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The relations between young adults' retrospective perceptions of differential parental treatment, quality of the childhood and current sibling relationship, and current psychological adjustment

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The Relationship Between Young Adults' Retrospective Perceptions of Differential Parental Treatment, Quality of the Childhood and Current Sibling Relationship and Current Psychological Adjustment

by

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The Relationship Between Young Adults' Retrospective Perceptions of Differential Parental Treatment, Quality of the Childhood and Current Sibling Relationship, and Current Psychological Adjustment

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ABSTRACT

This study explored the relations among young adults' perceptions of differential parental treatment, temperamental style, attitudes toward their childhood and current sibling relationships, and psychological adjustment. Participants included 87 college students and their siblings between the ages of 18 and 25 years. Students completed measures in small groups, and siblings completed the surveys via mail. The data were analyzed using the Actor-Partner Interdependence Model (APIM; Kashy & Kenny, 1999). Results revealed that participants' perceptions of their sibling relationship during childhood were related to their current attitudes toward the relationship. In addition, siblings were in agreement regarding their overall attitudes toward the sibling relationship as well as in their perceptions of their interactions with their parents. Siblings' reports higher levels of differential maternal and paternal control were related significantly to perceptions of less positive sibling interactions. Females and individuals with a sister reported higher levels of positivity in the sibling relationship than did males and individuals reporting on a brother. Level of psychological adjustment was found to be better for individuals who experienced more paternal control according to their sibling. Temperamental characteristics were found to be related to attitudes toward the sibling relationship and

reports of parenting behaviors. Results are discussed within the context of family-based research regarding parent-child and sibling relationships.

Introduction

Research has demonstrated that siblings raised in the same family may have different perceptions of various aspects of the family environment. Specifically, the literature indicates that one aspect of the family environment that may differ for siblings while growing up is parenting behaviors (Brody, Copeland, Sutton, Richardson, & Guyer, 1998; Dunn, Stocker, & Plomin, 1990; Furman & Giberson, 1995; McHale, Updegraff, Jackson-Newsom, Tucker, & Crouter, 2000; Parke, 2004; Richmond, Stocker & Rienks, 2005; Shebloski, Conger, & Widaman, 2005). Differential parent-child relationships as reported by siblings have been found to have a significant impact on the sibling relationship as well as on individual outcome (Barrett, Singer, & Weinstein, 2000; Boll, Ferring, & Filipp, 2003; Brody & Stoneman, 1994; Cicirelli, 1989; 1995; 1996; Daniels, Dunn, Furtenberg, & Plomin, 1985; Dunn, Stocker, & Plomin, 1990; Parke, 2004; Plomin, Asbury, & Dunn, 2001; Richmond et al., 2005; Shebloski et al., 2005; Tamrouti-Makkink, Dub, Gerris, & van Aken, 2004). In general, the literature suggests that higher levels of positivity (e.g., impartial responsivity and positive affect) in the parent-child relationship are associated with higher levels of self-esteem, positive affectivity and prosocial behavior in the sibling relationship while higher levels of parental negativity, intrusiveness, and control are associated with more internalizing and externalizing behaviors and conflict between siblings (Brody, Copeland, Sutton, Richardson, & Guyer, 1998; Dunn, Stocker, & Plomin, 1990; Furman & Giberson, 1995; Kowal, Krull, & Kramer, 2004; Kowal, Krull, & Kramer, 2006; Kramer & Kowal, 2005;

McElwain & Volling, 2005; Plomin, Asbury, & Dunn, 2001; Stocker & McHale, 1992; Volling & Belsky, 1992; Volling, 2003).

Research has also demonstrated that another factor that impacts the sibling relationship is temperamental style (Brody et al., 1998; Brody & Stoneman, 1996; Buss & Plomin, 1984; Furman & Lanthier, 1996). Specifically, children with more difficult temperaments (e.g., high levels of activity, emotionality and anger) tend to experience more interpersonal conflict, particularly in their interactions with siblings (Brody et al., 1998; Brody & Stoneman, 1996; Furman & Lanthier, 1996). The literature has demonstrated that individuals with more of an agreeable temperamental style (e.g., conscientiousness, agreeableness, and sociability) however, tend to experience more warmth and less conflict in their relationship with siblings (Brody et al., 1998; Brody & Stoneman, 1996; Furman & Lanthier, 1996).

Much of the research on siblings however, has focused on younger children and/or adolescents. Research that has examined various aspects of the adult sibling relationship has mainly focused on older adults. These studies have primarily investigated care-taking behaviors, social support, and the impact of marriage and other major life changes on the sibling relationship later in life (Bedford, 1992; 1998; Cicirelli, 1989; 1995; 1996; Dunn, 1985; Ross & Milgram, 1982). The few studies that have examined the long-term sequelae of differential parental treatment offer evidence that the negative consequences of such parenting persist through the transition from childhood/adolescence to adulthood (Bedford, 1992; Ross & Milgram, 1982). Other findings suggest that siblings' negative interaction patterns during childhood have a significant impact on outcome during adulthood (Bank, Patterson, & Reid, 1996; Barrett-

Singer & Weinstein, 2000; Bedford, 1998; Schrepferman, 2002). There is less known however, about the influence of perceived differential parental treatment during childhood and temperament on both the sibling relationship and individual adjustment later in life. Furthermore, many of the studies examining adult sibling relationships have relied on the perceptions of only one sibling. Therefore, the purpose of the current study is to explore the relationship between young adult siblings' retrospective reports of differential parental behaviors, temperamental style, the quality of the childhood and current sibling relationship, and current levels of psychological adjustment.

Differential Parental Treatment

Much of the research conducted on the influence of differential parental treatment has focused on maternal behaviors. It has typically been assumed that the impact that fathers have on their children is minimal given the fact that many fathers have traditionally played a secondary role in childrearing, particularly during the early years of their children's lives (Brody & Stoneman, 1994). The recent trend in family research, however, is to try to include fathers because both parents have been found to be influential in the normal and abnormal development of their children (Clark & Phares, 2004; Katz & Gottman, 1993; Phares, 1996; 1999; Phares, Lopez, Fields, Kamboukos, & Duhig, 2005; Tamrouti-Makkink et al., 2004). For example, McHale and colleagues (2000) conducted a study that examined the implications of differential parental treatment on self-esteem, siblings' perceptions of parents' fairness, and positivity in the sibling relationship during middle childhood and adolescence. The findings revealed that for siblings who were not disfavored, higher levels of maternal and paternal warmth were associated with greater self-esteem and sibling positivity. Furthermore, while siblings

from mixed-sexed dyads rated maternal and paternal involvement as less fair than those from same-sex dyads, adolescent females who experienced differential paternal warmth rated this behavior as being less fair in comparison to female children and adolescent males who perceived similar treatment from their fathers. In contrast, Furman and Giberson (1995) found that while different degrees of maternal warmth were associated with less warmth in sibling relationships, reports of differential paternal treatment were not significantly related to perceptions of the sibling relationship. The discrepancy in these findings may be attributed to the manner in which aspects of the sibling relationship were assessed. Whereas the previously mentioned authors relied on self-report measures to gather data on siblings' perceptions of their relationships, Furman and Giberson (1995) combined the parents' and children's reports to obtain information regarding the quality of sibling interactions which may contribute to the differences in the relationship between these variables.

Boer, Goedhart, and Treffers (1992) examined the relationship between children's perception of differential parental treatment and the quality of the sibling relationship. Interestingly, the authors found a positive relationship between ratings of parental behavior and children's perceptions of favoritism directed toward the sibling and favoritism directed toward themselves. Specifically, similar to the disfavored child, children who felt favored over their siblings perceived their parents as being detached and hostile suggesting that the children's experience of such treatment may have an impact on both siblings. Furthermore, the findings revealed that perceptions of parental favoritism were associated with negativity in the sibling relationship, regardless of the direction of the favoritism. The authors concluded that it is the parents' differential

behavior in general rather than the direction that breeds hostility, which may lead to conflict between siblings (Boer et al., 1992).

