm not Satisfied			I'm compl Satis	etely fied
1.	How well does your sibling meet your needs?	1	2	3	4	5
2.	In general, how satisfied are you with your relation	ionship?1	2	3	4	5
3.	How good is your relationship compared to mos	t? 1	2	3	4	5
4.	How often do you wish you were not siblings?	1	2	3	4	5
5.	To what extent has your relationship met your expectations of the typical sibling relationship?	1	2	3	4	5
6.	How much do you love your sibling?	1	2	3	4	5

7. How many proble

LIFE EVENTS QUESTIONNAIRE

Below is a list of things that sometimes happen to people. Put an 'X' in the space by each of the events you have ever experienced. For each of the events you check also indicate whether you would rate the event as a good event or as a bad event. Finally, indicate how much you feel the event has changed or has had an impact or effect on your life by placing a circle around the appropriate statement (no effect - some effect - moderate effect - great effect). Remember, for each event you have experienced, (1) place and 'X' in the space to indicate you have experienced the event, (2) indicate whether you viewed the event as a good or bad event, and (3) indicate how much effect the event has had on your life.

To get some idea of the type of events you will be asked to rate, please read over the entire list before you begin. Only respond to those events you have actually experienced.

Event		Type of event (circle one)			Impact or effect of event on your life			
1. Discovery of being adopted		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
2. New brother or sister		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
3. Serious illness or injury of family member.		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
4. Becoming involved with drugs or alcohol		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
5. Increased number of arguments between parents		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
6. Mother or father lost job		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
7. Death of a family member		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
8. Parents separated or divorced		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
9 Death of a close friend		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
10. Getting married		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
11. Parent getting into trouble with law	<u></u>	Good	Bad	No effect	Some effect	Moderate effect	Great effect	
12. New stepmother or stepfather		Good	Bad	No effect	Some effect	Moderate effect	Great effect	
13. Parent going to jail	·	Good	Bad	No effect	Some effect	Moderate effect	Great effect	

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	Event		Type of event (circle one)		Impact or effect of event on your li			our life
14. Cha fina	ange in parents' ncial status		Good	Bad	No effect	Some effect	Moderate effect	Great effect
15. Trou or s	uble with brother ister		Good	Bad	No effect	Some effect	Moderate effect	Great effect
16. Losi	ing a close friend		Good	Bad	No effect	Some effect	Moderate effect	Great effect
17. Gett girlfr	ting pregnant or riend getting pregnant		Good	Bad	No effect	Some effect	Moderate effect	Great effect
18. New	v boyfriend/girlfriend		Good	Bad	No effect	Some effect	Moderate effect	Great effect
19. Fail	ing a grade		Good	Bad	No effect	Some effect	Moderate effect	Great effect
20. Incr argu	ease in number of Iments <i>with</i> parents		Good	Bad	No effect	Some effect	Moderate effect	Great effect
21. Gett poli	ting into trouble with ce		Good	Bad	No effect	Some effect	Moderate effect	Great effect
22. Maj inju	or personal illness or ry		Good	Bad	No effect	Some effect	Moderate effect	Great effect
23. Brea boy	aking up with friend/girlfriend		Good	Bad	No effect	Some effect	Moderate effect	Great effect
24. Havi girlfr	ing abortion or riend having abortion		Good	Bad	No effect	Some effect	Moderate effect	Great effect
25. Beir scho	ng suspended from ool		Good	Bad	No effect	Some effect	Moderate effect	Great effect
26. Trou	uble with classmates		Good	Bad	No effect	Some effect	Moderate effect	Great effect
27. Get	ting put in jail		Good	Bad	No effect	Some effect	Moderate effect	Great effect
28. Dea	ath of a pet		Good	Bad	No effect	Some effect	Moderate effect	Great effect

Event	Type of event (circle one)		Impac	Impact or effect of event on your life			
Other events which have had an impact on your life. List and rate.							
29		Good	Bad	No effect	Some effect	Moderate effect	Great effect
30		Good	Bad	No effect	Some effect	Moderate effect	Great effect
31		Good	Bad	No effect	Some effect	Moderate effect	Great effect
32		Good	Bad	No effect	Some effect	Moderate effect	Great effect

Now choose the (up to) four events that you believe had the biggest impact on your life.