Differential Parental Treatment and Sibling Outcome

Various researchers who have examined the degree to which differential experiences within the family, particularly in terms of maternal parenting behaviors, are associated with internalizing and externalizing behaviors among siblings (Daniels, Dunn, Furstenberg, & Plomin, 1985; Dunn, Stocker, & Plomin, 1990; Plomin, Asbury, & Dunn, 2001; Tejerina-Allen, Wagner, & Cohen, 1994). Specifically, children and adolescents who perceived that they received less affection and more control from their mothers relative to their sibling exhibited more internalizing and externalizing behaviors including anxiety, depression, disobedience, hyperactivity, and suicidal ideation. Children and adolescents who perceived that they were favored by more affection and less control from mothers however, were reported to be more psychologically well-adjusted (Daniels et al., 1985; Dunn et al., 1990; Plomin et al., 2001; Tejerina-Allen et al., 1994).

Researchers who have included perceptions of both parents' differential behaviors have found that such parenting was related to children/adolescent's and young adults' well-being (Barrett-Singer & Weinstein, 2000; Brody, Copeland, Sutton, Richardson, & Guyer, 1998; Parke, 2004; Kowal, Kramer, Krull, & Crick, 2002; Plomin et al., 2001; Tamrouti-Makkink et al., 2004; Schlette et al., 1998).

Specifically, Kowal and colleagues (2002) explored relations between perceptions of the amount of differential parental treatment and children's socioemotional well-being. Findings revealed that while the amount of differential control was related to more

externalizing behavior problems, lower levels of internalizing behavior problems and greater global self-esteem were indicated when children perceived that such parenting was fair. Similarly, Tamrouti-Makkink and colleagues (2004) examined the role of absolute levels of differential parental behaviors in adolescents' level of psychological adjustment. The findings indicated that regardless of who was favored, differential parental control was associated with internalizing behaviors for females while differential warmth exhibited by fathers was linked to externalizing behaviors suggesting the significant role of parent and child gender when exploring the relationship between differential parenting behaviors and children/adolescents' outcome.

Brody and colleagues (1998) examined the relationship between perceptions of parental favoritism and young adults' level of adjustment and family functioning. The authors found that participants who perceived themselves as being disfavored by parents also reported more feelings of shame and fear in comparison to participants who perceived that they were favored by parental behaviors. In addition, individuals who rated themselves as disfavored also reported lower family cohesion, higher family disengagement, and higher family conflict than individuals who perceived being favored by parents.

In addition, Barrett-Singer and Weinstein (2000) examined the relationship between young adults' perceptions of differential parental treatment, academic achievement, and self-perceptions. While the findings revealed that being favored by parents (i.e., more affection or less control) and reporting less differential treatment (above and beyond which sibling was favored) was associated with more positive achievement and self-perceptions, the authors found that the direction of differential

parental treatment was significantly more predictive of level of adjustment than the magnitude of such parenting behaviors. Specifically, although perceptions of differential treatment by mothers did not predict achievement, less differential maternal affection was significantly associated with positive self-perceptions of ability and global self-worth. In contrast, perceptions of differential treatment by fathers predicted both achievement and self-perceptions such that less differential paternal control was positively related to academic achievement and young adults' perceptions of ability.

Long-Term Consequences of Differential Parental Treatment

Volling and Belsky (1992) conducted a longitudinal study that examined the contribution of the parent-child relationship to the quality of sibling interaction. This study assessed various aspects of mother-child and father-child interaction for parents of two children whose first-born's age spanned between 1 and 6 years over the course of the study. The findings revealed that when the first-born was 6-years-old, conflicted sibling interactions were associated with higher levels of conflict between the mother and the two children, intrusive and over-controlling maternal behaviors, and insecure mother-infant attachment. Prosocial sibling relations, however, were found to be associated with fathers who were more affectionate and facilitative of their children's cooperative play behavior.

In addition, Brody and Stoneman (1994) conducted a study examining the maternal and paternal direct and differential behaviors that contributed to the longitudinal prediction of their children's sibling relationship quality at one-year follow-up. Direct behavior was defined as that which a parent exhibits toward an individual child, without regard to the behavior the parent enacts with the child's siblings. The results of this

study revealed that although rates of direct and differential behaviors were similar for fathers and mothers, fathers' behavior appeared to be associated more strongly with their children's behavior and sibling relationships. That is, paternal differential responsive and controlling behaviors were associated with higher rates of negative behavior from both siblings. Paternal differential positive and negative behaviors however, were related to fewer positive and more negative perceptions of the sibling relationship (Brody & Stoneman, 1994). These authors also conducted a longitudinal study of the relationship between differential parental treatment, sibling problem-solving strategies, and conflict in sibling relationships. The findings revealed that fathers' unequal treatment of siblings during problem-solving discussions was related to siblings' negative problem-solving behavior, whereas such treatment from mothers was associated with siblings' reports of conflicted relationships (Brody & Stoneman, 1994).

Furthermore, more recent research assessing the associations between parental differential treatment and adjustment across time have found that parental partiality was negatively related to children and adolescent's externalizing behaviors and positively associated with depressive symptoms and feelings of self-worth (Richmond et al., 2005; Shebloski et al., 2005).

In order to examine the long-term consequences of differential parental treatment, researchers have explored the degree to which parental favoritism during childhood was related to the quality of sibling relationships during adulthood and adult child-parent bonds (Bedford, 1992; Belsky, Jaffee, Caspi, Moffitt, & Silva, 2003; Boll et al., 2003; Panish & Stricker, 2001). Overall findings suggested that adults who perceived that they

were disfavored by differential parental treatment also reported less affection and more conflict in the current relationship with their parents and siblings.

These findings have implications regarding the nature of the parent-child and sibling relationship across time. The life span attachment theory (Bowlby, 1988; Cicirelli, 1989; 1995, 1996; Collins, Guichard, Ford, & Feeney, 2004) suggests that the child's early attachments to his/her primary caregiver as well as to other family members influence the nature of those relationships later in life.

Lifespan Attachment Theory- Parent and Sibling Bonds

Attachment, which refers to the emotional bond between parent and child, forms during the first year of the child's life and continues over time, with the quality of the attachment demonstrating relative stability across time (Bowlby, 1988; Collins et al., 2004; Cummings & Davies, 1994). In the early years of life, the presence or absence of attachment figures is significant relative to the child's perception of how emotionally available and responsive his or her caretakers are to the child's needs. In addition, the degree to which children perceive their attachment figures as accessible when needed is also important, particularly as children mature. Therefore, parental emotional responses that contribute to children feeling secure impact the manner in which children adaptively define themselves and evaluate others (Bowlby, 1988). Furthermore, attachment theorists postulate that children develop internal representations of relationships based on interactions with their primary caregivers that are generalized to other relationships (Sroufe & Fleeson, 1986, as cited in Brody et al., 1998). For example, researchers have explored the degree to which attachment styles among college students are related to various relationship factors. Individuals whose relationship with their parents was

consistent with the secure attachment style reported greater satisfaction with their romantic relationships than persons whose parent-child relationship was characteristic of an avoidant-attachment style (Collins et al., 2004).

In addition, Volling and Belsky (1992) found that in families where the firstborn child had been insecurely attached to the mother at 12 months of age, siblings experienced more conflict in their relationships when the older child was 6. Furthermore, research has offered support regarding the degree to which thoughts, feelings, and behaviors associated with the childhood sibling relationship persist through the transition to adulthood (Bedford, 1992, 1998; Ross & Milgram, 1982; Weaver, Coleman, & Ganong, 2003).