#_____, #_____, #_____.

List the person(s) whom you feel supported you the most throughout these events. Give the person's initials and their relationship to you.

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

NEO FIVE FACTOR INVENTORY

Using the scale below as a guide, write a number beside each statement to indicate how much you agree with it.

+	+	+	+	+
1	2	3	· 4	5
not true		somewhat		very true

- _____ 1. I am not a worrier.
- 2. I like to have a lot of people around me.
- _____ 3. I don't like to waste my time daydreaming.
- _____ 4. I try to be courteous to everyone I meet.
- _____ 5. I keep my belongings clean and neat.
- 6. I often feel inferior to others.
- _____ 7. I laugh easily.
- 8. Once I find the right way to do something, I stick to it.
- _____ 9. I often get into arguments with my family and co-workers.
- _____ 10. I'm pretty good about pacing myself so as to get things done on time.
- _____11. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.
- _____ 12. I don't consider myself especially "lighthearted".
- _____ 13. I am intrigued by the patterns I find in art and nature.
- _____14. Some people think I'm selfish and egotistical.
- _____ 15. I am not a very methodical person.
- _____ 16. I rarely feel lonely or blue.
- _____ 17. I really enjoy talking to people.
- _____ 18. I believe letting students hear controversial speakers can only confuse and mislead them.
- _____ 19. I would rather cooperate with others than compete with them.
- 20. I try to perform all the tasks assigned to me conscientiously.
- _____ 21. I often feel tense and jittery.

+	+	+	+	+	
1	2	3	4	5	
not true		somewhat		very true	

- _____ 22. I like to be where the action is.
- _____ 23. Poetry has little or no effect on me.
- 24. I tend to be cynical and skeptical of other's intentions.
- 25. I have a clear set of goals and work toward them in an orderly fashion.
- _____ 26. Sometimes I feel completely worthless.
- _____ 27. I usually prefer to do things alone.
- _____ 28. I often try new and foreign foods.
- _____ 29. I believe that most people will take advantage of you if you let them.
- _____ 30. I waste a lot of time before settling down to work.
- _____ 31. I rarely feel fearful or anxious.
- _____ 32. I often feel as if I am bursting with energy.
- _____ 33. I seldom notice the moods or feelings that different environments produce.
- _____ 34. Most people I know like me.
- _____ 35. I work hard to accomplish my goals.
- _____ 36. I often get angry at the way people treat me.
- _____ 37. I am a cheerful, high-spirited person.
- _____ 38. I believe we should look to our religious authorities for decisions on moral issues.
- _____ 39. Some people think of me as cold and calculating.
- 40. When I make a commitment, I can always be counted on to follow through.
- 41. Too often, when things go wrong, I get discouraged and feel like giving up.
- _____ 42. I am not a cheerful optimist
- 43. Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.
- _____ 44. I'm hard-headed and tough-minded in my attitudes.

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+	+	+	+	+	
1	2	3	4	5	
not true		somewhat		very true	

- 45. Sometimes I'm not as dependable or reliable as I should be.
- _____ 46. I am seldom sad or depressed.
- _____ 47. My life is fast-paced.

_____48. I have little interest in speculating on the nature of the universe or the human condition.

- _____ 49. I generally try to be thoughtful and considerate.
- _____ 50. I am a productive person who always gets the job done.
- _____ 51. I often feel helpless and want someone else to solve my problems.
- _____ 52. I am a very active person.
- _____ 53. I have a lot of intellectual curiosity.
- _____ 54. If I don't like people, I let them know it.
- _____ 55. I never seem to be able to get organized.
- _____ 56. At times I have been so ashamed I just wanted to hide.
- _____ 57. I would rather go my own way than be a leader of others.
- _____ 58. I often enjoy playing with theories or abstract ideas.
- _____ 59. If necessary, I am willing to manipulate people.
- _____ 60. I strive for excellence in everything I do.