Adult Sibling Relationships

Ross and Milgram (1982) conducted a qualitative study of adults ranging in age from 22 to 93 years that explored how perceptions of closeness, sibling rivalry, and critical incidents impact the adult sibling relationship. The findings suggested that adult siblings' current feelings of closeness and rivalry originated during childhood. Siblings reported that the factors that contributed to their closeness during childhood included shared family experiences, experiences shared with groups or particular siblings, shared family and personal values, and shared physical space (e.g., bedroom). Those factors that contributed to the maintenance of sibling's closeness during adulthood included shared personal values, goals and interests, family traditions, personal commitments to family values and traditions and communication with family members.

The authors found that rivalrous feelings between adult siblings that originated during childhood were reported to be adult-initiated (e.g., by parents) through overt or

covert comparisons or generated by the siblings themselves. Sibling rivalry that persists into adulthood was found to be most often maintained by such factors as continued parental preferential treatment and overt comparisons, competitive behaviors between the siblings, and the siblings' reluctance to discuss their rivalries (Ross & Milgram, 1982). Similarly, Boll and colleagues (2003) found that adult siblings perceived less positivity in their current relationship when they perceived that their parents were differentially affectionate and/or the parents sought support from one sibling more than the other.

Bedford (1998) investigated the degree to which adults cope with the negative aspects of their sibling relationships was related to well-being. The findings revealed that positive reappraisals of sibling problems in childhood were related to higher levels of social support and positive affect in adulthood. Adults' appraisals of existing negativity in the sibling relationship however, were not associated with current levels of well-being. These findings offer further support regarding the potential significance of early experiences with siblings to well-being later in life.

Contributors to Differences in Individual Sibling Outcome

Various theories have attributed differences in siblings' individual outcome to evolutionary, neurobiological, genetic, environmental and/or a combination of these factors (Daniels & Plomin, 1985; Dunn & Plomin, 1990; Plomin & Daniels, 1987). Much of the research conducted in this area has focused on the contribution of various family constellation variables including age, gender, spacing, and birth-order on individual sibling outcome. These variables have been found to be modestly related to sibling differences between and across families (Daniels & Plomin, 1985). Accordingly, research has begun to focus on the role of such within-family environmental influences as

siblings' perceptions of differential parental treatment and fairness, marital distress, characteristics of individual family members (e.g., temperament and history of mental disorder), quality of the sibling relationship, and relationship with peers to explain differences in sibling outcome (Beardsall & Dunn, 1992; Belsky et al., 2003; Brody et al., 1998; Dunn, Stocker, & Plomin, 1990; Feinberg et al., 2000; Kramer & Kowal, 2005; McElwain & Volling, 2005; McHale et al., 2000).

Factors Related to Differential Parental Treatment

Gender. Parents may feel the need to treat their children based on their individual developmental needs and, to some degree, the gender of the child (Brody et al., 1998; Dunn & Plomin, 1990). McHale and colleagues (2000) found that for children whose ratings indicate that they receive less preferential parental treatment, females tended to report lower self-esteem in comparison to males, particularly when such parenting behaviors were considered to be unfair. In addition, while siblings from same-sex dyads reported lower fairness for chores and parental warmth, first-born siblings from same-sex dyads who rated their household task involvement as less fair, reported lower self-esteem than those from same-sex dyads who perceived their treatment as fair.

Marital distress. Another aspect of the family environment that may influence parent's differential treatment of their children is marital distress (Parke, 2004). Research has indicated that interparental conflict has the potential to impact the parent-child relationship adversely. It is possible that the negative emotions associated with marital distress may be carried over into the parent-child relationship and influence the degree to which the parent is emotionally available and supportive to the child (Clark & Phares, 2004; Cummings & Davies, 1994; Neighbors, Forehand, & Bau, 1998; Osborne

& Fincham, 1996). Furthermore, as a function of such negative emotionality, each parent's relationship with the opposite-sexed child may be influenced given that this child may be reminiscent of the spouse (O'Leary, 1984). In addition, research has indicated that men in unhappy marriages tend to withdraw from their wives and therefore, may emotionally distance themselves from their children (Howes & Markman, 1987). Because children tend to identify with the same-sexed parent, exposure to interparental conflict may also adversely impact their perceptions of the relationship with the opposite-sexed parent (Osborne & Fincham, 1996). For example, McHale (1995) found that marital conflict was associated with fathers' withdrawal from parent-child interaction, particularly in relationships with their daughters.

It is possible that hostility between parents serves as a model for children who learn that these responses to conflict are appropriate (Jenkins, 1992) and may go on to engage in similar interactions with siblings and peers (Brody et al., 1998). In some cases, however, the literature suggests that children exposed to interparental conflict may have the ability to develop and maintain close relationships with their siblings (Jenkins, 1992). This outcome may occur if the negativity associated with marital distress is not carried over into parenting behaviors (Brody et al., 1998). In fact, research has demonstrated that if parenting does not become hostile, marital distress and parental depression have no significant effect on the quality of the sibling relationship (Brody et al., 1998; Hetherington, 1988). Jenkins (1992) found that children in disharmonious homes who did manage to have a moderately close or very close relationship with a sibling had a significantly lower level of emotional and behavioral problems than children who did not have positive relations with their siblings. However, children from disharmonious homes

who had poor mother-child relationships had higher levels of emotional and behavioral problems (Jenkins, 1992). A similar trend has been found in research examining adult sibling relationships wherein recall of exposure to higher levels of marital conflict during childhood was associated with more conflicted adult sibling interactions (Panish & Stricker, 2001).

Temperament. Finally, parents may respond differentially to their children depending on the temperament of each child. Temperament is defined as inherited personality characteristics that appear during the first two years of life and endure as basic components of personality. An individual's temperament produces certain behavioral pattern to which others respond (Buss & Plomin, 1975; Buss & Plomin, 1984). That is, if a child has a difficult temperament, the parent may reciprocate this behavior in his/her interactions with the child. Therefore, parents may exhibit less positive and more negative affect with that child in comparison to a sibling who has more of an agreeable temperamental style. Various studies have found that higher levels of positivity in the parent-child relationship are associated with commensurate levels of positive sibling interactions. Conversely, higher levels of negativity, intrusiveness, and control in the parent-child relationship are related to increased negativity and conflict in the sibling relationship, particularly when parents engage in such behaviors differentially among their children (Brody et al., 1998; Brody & Stoneman, 1994; Hetherington, 1988).

Temperament and Sibling Relationships

Research has demonstrated that children with more difficult temperaments tend to have more conflicted relations with their siblings (Brody, 1998; Brody et al., 1998; Brody & Stoneman, 1994; Mash & Johnson, 1983; Pike & Atzaba-Poria, 2003). Specifically,

the results of various studies have found that children who were highly emotional and active tended to experience significantly more conflict in their interactions with siblings than children who exhibited lower levels of emotionality and activity.

In order to explore the influence of individual characteristics on sibling relationships, Furman and Lanthier (1996) examined the Five-Factor Model of personality relative to various aspects of the sibling relationship including warmth, conflict, relative power, and competition for parental attention. The results revealed that in comparison to younger siblings, older siblings' personality characteristics were associated more with the distribution of power in the relationship. In addition, conscientiousness was found to be positively related to warmth and negatively associated with conflict, relative power, and parental competition. Agreeableness was found to be negatively related to conflict as well as differences in power in the sibling relationship.

Stoneman and Brody (1993) conducted an observational study examining the degree to which the positive temperamental qualities of one sibling serve to buffer the negative influence of the difficult temperament of the other sibling on the relationship. The findings indicated that siblings experienced higher levels of negativity and conflict when the older child was highly active and the younger child was not. Sibling dyads consisting of a highly active younger child and a less active older sibling however, exhibited more positivity and lower levels of conflict. The authors postulated that given the typical power differential of the older sibling over the younger interpersonally, it is likely that the temperament of the older child defines the nature of the sibling interactions.

The literature also suggests that problematic interaction patterns between siblings may carry over into other interpersonal relations outside of the family (Cicirelli, 1989; 1995, 1996; Dunn, 1992; Dunn & Plomin, 1990; Pike & Atzaba-Poria, 2003).

The Relationship Between Sibling and Peer Interactions

The literature suggests that the nature and quality of the relationship between siblings influences the manner in which children interact with their peers (Bank et al., 1996; Dunn & McGuire, 1994; Dunn & Plomin, 1990). Children or adolescents who have conflicted sibling relations are also more likely to have problematic interactions with their peers (Bank, Patterson, & Reid, 1996; Hetherington, 1988; Seginer, 1998). Specifically, high levels of emotionality have been found to be associated with increased negativity in sibling and peer interactions while positivity in sibling and peer relationships has been linked with sociability (Pike & Atzaba-Poria, 2003).

Bank and colleagues (1996) explored the degree to which negative sibling interaction patterns predicted later adjustment problems in adolescent and young adult males. The findings revealed that antisocial behaviors (i.e., number of arrests) and self-reported levels of psychopathology during young adulthood were associated with negative sibling interactions during middle childhood and adolescence. In addition, individuals who engaged in negative interactions with siblings and mothers during middle childhood were more likely to use verbal and physical aggression with a significant partner and peers as well during young adulthood.

Seginer (1998) examined adolescents' perceptions of relationships with an older sibling relative to the adolescent-parent and adolescent-peer relationships. The findings revealed that adolescents' relationships with older siblings were similar to self-reported

relationships with mothers, fathers, and peers. In addition, positive sibling relationships were more associated with the adolescents' sense of emotional and school-related support than with either parental or peer acceptance.

Howe and Ross (1990), however, found that sibling interaction patterns involving both negative (e.g., conflicted) and positive (e.g., discussion of feelings) exchanges were positively related to maternal caregiving (e.g., providing reassurance to a distressed child and verbal/physical interaction with child) during early childhood. Similarly, Hetherington (1988) found that sibling relationships characterized by a balance of conflict and support (Brody et al., 1998) were associated with children's relationship with peers and school adjustment. Specifically, brothers whose relationship consisted of high levels of both aggression and warmth were rated by their teachers as having more positive peer relationships and fewer externalizing problems as opposed to children whose sibling relationships were highly conflictual and low in support.

Furthermore, McElwain and Volling (2005) examined the extent to which peer and sibling relationship quality each contributed to children's behavioral adjustment. The authors found that when sibling relationship quality was poor, positive peer interactions were associated with the child engaging in fewer aggressive-disruptive behaviors as reported by parents. When sibling interactions were more positive, however, the associations between the relationship with peers and problem behaviors were non-significant suggesting that positive peer interactions appear to buffer the negative effect of less positive sibling interactions on children's behaviors.

Additionally, Kramer and Kowal (2005) examined the continuity in sibling relationships across childhood and the degree to which children's relationship with their

peers prior to the birth of their sibling predicted problem behaviors as well as the quality of the sibling relationship in adolescence. The findings revealed that children who had more positive interactions with their peers prior to the birth of their sibling and engaged in prosocial behaviors with their sibling demonstrated more prosocial interactions with both their siblings and friends in adolescence and exhibited fewer externalizing behavior problems. The authors concluded that children's early peer relationships appear to contribute significantly to their social development across time.

Sibling Gender and Relationship Quality

Various studies have demonstrated the significance of the gender constellation of sibling dyads when exploring factors contributing to the quality of the sibling relationship (Cicirelli, 1989; 1995, 1996; Riggio, 2000; Riggio, 2006; Stocker, Lanthier, & Furman, 1997; Tucker, McHale, & Crouter, 2001;Weaver et al., 2003). Although some research suggests that same sex siblings experience greater warmth and closeness in their relationship than opposite sex siblings during late childhood and adolescence (Buhrmester, 1992), other findings suggest that during this time period, sister pairs report higher levels of positivity in their relationships than mixed or male sibling dyads (McHale et al., 2000; Riggio, 2000; Riggio, 2006). For adult sibling relationships, however, the literature suggests that siblings report more warmth and affection in their relationships when the pair consists of at least one sister (Cicirelli, 1989; 1995, 1996; Riggio, 2000; Riggio, 2006; Stocker, Lanthier, & Furman, 1997; Weaver et al., 2003).

Tucker and colleagues (2001) investigated older and younger siblings' support of one another during middle childhood and adolescence in the domains of parent-child relations, social-life issues, school work, and risky behavior. Both older and younger

sisters provided more support than did older and younger brothers. In addition, although older sisters gave more support about social life to their siblings when they were more competent with peers, they tended to provide the most support about such issues to younger sisters (Tucker et al., 2001).

The literature suggests that perceptions of higher levels of closeness between adult siblings has been found for sibling pairs consisting of at least one sister (Cicirelli, 1989; 1995, 1996; Panish & Stricker, 2001; Riggio, 2000; Riggio, 2006; Stocker, Lanthier, & Furman, 1997; Weaver et al., 2003). The perception of a close bond to sisters by either men or women has also been found to be related to psychological adjustment, as indicated by fewer symptoms of depression (Cicirelli, 1989; 1995, 1996; Panish & Stricker, 2001). Other research has found that differences due to the gender constellation of the sibling dyad depend on aspects of the sibling relationship being explored. For example, Weaver and colleagues (2003) found that while female sibling pairs were more likely to provide assistance to each other than brother pairs and opposite-sex siblings, sisters did not differ significantly from male sibling pairs in terms of identifying with each other and teaching behaviors.

Consistency in Sibling Ratings

Much of the research that is conducted on siblings regarding sibling relationships and individual outcome is based on either parental report or the perspective of one sibling. Those studies that have employed the perceptions of both siblings either do not examine congruence in sibling ratings or have mixed findings relative to consistency in siblings' views of parental behaviors and sibling relations. For example, several studies of child and adolescent siblings found little to no consistency in siblings' perceptions of

differential treatment (Dunn & McGuire, 1994; McHale & Crouter, 1996) as well as in their perceptions of the sibling relationship (Dunn & McGuire, 1994) suggesting that each sibling may attribute different meanings to the same family dynamics**.** The literature on adult siblings, however, suggests low to moderate consistency in siblings' perceptions of parenting behaviors (Brody et al., 1998; Daniels & Plomin, 1985; Kowal, Krull & Kramer, 2006; McCrae & Costa, 1988; Schwarz, Barton-Henry, & Pruzinsky, 1985) and substantial consistency relative to perceptions of the sibling relationship (Stocker et al., 1997). These findings suggest that perceptions of the sibling relationship may have a developmental course. Because most siblings live at home with their parents during childhood/adolescence when the family dynamics are more salient, they may be more sensitive to any amount of disparity in parenting behaviors. Adult siblings who are less likely to be living at home and who have had more time to reflect on their parents, however, may be somewhat more stable and consistent in their views about family members as they come to terms with the characteristics of their family relations. In fact, conclusions based on longitudinal research assessing the stability of adolescents' reports of parenting behaviors over time suggested that adolescents' recall of events were the most stable beginning between the ages of 19 and 23 (Schlette, Brandstrom, Eismann, Sigvardsson, Nylander, Adolfsson, & Perris, 1998; Winfield, Goldney, Tiggermann, & Winfield, 1990).