RELATIONSHIP QUESTIONNAIRE (RQ - 1)

PLEASE READ DIRECTIONS!!!

1) Following are descriptions of four general relationship styles that people often report. Please read each description and **CIRCLE** the letter corresponding to the style that *best* describes **you** or is *closest* to <u>the way you generally are in your close relationships</u>.

A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

C. I want to be completely emotionally intimate with others, but often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

2) Please rate each of the above relationship styles according to the *extent* to which you think each description corresponds to **your** general relationship style.

Not at all like me			Somewhat like me			Very mu like me		
Style A.	1	2	3	4	5	6	7	
Style B.	1	2	3	4	5	6	7	
Style C.	1	2	3	4	5	6	7	
Style D.	1	2	3	4	5	6	7	

RQ - 2

PLEASE READ DIRECTIONS!!!

3) Your relationship style may also be similar to or different from the style of those people with whom you have relationships. Think of <u>your closest sibling</u>. Please read each description and CIRCLE the letter corresponding to the style that best describes your sibling or is closest to the way they generally are in <u>their close relationships</u>.

A. It is easy for my sibling to become emotionally close to others. S/he is comfortable depending on others and having others depend on him/her. My sibling doesn't worry about being alone or having others not accept him/her.

B. My sibling is uncomfortable getting close to others. S/he wants emotionally close relationships, but s/he finds it difficult to trust others completely, or to depend on them. My sibling worries that s/he will be hurt if s/he allows him/herself to become too close to others.

C. My sibling wants to be completely emotionally intimate with others, but often finds that others are reluctant to get as close as s/he would like. S/he is uncomfortable being without close relationships, but s/he sometimes worries that others don't value her as much as s/he values them.

D. My sibling is comfortable without close emotional relationships. It is very important to him/her to feel independent and self-sufficient, and s/he prefers not to depend on others or have others depend on him/her.

4) Now please rate to what extent each of the four styles is descriptive of your closest sibling.

Not at all like them			Somev like th		Very m like th		
Style A.	1	2	3	4	5	6	7
Style B.	1	2	3	4	5	6	7
Style C.	· 1	2	3	4	5	6	7
Style D.	1	2	3	4	5	6	7

RQ - 3

PLEASE READ DIRECTIONS!!!

5) Think of your relationship with your closest sibling. Please read each description and CIRCLE the letter corresponding to the style that best describes you or is closest to the way you generally are in <u>your relationship with your closest sibling</u>.

A. It is easy for me to become emotionally close to my sibling. I am comfortable depending on him/her and having him/her depend on me. I don't worry about being alone or having my sibling not accept me.

B. I am uncomfortable getting close to my sibling. I want an emotionally close relationship with my sibling, but I find it difficult to trust him/her completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to him/her.

C. I want to be completely emotionally intimate with my sibling, but often find that s/he is reluctant to get as close as I would like. I am uncomfortable being without a close relationship with him/her, but I sometimes worry that s/he doesn't value me as much as I value him/her.

D. I am comfortable without a close emotional relationship with my sibling. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on him/her or have him/her depend on me.

6) Now please rate to what extent each of the four styles is descriptive of the way you are in your relationship with your closest sibling.

Not at all like me			Somewhat like me			Very much like me		
Style A.	, 1	2	3	4	5	6	7	
Style B.	1	2	3	4	5	6	7	
Style C.	1	2	3	4	5	6	7	
Style D.	1	2	3	4	5	6	7	

RELATIONSHIP SCALES QUESTIONNAIRE (RSQ)

Please read each of the following statements and rate the extent to which it describes your feelings about close relationships by circling the appropriate number. Think about <u>all</u> your close relationships, past and present, and respond in terms of how you generally feel in these relationships.