Summary

Overall, the literature suggests that individuals who receive less warmth and affection and more control from their parents in comparison to their siblings, tend to experience significantly more internalizing and externalizing behavioral problems and

difficulty with peers (Daniels et al., 1985; Dunn, Stocker, & Plomin, 1990; McHale et al., 2000; Tejerina-Allen et al., 1994). In addition, differential parental treatment has often been associated with conflicted sibling relations regardless of which sibling is favored (Boer et al., 1992; Brody & Stoneman, 1994; Furman & Giberson, 1995). Furthermore, higher levels of conflict and negativity in sibling interactions appear to be associated with difficult temperamental characteristics (Furman & Lanthier, 1996; Pike & Atzaba-Poria, 2003), particularly for individuals who perceive that they experienced less positivity in the parent-child relationship relative to their siblings (Boll et al., 2003; Brody et al., 1998; Mash & Johnson, 1983; Stoneman & Brody, 1993). In contrast, close bonds with siblings have been associated with fewer emotional and behavioral problems among children and adolescents (Beardsall & Dunn, 1992; Cicirelli, 1989; 1995, 1996; McHale et al., 2000). The literature also suggests that although children and adolescents report more positivity in same sex sibling relationships (Buhrmester, 1992; McHale et al., 2000; Tucker et al., 2001), adult siblings report more positivity in their relationships when the pair consists of at least one sister (Cicirelli, 1989; 1995, 1996; 1995; 1996; Panish & Stricker, 2001; Riggio, 2000; Riggio, 2006; Stocker et al., 1997; Weaver et al., 2003). In addition, whereas research comparing siblings' perceptions of relationships within the family have found little to no consistency in child/adolescent ratings, small but significant associations have been observed for adult siblings. Furthermore, the literature indicates that early experiences persist during the transition from childhood/adolescence to adulthood and have a significant impact on adjustment later in life (Bank et al., 1996; Bedford, 1992, 1998; Ross & Milgram, 1982). The purpose of this research, therefore, was to explore perceptions of differential parental treatment and individual temperament

in relation to the quality of the childhood and current sibling relationship and psychological adjustment in young adults.

Purpose of Research and Hypotheses

The degree to which siblings perceive disparity in the way parents relate to their individual children as well as their children's temperamental style may be adversely related to the quality of the sibling relationship (Brody et al., 1998; Dunn, Stocker, & Plomin, 1990; Furman & Giberson, 1995; McHale et al., 2000; Stocker & McHale, 1992; Volling & Belsky, 1992). According to social learning theory (Bandura, 1977), sibling relations during childhood can serve as a model for social interactions outside of the family (Brody et al., 1998; Cicirelli, 1989; 1995, 1996; Dunn, 1990; Dunn & Plomin, 1990; Jenkins, 1992; Pike & Atzaba-Poria, 2003). Because of the potential consequences of negative sibling interactions for children, parents, and society (e.g., peers and romantic partners), it is worthwhile to explore the relationship between parenting behaviors (i.e., differential parental treatment), temperamental style, children and young adults' sibling relationships, and psychological adjustment.

The purpose of this research was to investigate the relationship between perceptions of differential parental treatment during childhood, temperamental characteristics, perceptions of the childhood and current sibling relationship, and current levels of psychological adjustment in college students and their siblings. In order to assess the relationship between psychological consequences in adulthood and differential parental treatment earlier in life, it is appropriate to examine older offspring. Very little research has been conducted on differential parental treatment, temperamental style, childhood and current sibling relationships, and psychological adjustment in young

adults. Thus, this research may provide insight regarding relationship and emotional/behavioral problems experienced by young adults that are related to temperament and perceptions of differential parental treatment during childhood. Based on the literature, it appears that the extent to which these problems are experienced depends on the quality of the parent-child relationship and negativity in sibling interactions during childhood. Furthermore, in order to determine the degree to which these problems persist into adulthood, it is necessary to examine this trend among older adolescents and young adults (e.g., undergraduate college students and their siblings).

A significant issue that arises in collecting this type of data, however, pertains to the validity of retrospective reports given the fact that the information obtained was based on recollections of childhood experiences as opposed to experiences that occur currently. It has been suggested that such recollections are typically subject to distortions as a function of normal limitations in memory, general memory deficits associated with psychopathology, and mood-congruent memory processes (Brewin, Andrews & Gotlib, 1993). Results of several studies that examined the relation between participants' depression and retrospective recall of their parents' parenting behaviors, however, provide evidence of the validity of retrospective reports of these early experiences (Brewin et al., 1993). The findings revealed that recall was similar whether or not the person was depressed at the time that the self-report measures were completed. Therefore, depressed mood did not appear to influence recall of childhood memories substantially. Relative to these findings, it has been suggested that for such personally significant experiences as parenting and childhood sibling interactions, individuals access the same set of highly selected and rehearsed memories regardless of their mood state.

On the other hand, memories that are less well-rehearsed (i.e., recent experiences) may be more influenced by mood (Brewin et al., 1993).

Consistent with the literature regarding the relationship between differential parental treatment, temperament, childhood and current sibling relationships, and young adults' psychological adjustment, the following hypotheses were generated:

Hypothesis 1 –

a. It was expected that siblings' ratings of their overall attitudes toward the sibling relationship would be positively related.
b. It was expected that siblings' ratings of parental treatment that occurred during childhood would be related.

This hypothesis is based on the literature on adult siblings that suggests low to moderate consistency in siblings' perceptions of parenting behaviors (Brody et al., 1998; Daniels & Plomin, 1985; McCrae & Costa, 1988; Schwarz, Barton-Henry, & Pruzinsky, 1985) and significant consistency regarding perceptions of the sibling relationship (Stocker et al., 1997).

Hypothesis 2 –

It was expected that participants' retrospective reports of the childhood sibling relationship would be positively related to their own perceptions of the current sibling relationship. This hypothesis is based on the literature which suggests that thoughts, feelings, and behaviors associated with the childhood sibling relationship persist through the transition to adulthood (Bedford, 1992, 1998; Riggio, 2000; Riggio, 2006; Ross & Milgram, 1982).

Hypothesis 3 -

Individuals who perceive more disparity in parental treatment, regardless of the direction, were expected to report more negativity in the childhood and current sibling relationship than would individuals who perceived that their parents engaged in less differentiating behaviors. This hypothesis is based on the literature which suggests that differential parental treatment is associated with conflicted sibling relations regardless of which sibling is favored (Boer et al., 1992; Boll et al., 2003; Brody & Stoneman, 1994; Furman & Giberson, 1995). Therefore, it is the parents' differential behavior in general rather than the direction that the differentiating occurs that breeds hostility and conflict between siblings (Boer et al., 1992). Furthermore, the literature indicates that these early experiences persist during the transition from childhood/adolescence to adulthood (Bank et al., 1996; Bedford, 1992, 1998; Ross & Milgram, 1982).

Hypothesis 4 –

Sibling pairs with at least one female were expected to report more positive overall attitudes toward the sibling relationship than would male sibling dyads. This hypothesis is based on the literature which suggests that adult siblings report more positivity in their relationships when the pair consists of at least one sister (Cicirelli, 1989; 1995, 1996; Panish & Stricker, 2001; Riggio, 2000; Riggio, 2006; Stocker et al., 1997; Weaver et al., 2003).

Hypothesis 5 –

Individuals reporting that they received differentially less warmth and/or more control from their parents relative to their siblings were expected to report higher

levels of psychological symptoms than individuals who reported experiencing relatively more warmth and/or less control from their parents. This hypothesis is based on the findings of various studies which revealed that children and adolescents who receive less warmth and affection and more control from their parents tend to experience significantly more internalizing and externalizing behavioral problems (Daniels et al., 1985; Dunn, Stocker, & Plomin, 1990; McHale et al., 2000; Tejerina-Allen, et al., 1994). These findings are consistent with the adult literature which suggested that the direction of differential parental treatment was significantly more predictive of level of adjustment than the magnitude of such parenting behaviors. Specifically, individuals who experienced lower levels of parental warmth and higher levels of parental control during childhood reported more negative self-perceptions of ability and self-worth (Barrett-Singer & Weinstein, 2000; Brody et al., 1998; Schlette et al., 2001).