Not a me	at all like me Somewi	hat like me		Very	much lik	(e
	2 3		4		5	
1.	I find it difficult to depend on other people.	1	2	3	4	5
2.	It is very important to me to feel independer	nt. 1	2	3	4	5
3.	I find it easy to get emotionally close to othe	ers. 1	2	3	4	5
4.	I worry that I will be hurt if I allow myself to become too close to others.	1	2	3	4	5
5.	l am comfortable without close emotional relationships.	1	2	3	4	5
6.	I want to be completely emotionally intimate with others.) 1	2	3	4	5
7.	I worry about being alone.	1	2	3	4	5
8.	I am comfortable depending on other peopl	e. 1	2	3	4	5
9.	I find it difficult to trust others completely.	1	2	3	4	5
10.	I am comfortable having other people dependent on me.	nd 1	2	3	4	5
11.	I worry that others don't value me as much I value them.	as 1	2	3	4	5
12.	It is very important to me to feel self-sufficie	ent. 1	2	3	4	5
13.	I prefer not to have other people depend or	1 me. 1	2	3	4	5
14.	I am somewhat uncomfortable being close to others.	1	2	3	4	5
15.	I find that others are reluctant to get as clos I would like.	e as 1	2	3	4	5
16.	I prefer not to depend on others.	1	2	3	4	5
17.	I worry about having others not accept me	1	2	3	4	5

APPENDIX B

Appendix B outlines the steps taken in factor analyzing the measures of attachment to sibling. The first step in the factor analysis of the attachment to sibling measures involves examining mean differences between the sexes on these measures. The <u>t</u>-tests were conducted on all participants on the ANQ-R sibling mentioned, QRI Depth, and ISA Attachment mean scores indicated significant sex differences for the QRI Depth and ISA Attachment scores (Table 11) using an adjusted alpha level of .02 (and alpha of .05 divided by three <u>t</u>-tests conducted).

Insert Table 11 about here

The scores were then mean-deviated for the QRI Depth and ISA Attachment variables, and the variance-covariance matrices were tested using Box's M test for significant differences. They were not significantly different ($\underline{F} = 1.88$, $\underline{p} > .10$). As such, principal factor extraction was performed for both sexes together. One factor was extracted, with an eigenvalue of 1.91, accounting for 64% of the variance.

Table 11

Gender Differences in Attachment to Sibling Measures

	<u>M</u>		<u>t</u>	df
	Males	Females		
ANQ-R Sibling Mentioned	.15	.15	24	759
QRI Depth	2.79	3.06	-6.21****	771
ISA Attachment	3.39	3.51	-2.68**	768

<u>Note.</u> ****<u>p</u><.0001, two-tailed; **<u>p</u> < .01, two-tailed.

APPENDIX C

Appendix C describes the steps taken in factor analyzing the measures of positive and negative relationship variables. Using an adjusted alpha level of .004 (an alpha of .05 divided by 12 <u>t</u>-tests conducted), significant sex differences were found for the following scales: QRI Support, QRI Depth, ASRQ Intimacy, ASRQ Affection, ASRQ Emotional Support, and ISA Communication (Table 12).

Insert Table 12 about here

Sex differences were also found in the variance-covariance matrices of the meandeviated scores ($\mathbf{E} = 1.59$, $\mathbf{p} < .0001$) so principal components factor analyses were performed separately for each sex. They were deemed to be similar enough to allow the sexes to be factor analyzed together (R. Hakstian, personal communication, January 25, 2000). Principal component analysis with oblique rotation extracted 2 factors with eigenvalues of 7.03 and 2.33, accounting for 72% of the variance. Pattern matrices for males, females and both together are shown in Table 13.