Hypothesis 6 –

Individuals reporting more negative temperamental characteristics (higher levels of activity, emotionality, and anger and lower levels of sociability) were expected to report less positivity in their attitudes toward the childhood and adult sibling relationship. This hypothesis is based on the literature which suggests that individuals with more difficult temperaments tend to have more conflicted sibling relationships (Brody et al., 1998; Brody & Stoneman, 1994; Furman & Lanthier, 1996; Pike & Atzaba-Poria, 2003).

Method

Participants

A power analysis with an alpha of .05, power of .80 and an expectation of a medium effect size indicated that a minimum of 84 sibling pairs would be required for an adequate test of the hypotheses. A total of 316 students recruited from the Psychology and Communication Sciences and Disorders Departments at the University of South Florida (USF) participated voluntarily in the study. Of these students, 89 had siblings who returned completed packets. Two of the 89 siblings were outside of the age range (18-25 years, with a sibling within three years of the students' age) required for the current study. Therefore, the final sample included a total of 87 sibling pairs consisting of undergraduate students at USF and their siblings.

In order to ensure a relatively homogeneous sample with respect to age, only students between 18 and 25 years of age and one sibling who was also between the ages of 18 and 25 and within three years of the students' age were invited to participate. Of the student participants, a total of eight (9%) were male and 79 (91%) were female. A total of 33 (38%) siblings were male and 54 (62%) were female. Participants had a mean of 2.83 (SD = 3.21) siblings (including biological, half, step, and adopted siblings). The majority of participants (92%) reported on their biological sibling. Thirty-seven percent of the pairs consisted of a female student and her brother (n = 32), 54% (n = 47) consisted of a female student and her sister, 1% (n = 1) were made up of male students reporting on a brother, and 8% (n = 7) consisted of a male student reporting on his sister.

Participants and their siblings reported relatively frequent contact with each other (an average of 10-11 times per month).

The mean age of the student participants was 20.53 years (SD = 1.68) and the mean age of the siblings was 20.80 (SD = 1.96). The mean age difference between the student and sibling was 2.01 years (SD = .90). The sample was ethnically diverse such that 74% of the sibling pairs were Caucasian, 12% of the siblings were African American, 11% of the siblings were Latino/Latina, and 3% of the sibling pairs were identified as Other.

In terms of residential status, student participants reported most commonly that they currently reside in an apartment (48%) while the most common living situation of their siblings was with their parents (44%). The remaining participants reported other living arrangements including dormitory, with sibling, with family members or spouse, or some other living situation. Participants reported on their biological mother (94%) and their biological father (87%) predominantly. Sixty-four percent of the participants indicated that their parents were currently married to each other, 26% reported that their parents were separated/divorced and neither were married, or that one or both of their parents were remarried. The remaining 10% reported various parental marital constellations. Participants and their siblings reported relatively frequent contact with their parents. Specifically, student participants reported that they saw their mother and father on an average of 8-10 times per month (SD = 11.87 for mothers and 11.54 for fathers) and had contact with them 12-19 times per month (SD = 13.14 for mothers and 12.29 for fathers). Siblings reported seeing their parents an average of 17-20 times per month (SD = 33.92 for mothers and 34.02 for fathers) and having contact with them

between 13-18 times per month (SD = 19.25 for mothers and 17.74 for fathers). Table 1 lists the demographic information for siblings and their parents.

Table 1.
Demographic Information for Sibling and Parent Relationships

	Range	Mean	SD
Frequency of sibling contact per/month			
Student			
Sees sibling	0-31	10.23	12.07
Contact with sibling	31	11.42	10.51
Sibling			
Sees sibling	0-100	10.71	15.45
Contact with sibling	0-35	11.14	11.13
Frequency of contact with parents per/month			
Student			
Sees mother	0-31	10.57	11.87
Contact with mother	0-60	19.39	13.14
Sees father	0-31	8.75	11.54
Contact with father	0-60	12.65	12.29
Sibling			
Sees mother	0-300	19.96	33.92
Contact with mother	0-120	17.84	19.25
Sees father	0-300	17.12	34.02
Contact with father	0-100	12.93	17.74
		N	%
Gender Constellation of participant and sibling			
Female-male		32	37
Female-female		47	54
Male-male		1	1
Male-female		7	8
Genetic Relationship to Sibling			
Biological		80	93
Adopted		1	1
Half		2	2
Step		3	4

Table 1 (Continued).
Demographic Information for Sibling and Parent Relationships

	N	%
Current Parental Marital Status		
Still married to each other	56	64
Separated/divorced not remarried	10	12
Divorced only mother remarried	8	8
Divorced only father remarried	5	6
Divorced both remarried	3	3
Mother passed away, father single	1	1
Father passed away, mother single	2	2
Father passed away, mother remarried	2	2
Other	1	1

Participants Without Sibling Data. Analyses were completed to compare participants whose sibling did or did not complete the measures. Of the student participants whose siblings did not participate in the study, a total of 192 (84%) were female and 36 (16%) were male. The specific gender constellation was as follows: 101 (44%) female student/female sibling, 91 (40%) female student/male sibling, 17 (8%) male student/female sibling, and 19 (8%) male student/male sibling.

To determine whether there were significant differences between student participants whose siblings did versus did not participate in the study with respect to students' age, reports of parenting behaviors, amount of contact with sibling and parents, temperamental style, sibling relationship, and psychological symptoms, several t-tests were conducted. The means and results of the t-tests can be seen in Table 2. Ratings of the amount of differential maternal control were significantly greater for students whose siblings did not participate ($\underline{M}$ = .43) than for those whose sibling did participate in the study ($\underline{M}$ = .30), $\underline{df}$ = 308, $\underline{t}$ = -2.16, $\underline{p}$ < .05). In addition, significantly higher levels of

anger were reported for students whose siblings did not participate (M = 2.64) than for those whose siblings did (M = 2.40), df = 311, t = -2.08, p < .05). There were no significant differences between students whose siblings did and did not participate in the study on the other 21 variables that were explored.

A chi-square analysis was also conducted to determine whether there was a significant difference in response rate for participants reporting on same versus opposite-sexed siblings. The findings revealed no significant relationship between response rate and siblings being the same (75%) versus opposite gender (69%), χ^2 (1, N=228) = 1.01, p = .32).

Table 2.
Means, and Standard Deviations of Students with Participating and Non-Participating Siblings

	Students with Participating Siblings (n = 87)		Students with Non-Participating Siblings (n = 228)		
	Mean	SD	Mean	SD	t
Age	20.53	1.68	20.43	1.92	—
BSI	.74	.59	.77	.61	—
TSA					
Sociability	3.43	.91	3.46	.85	—
Activity	3.01	.85	3.09	.84	—
Emotionality	2.21	.90	2.34	.99	—
Anger	2.40	.85	2.64	.91	-2.08*
LSRS					
Total Adult	90.30	19.10	88.37	20.34	—
Total Child	88. 96	20.08	85.68	19.25	—
LSRS Total	178.52	32.20	173.64	34.43	—
SIDE-R					
Amt of MA	.38	.51	.44	.51	—
Amt of MC	.30	.44	.43	.50	-2.17*
Amt of PA	.44	.45	.54	.63	—
Amt of PC	.33	.57	.40	.52	—

Table 2 (Continued).
Means, and Standard Deviations of Students with Participating and Non-Participating Siblings

	Students with Participating Siblings (n = 87)		Students with Non-Participating Siblings (n = 228)		
	Mean	SD	Mean	SD	t
SIDE-R					
Dir of MA	.03	.64	.09	.67	—
Dir of MC	.06	.53	.11	.65	—
Dir of PA	.10	.62	-.04	.82	—
Dir of PC	.02	.66	-.05	.66	—
Freq. of sibling contact p/mo.					
Sees	10.23	12.15	10.01	12.01	—
Contact	11.53	10.52	12.71	11.95	—
Freq. of contact w/parents p/mo.					
Sees mom	10.52	11.93	10.30	11.66	—
Contact mom	18.92	12.46	18.28	11.77	—
Sees dad	8.79	11.60	7.45	10.78	—
Contact dad	12.56	12.33	11.59	10.83	—

Note. Dashes (—) indicate a nonsignificant t-test comparison ($p < .05$).
* - $p < .048$.
BSI = Brief Symptom Inventory; TSA = Temperament Survey for Adults; LSRS = Lifespan sibling Relationship Scale; SIDE-R = The Sibling Inventory of Differential Experience-Revised (Amt of MA= Amount of Maternal Affection; Amt of MC= Amount of Maternal Control; Amt of PA= Amount of Paternal Affection; Amt of PC= Amount of Paternal Control; Dir of MA= Direction of Maternal Affection; Dir of MC= Direction of Maternal Control; Dir of PA= Direction of Paternal Affection; Dir of PC= Direction of Paternal Control).

Given the number of t-test analyses that were conducted, modified Bonferroni tests were computed to reduce the alpha level required for statistical significance (Keppel, 1991). The modified Bonferroni method is calculated by multiplying alpha (.05) by the number of planned comparisons minus 1 and dividing this number by the number of planned comparisons.

The significant differences between students whose siblings did or did not participate with respect to reported levels of anger and amount of differential maternal control remained significant after modified Bonferonni correction ($p < .048$). These results suggest that there were few differences between students with participating and non-participating siblings on a variety of parenting, relationship, and personal characteristics. Based on these findings, the student sample appears to be representative of college students at the university. Therefore, given the minimal differences between student participants whose sibling did versus did not participate in the study, the final sample of 87 sibling pairs appears to be representative for an adequate (although somewhat limited) test of the hypotheses.

Measures

Demographics. A demographics questionnaire (Appendix A) was included and inquired about students' current living situation (e.g., currently residing with chosen sibling, at home, in a dorm, apartment, etc.), age, gender, race, age of chosen sibling, gender of sibling, biological relationship to sibling (i.e., 'full', 'half', 'step', or 'adopted'), and frequency of contact between siblings and parents and siblings. The participants were asked to base their responses to items on all questionnaires related to siblings on one sibling whose age was within three years of their own. That sibling was sent a packet of information including a demographics questionnaire (Appendix B) and the measures. The sibling was asked to respond to all questions keeping in mind the sibling identified as having participated in the study as well as the same set of parents as the student.

Psychological functioning. Students and sibling were asked to complete the Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982; Appendix C) which is a 53-item self-report questionnaire designed to measure current levels of psychological distress. The respondent is asked to rate each item on a scale from 0 (*not at all*) to 4 (*extremely*) regarding how much they are distressed by a particular problem. This scale can be scored and profiled in terms of nine primary symptom dimensions: 1) Somatization, 2) Obsessive-Compulsive, 3) Interpersonal Sensitivity, 4) Depression, 5) Anxiety, 6) Hostility, 7) Phobic Anxiety, 8) Paranoid Ideation, and 9) Psychoticism. The BSI also consists of three global indices which include: 1) Global Severity Index (GSI), 2) Positive Symptom Distress Index (PSDI), and 3) Positive Symptom Total (PST). The questionnaire has been shown to be internally consistent (alphas range from .71 on the Psychoticism dimension to .85 on Depression) and reliable over time (test-retest at two weeks ranged from .68 on Somatization to .91 for Phobic Anxiety). A reliability coefficient of .90 on the Global Severity Index indicates that this instrument is stable across time. For the purpose of this study, only the Global Severity Index was interpreted in order to obtain an overall assessment of psychological and physical well-being. In the current sample, alphas for the Global Severity Index for students and their siblings were .96. Higher numbers on the measure reflect greater psychological distress.

Sibling relationship. Students and siblings were asked to complete the Lifespan Sibling Relationship Scale (LSRS; Riggio, 2000; Appendix D) which is a 48-item self-report instrument that measures three dimensions of the sibling relationship in childhood and adulthood: frequency and positivity of behavior toward the sibling, affect toward the sibling, and beliefs about the sibling and the sibling relationship. Respondents are asked

to complete the LSRS with only one sibling relationship in mind and are asked to rate each item on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The LSRS has demonstrated internal reliability (alphas range from .84 to .89, .87 to .91, and .96 for the Child, Adult and total scales, respectively) and stability (test-retest at the time of norming and at one month yielded correlations greater than .80 and .91 for the total scale) in responses over time. In the current sample, alphas for the Child, Adult, and total scales for students were .83 to .92, .88 to .90, and .96, respectively and ..87 to .88, .83 to .88, and .96, respectively for siblings. Furthermore, the LSRS has been shown to have convergent and discriminant validity with measures of personality, social support, psychological well-being, social desirability, and an alternative measure of adult sibling relationship quality. Higher scores on the LSRS reflect more positivity in the sibling relationship.

Temperament. Students and siblings were asked to complete the Temperament Survey for Adults (TSA; Buss & Plomin, 1984; Appendix E) questionnaire which is a 20-item self-report measure that yields three dimensions of temperament: emotionality, defined as the tendency to become upset easily and intensely, activity level, and sociability, the tendency to prefer the presence of others to being alone (Buss & Plomin, 1984). Respondents are asked to rate the items on a scale from 1 (*not characteristic or typical of yourself)* to 5 (*very characteristic or typical of yourself*). The adult version of the EAS, which was used in the present study, yields a further three subdivisions of the emotionality subscale: anger, fear, and emotional distress. Only the anger and emotional distress (emotionality) scales were included for use in the current study given that these characteristics have consistently been found to be related to the quality of the parent-

child and sibling relationship whereas fearfulness has not been studied relative to such relationships. On average, test-retest reliability for the adult EAS scale was .82 for a two week interval (Buss & Plomin, 1984). In the current sample, alphas for the Sociability, Activity, Emotionality, and Anger scales for students were .71, .71, .79 and .62, respectively, and .65, .61, .74, and .57, respectively for siblings. Higher numbers on each scale reflect higher levels of that temperamental characteristic.

Parental behavior. Students and siblings were asked to complete the Sibling Inventory of Differential Experience-Revised (SIDE-R; Barrett-Singer & Weinstein, 2000; Appendix F - G) which is an adaptation of the SIDE (Daniels & Plomin, 1985) designed to assess siblings' differential experience with regard to perceived parental affection and control. The SIDE requires that the respondents make direct comparisons between the way his/her parents treated them and one sibling on the same questionnaire, whereas the SIDE-R was designed as a quantitative measure of the perceptions of direct parental treatment of self and of the sibling on independent scales. The SIDE assesses four domains: non-mutuality of sibling interaction, differential parental treatment, differential peer characteristics, and events specific to each sibling. Like the SIDE, the SIDE-R also assesses differential parental treatment in the domains of maternal and paternal Differential Control and Differential Affection. Unlike the SIDE, the SIDE-R only measures parental behaviors across 8 subscales: maternal affection toward participant (MA.self), maternal control toward participant (MA.self), maternal affection toward sibling (MA.sib), maternal control toward sibling (MC.sib), paternal affection toward participant (PA.self), paternal control toward participant (PA.self), paternal affection toward sibling (PA.sib), and paternal control toward sibling (PC.sib).

The Differential Control and Differential Affection scales of this instrument were used to measure the respondents' perceptions of the magnitude of maternal and paternal differential treatment directed toward themselves and that experienced by their sibling while growing up. Respondents are asked to report on their and their sibling's interactions with each parent on independent scales. Respondents rate each item on a scale from 1 (*Almost Never*) to 4 (*Almost Always*) relative to how their parents treated them on one scale and treated their sibling on a separate scale in the domains of control and affection. The Control scale includes four items assessing parental strictness, punishment, blame, and discipline. The Affection scale consists of five items that measure parental pride, interest, favoritism, enjoyment, and sensitivity. The instructions are worded so that responses for individuals whose parent(s) are deceased or are divorced are based on the mother and father with whom they lived for the longest period of time.