Insert Table 13 about here

Table 12

Gender Differences of the Relationship Variable Measures

	<u>M</u>		<u>t</u>	<u>df</u>
	Males	<u>Females</u>		
QRI Support	2.75	2.97	-5.21****	770
QRI Depth	2.79	3.06	-6.21****	771
QRI Conflict	2.03	2.04	10	769
ASRQ Intimacy	2.72	3.05	-5.19****	767
ASRQ Affection	3.09	3.31	-3.46***	767
ASRQ Emotional Support	2.73	3.15	-6.84****	768
ASRQ Antagonism	2.46	2.40	.93	767
ASRQ Quarreling	2.75	2.69	1.13	768
RAS Satisfaction	3.68	3.77	-1.65	756
ISA Trust	3.67	3.80	-2.47	768
ISA Communication	2.96	3.20	-4.41****	768
ISA Alienation	2.50	2.54	-1.04	768

<u>Note.</u> ****<u>p</u><.0001, two-tailed; ***<u>p</u> < .001, two-tailed.

Table 13

Relationship Variables Pattern Matrices

	Males'	Factors	Females	' Factors	Both F	actors
Scale	1	2	1	2	1	2
ASRQ Acceptance	.53	40	.59	31	.56	35
ASRQ Affection	.89	.07	.90	.05	.90	.07
ASRQ Antagonism	.05	.88	.00	.90	.03	.89
ASRQ Emotional Support	.88	.11	.91	.07	.90	.09
ASRQ Intimacy	.91	.17	.92	.13	.92	.15
ASRQ Quarrelling	.11	.92	.14	.95	.13	.93
ISA Alienation	29	.59	45	.44	37	.51
ISA Communication	.88	.00	.88	01	.88	01
ISA Trust	.74	34	.79	27	.76	30
QRI Depth	.83	.05	.82	.08	.83	.07
QRI Support	.81	06	.90	.11	.86	.03
QRI Conflict	.00	.88	10	.87	05	.88
RAS Satisfaction	.69	28	.67	19	.68	23

APPENDIX D

Appendix D describes the analyses for Question 3 using the four adult attachment styles, instead of the self- and other-model dimension. With an adjusted alpha level of .006 (an alpha of .05 divided by eight correlations calculated), significant overall correlations were found between Factor 1 and the secure and fearful adult attachment patterns (Table 14). Correlations ranged from -.02 to .20. Significant correlations were found between Factor 2 and all constructs except the dismissing pattern, with the largest correlation being with the fearful pattern ($\mathbf{r} = .30$, $\mathbf{p} < .0001$).

Insert Table 14 about here

An adjusted alpha level of .006 resulted in significant cross intraclass correlations between the secure and fearful patterns and Factor 1 (Table 15). Factor 2 was significantly correlated with the fearful and preoccupied patterns. That is, one sibling's security was positively related to the other sibling's Factor 1 score. Also, one sibling's level of fearfulness was associated with lower scores on Factor 1 but higher scores on Factor 2.

Insert Table 15 about here

Structural Equation Modeling was done separately for each sibling pair type. The first group of models tested included the secure, fearful, preoccupied, and dismissing adult attachment patterns as the predictor variables, and the first relationship variables factor as the predicted variable. The second group of models tested also included the four attachment patterns

Table 14

Pearson's Overall Correlation Coefficients Between Adult Attachment Patterns and Relationship

Pattern	Factor 1	Factor 2
Secure	.20****	18****
Fearful	19****	.30****
Preoccupied	10	.25****
Dismissing	02	.07

Factor Scores for All Sibling Pairs

<u>Note.</u> ****<u>p</u> < .0001, two-tailed; ***<u>p</u> < .001, two-tailed.

Table 15

Cross Intraclass Correlation Coefficients Between Adult Attachment Patterns and Relationship

Pattern	Factor 1	Factor 2
Secure	.14**	06
Fearful	16***	.14**
Preoccupied	07	.11
Dismissing	03	.07

Factor Scores for All Sibling Pairs

<u>Note.</u> ***p < .001, two-tailed; **p < .006, two-tailed.

as the predictor variables, but the second relationship variables factor was now the predicted variable. It was also progressively simplified until a final model was achieved.

Table 16 shows the regression weights for best-fitting models for male-female pairs. For Model 1 ($\chi^2 = 7.61$, df = 7, p > .10), the preoccupied pattern direct paths were significantly different for males and females. All other paths were set equal. This model accounted for 9.8% and 10.8% of the variance for females and males, respectively. Using an adjusted alpha level of .003 (an alpha of .05 divided by the 16 paths tested for this model), significant paths were found between males and females secure pattern and their own Factor 1 scores. In Model 2 ($\chi^2 = 6.76$, df = 8, p > .10), all paths were set equal. It accounted for 16.8% and 13.3% of the variance for females and males, respectively. Significant paths were found between males and females males, respectively.

Insert Table 16 about here

The regression weights for the best-fitting model examining the attachment patterns and Factor 1 for male-male pairs is shown in Table 17 ($\chi^2 = 3.84$, $\underline{df} = 6$, $\underline{p} > .10$). This model accounted for 8.9% of the variance for older siblings, and 26.1% of the variance for younger siblings. The direct and cross paths for the fearful pattern were significantly different for older and younger siblings. All other paths were not significantly different. An adjusted alpha level of .003 resulted in significant cross paths between individual's own dismissing patterns to their siblings' Factor 1. The second model set all paths except for the direct path between the preoccupied pattern and factor 2 equal (Table 28). The final model ($\chi^2 = 2.38$, $\underline{df} = 7$, $\underline{p} > .10$) accounted for 7.6% and 27.2% of the variance for the older and younger siblings, respectively.
Regression Weights of Paths from the Adult Attachment Patterns to Relationship Variables

Factors for Male – Female Pairs

	Factor Path	Model 1		Model 2	
Predictors		<u>B</u>	<u>β</u>	<u>B</u>	β
Female Secure	Female	.248**	.26	115	10
Male Secure	Female	.097	.10	.023	.02
Female Secure	Male	.097	.09	.023	.02
Male Secure	Male	.248**	.23	115	11
Female Fearful	Female	013	02	.129	.12
Male Fearful	Female	018	02	007	01
Female Fearful	Male	018	02	007	01
Male Fearful	Male	013	01	.129	.12
Female Preoccupied	Female	.200	.19	.266**	.21
Male Preoccupied	Female	019	02	.264**	.20
Female Preoccupied	Male	019	02	.264**	.22
Male Preoccupied	Male	115	10	.266**	.22
Female Dismissing	Female	.109	.10	023	02
Male Dismissing	Female	006	01	.104	.07
Female Dismissing	Male	006	01	.104	.09
Male Dismissing	Male	.109	.08	023	02

<u>Note.</u> ** \underline{p} < .003, two-tailed.

Significant paths were found between the younger siblings' preoccupied patterns and their Factor 2 scores.

Insert Table 17 about here

The best-fitting first model ($\chi^2 = 7.09$, $\underline{df} = 5$, $\underline{p} > .10$) for female-female pairs did not allow the preoccupied direct paths, and the secure and fearful cross paths to be set equal (Table 29). Using an adjusted alpha level of .003, the only significant path found was between older siblings' secure pattern and their younger siblings' Factor 1. This model accounted for 18.1% and 23.9% of the variance for older and younger siblings, respectively. Table 18 shows the regression weights for the best-fitting second model ($\chi^2 = 4.05$, $\underline{df} = 4$, $\underline{p} > .10$). In this model the secure, fearful, and dismissing direct paths, and the preoccupied cross path were significantly different for younger and older siblings, thus were not set equal. A significant path was found between older siblings' secure pattern and their own Factor 2 scores. This model accounted for 38.4% and 12.2% of the variance for older and younger siblings' scores, respectively.

Insert Table 18 about here

<u>Summary</u>. For male-female pairs, higher Factor 1 (positive relationship variables) scores resulted from increased levels of secure attachment. Higher Factor 2 (negative relationship variables) scores were predicted by higher levels of preoccupied attachment. Increased levels of dismissing attachment in one sibling were predictive of higher Factor 1 scores for both older and

Regression Weights of Paths from the Adult Attachment Patterns to Relationship Variables Factors for Male – Male Pairs

Predictors		Model 1		Model 2			
	Factor Path	<u>B</u>	<u>β</u>	<u>B</u>	ß		
Younger Secure	Younger	.135	.11	034	03		
Older Secure	Younger	057	05	.096	.07		
Younger Secure	Older	057	06	.096	.09		
Older Secure	Older	.135	.15	034	04		
Younger Fearful	Younger	320	26	.254	.20		
Older Fearful	Younger	.350	.27	.028	.02		
Younger Fearful	Older	165	19	.028	.03		
Older Fearful	Older	.262	.29	.254	.25		
Younger Preoccupied	Younger	147	13	.435****	.35		
Older Preoccupied	Younger	.006	.00	032	02		
Younger Preoccupied	Older	.006	.01	032	03		
Older Preoccupied	Older	147	15	128	11		
Younger Dismissing	Younger	.084	.07	.079	.06		
Older Dismissing	Younger	.172**	.31	066	11		
Younger Dismissing	Older	.172**	.19	066	07		
Older Dismissing	Older	.084	.21	.079	.18		

<u>Note.</u> ****p < .0001, two-tailed; **p < .003, two-tailed.

Regression Weights of Paths from the Adult Attachment Patterns to Relationship Variables

Factors for Female – Female Pairs

	Factor Path	Model 1		Model 2	
Predictors		<u>B</u>	ß	<u>B</u>	ß
Younger Secure	Younger	.219	.18	.091	.08
Older Secure	Younger	486****	44	.142	.14
Younger Secure	Older	.232	.20	.142	.12
Older Secure	Older	.219	.22	643****	60
Younger Fearful	Younger	.043	.04	.250	.25
Older Fearful	Younger	160	13	.033	.03
Younger Fearful	Older	.162	.16	.033	.03
Older Fearful	Older	.043	.04	089	08 ,
Younger Preoccupied	Younger	128	12	.038	.04
Older Preoccupied	Younger	097	09	.126	.12
Younger Preoccupied	Older	097	10	172	17
Older Preoccupied	Older	.234	.22	.038	.04
Younger Dismissing	Younger	.090	.07	.090	.08
Older Dismissing	Younger	113	09	.150	.13
Younger Dismissing	Older	113	10	.150	.13
Older Dismissing	Older	.090	.08	207	17

<u>Note.</u> ****p < .0001, two-tailed.

younger male-male siblings; while for younger siblings only, increased levels of preoccupied attachment lead to higher Factor 2 scores. For female-female pairs, greater security in older siblings predicted lower levels of Factor 1 in younger siblings and lower levels of Factor 2 scores in older siblings.

APPENDIX E

Appendix E outlines the analyses completed for Question 4 using the four adult attachment patterns rather than the self- and other-model dimensions. Before they were calculated, gender differences on each of the four adult attachment patterns were tested for all relevant scales. Results are presented in Table 19. All <u>t</u>-tests were non-significant.

Insert Table 19 about here

Pairwise intraclass correlation coefficients are presented in Table 20. Siblings were significantly correlated with each other on the fearful pattern using an adjusted alpha level of .01 (an alpha of .05 divided by the four correlations calculated).

Insert Table 20 about here

In order to examine the extent to which participant's own ratings corresponded with their siblings' ratings of them, cross intraclass correlation coefficients were calculated using the RQ. A series of <u>t</u>-tests (Table 19) indicated that the different pair types had to be analyzed separately for the dismissing pattern since there were significant differences between the means of males and females on this pattern. No significant mean differences were found for the RQ ratings of sibling measure.

Table 21 lists overall correlations between RQ self-ratings and ratings of sibling. All correlations were significant for the combined sibling pairs and ranged from .23 to .33 (p < .0001). All correlations were also significant for the male-male pairs. Female-female pairs were

Gender Differences in Ratings of Adult Attachment Patterns

Patterns	<u>M</u>		t	<u>df</u>	
Combined Ratings (RO & RSO)	Males	Females			
Secure	.042	014	.82	613	
Fearful	079	.032	-1.54	611	
Preoccupied	004	017	.20	613	
Dismissing	.103	043	2.33	614	
Self Ratings	Males	Females			
Secure	.01	.00	.04	613	
Fearful	12	.06	-2.20	611	
Preoccupied	.04	08	1.53	613	
Dismissing	.23	14	4.68***	614	
Ratings of Sibling					
Secure	.02	02	.41	611	
Fearful	.00	.03	32	604	
Preoccupied	.11	07	2.13	606	
Dismissing	.06	02	.94	608	

<u>Note.</u> *** \underline{p} < .001, two-tailed.

Dismissing

Pairwise Intraclas	s Correlation Coefficients	Between Siblings	on Attachment Patterns
Pattern	All Sibling Pairs		
Secure	.11		
Fearful	.16**		
Preoccupied	01		

.04

<u>Note.</u> **p < .01, two-tailed.

significantly correlated only on the fearful, preoccupied, and dismissing patterns while malefemale sibling pairs were correlated on the secure, fearful, and dismissing patterns.

Insert Table 21 about here

Table 22 indicates that participants' ratings of themselves and their siblings' ratings of them were significantly correlated for all patterns when all pairs were analyzed together. Correlations ranged from .15 to .22 (p < .0001). Using an adjusted alpha level of .01, male-male pairs were significantly correlated for the secure pattern only, female-female pairs for the secure and fearful patterns, while male-female pairs were significantly correlated only for the fearful pattern.

Insert Table 22 about here

<u>Summary</u>. Significant concordance between siblings was found only for the fearful pattern. Also, siblings appear to be view their siblings similarly to the way their siblings view themselves, as significant correlations were found between one sibling's rating of themselves and their sibling's rating of them for all attachment patterns. Siblings also viewed themselves similarly to the way they viewed their siblings.

Pattern	All Sibling Pairs	M-M ^a	F-F⁵	M-F ^{ed}	
Secure	.23****	.31****	.17	.21**	
Fearful	.30****	.27****	.27***	.34****	
Preoccupied	.28****	.44****	.21**	.15	
Dismissing	.33****	.41****	.29****	.29****	

Overall Correlation Coefficients Between RO Self-Rating and Rating of Sibling

<u>Note.</u> ****p < .0001, two-tailed; ***p < .001, two-tailed; **p < .01, two-tailed.

^a M-M = Male-Male Sibling Pairs; ^b F-F = Female-Female Sibling Pairs; ^c M-F = Male-Female Sibling Pairs; ^d Partial pairwise intraclass correlation partialling out sex.

Cross Intraclass Correlation Coefficients Between RQ Self-Rating and Sibling Rating of Self $M-F^{cd}$ All Sibling Pairs $\mathbf{F} - \mathbf{F}^{\mathsf{b}}$ $M-M^{a}$ Pattern Secure .20** .28*** .15 .21**** Fearful .15 .23** .26*** .22**** .15**** Preoccupied .16 .13 .15 .18**** Dismissing .16 .16 .18

<u>Note.</u> ****p < .0001, two-tailed; ***p < .001, two-tailed; **p < .01, two-tailed.

^a M-M = Male-Male Sibling Pairs; ^b F-F = Female-Female Sibling Pairs; ^c M-F = Male-Female Sibling Pairs; ^d Partial pairwise cross intraclass correlation partialling out sex.