For each respondent, a relative differential treatment score is obtained by subtracting the score for perceived treatment of sibling from the score for perceived treatment of self. Relative differential treatment measures convey the perceived *direction and magnitude* of differential parental treatment. Each relative response can be recoded on an absolute scale such that scores are obtained from the mathematical absolute value of each relative differential treatment item score. Absolute differential treatment measures convey the perceived overall *amount* of differential parental treatment, *regardless of direction*. Therefore, an absolute differential treatment item score of "0" means that there was no perceived parental differential treatment while an absolute differential treatment score of "3" means that there were high levels of perceived parental differential treatment.

To examine participants' perceptions of their direct interactions with their parents without regard for the frequency of their parents' interactions with their sibling, the maternal affection toward participant (MA.self), paternal affection toward participant (PA.self), maternal control toward participant (MC.self), and paternal control toward participant (PC.self) can be used. For each subscale, the individual subscale item scores are added together and divided by the number of items for that subscale.

Test-retest reliability at two-weeks for the affection and control subscales of the SIDE for each parent range from .77 to .93, with a mean of .84 (Daniels & Plomin, 1985). The alpha coefficients for the scales of the SIDE-R are .79 for differential affection and .76 for differential control (Barrett-Singer & Weinstein, 2000). The alpha coefficients for the current sample range from .74 to .79 for maternal affection, .71 to .83 for maternal control, .77 to .84 for paternal affection, and .76 to .88 for paternal control.

Procedure

The procedures outlined by the Psychology Department and Institutional Review Board (IRB) at the University of South Florida were followed regarding the use of the subject pool. Participants recruited from the university were provided with extra credit points as an incentive to encourage participation in the study. Willing students completed an address label for questionnaires that were sent to their sibling. As an incentive to participate, the students' siblings were informed that their names would be entered into a drawing allowing them to have the opportunity to receive one of two cash prizes of $100 each or one of a selection of small gift certificates to local merchants.

After providing consent to participate in the study (Appendix H), each student participant completed the battery of questionnaires in a small group. The questionnaires

were organized in such a manner to avoid sensitizing the participants to the goals of the research: the BSI, TSA, LSRS, and the SIDE-R. The measure of psychological and physical symptoms (the BSI) was distributed first in order to avoid mood induction based on recalled events. The total amount of time required to complete the questionnaires was approximately 30-45 minutes.

Students were asked to fill in their siblings' address on a label that was stamped with an identification number for matching student and sibling measures. The labels were attached directly to the packet of sibling questionnaires and mailed to the siblings. Siblings were provided with a business-reply return envelope addressed to the researcher. At the end of the session, each student received a receipt for extra credit and an Educational Debriefing form (Appendix I). The packet that was mailed to the siblings consisted of a description of the study (Appendix J), a consent form (Appendix K), the measures, and information regarding the opportunity to obtain one of two cash prizes of $100 or one of a selection of small gift certificates to local merchants when their name was entered into a drawing as a function of their participation. The siblings were also provided with instructions regarding the order in which the questionnaires should be completed and were asked to respond to all questionnaires, keeping in mind the sibling who was identified on the instructions and demographics forms as having participated in the study. Siblings were also instructed to respond to the parent measures, keeping in mind the same set of parents as the student.

Results

Descriptive Statistics

Table 3 lists the means, standard deviations, and ranges for each scale. The mean BSI, TSA, LSRS, and SIDE-R scores are consistent with findings in other samples (Barrett-Singer & Weinstein, 2000; Buss & Plomin, 1984; Derogatis & Spencer, 1982; Riggio, 2000). Specifically, participants reported little psychological/emotional distress, were relatively even-tempered, had generally positive perceptions of the sibling relationship, and reported relatively little differential parental treatment.

Table 3.
Means, Standard Deviations, and Ranges of Measures

Scale		Mean	SD	Range
BSI				
	Females	.73	.61	.02-3.58
	Males	.65	.51	.04-2.64
TSA				
	Females			
	Sociability	3.42	.92	.75-5
	Activity	2.87	.77	1-4.75
	Emotionality	2.25	.93	1-4.75
	Anger	2.45	.90	1-5
	Males			
	Sociability	3.27	.87	1.75-5
	Activity	2.66	.85	1-4.50
	Emotionality	1.79	.70	1-3.50
	Anger	2.34	.78	1-4.50
LSRS				
	Females			
	Total Adult	92.04	18.35	35-120
	Total Child	91.02	19.70	42-120
	LSRS Total	183.05	32.14	109-238

Table 3 (Continued).
Means, Standard Deviations, And Ranges of Measures

Scale	Mean	S.D.	Range
LSRS			
Males			
Total Adult	80.24	15.99	49-120
Total Child	78.85	17.11	23-118
LSRS Total	159.10	22.13	90-204
SIDE-R			
Females			
Maternal			
Direct Affection	3.12	.64	1.00-4.00
Direct Control	2.42	.70	1.00-4.00
Affection to Sibling	3.12	.61	1.00-4.00
Control to Sibling	2.38	.76	1.00-4.00
Amount of DfA	.35	.45	.00-2.00
Amount of DfC	.32	.43	.00-2.00
Direction of DfA	.002	.57	-2.00-2.00
Direction of DfC	.04	.53	-2.00-1.75
Paternal			
Direct Affection	2.90	.77	1.00-4.00
Direct Control	2.29	.84	1.00-4.00
Affection to Sibling	2.84	.74	1.00-4.00
Control to Sibling	2.22	.81	1.00-4.00
Amount of DfA	.39	.42	.00-2.00
Amount of DfC	.35	.54	.00-2.75
Direction of DfA	.06	.58	-1.40-2.00
Direction of DfC	.07	.64	-2.75-2.75
Males			
Maternal			
Direct Affection	3.01	.65	1.40-4.00
Direct Control	2.38	.79	1.00-4.00
Affection to Sibling	3.15	.56	1.80-4.00
Control to Sibling	2.29	.63	1.00-4.00
Amount of DfA	.49	.66	.00-2.60
Amount of DfC	.46	.46	.00-2.00
Direction of DfA	-.14	.81	-2.60-1.20
Direction of DfC	.09	.65	-2.00-1.50
Paternal			
Direct Affection	2.73	.63	1.00-4.00
Direct Control	2.26	.75	1.00-4.00

Table 3 (Continued).
Means, Standard Deviations, And Ranges of Measures

Scale	Mean	S.D.	Range
SIDE-R			
Males			
Paternal			
Affection to Sibling	2.73	.79	1.00-4.00
Control to Sibling	2.19	.80	1.00-3.75
Amount of DfA	.46	.44	.00-2.00
Amount of DfC	.36	.48	.00-1.75
Direction of DfA	-.01	.64	-1.20-1.60
Direction of DfC	.07	.60	-1.75-1.75

Note. BSI = Brief Symptom Inventory; TSA = Temperament Survey for Adults; LSRS = Lifespan sibling Relationship Scale; SIDE-R = the Sibling Inventory of Differential Experience-Revised (DfA = Differential Affection; DfC = Differential Control).

Data Analytic Strategies

Analyses were conducted using the Actor-Partner Interdependence Model (APIM; Kashy & Kenny, 1999). This model takes into account the interdependence (i.e., nonindependence) of observations between individuals involved in dyadic relationships (e.g., couples, siblings, roommates) wherein each member of the dyad may directly or indirectly influence the others' cognitions, emotions, and behaviors (Campbell & Kashy, 2002; Cook & Kenny, 2005; Cook & Snyder, 2005; Kenny & Cook, 1999; Kenny, Kashy, & Cook, 2006) as a result of existing in the same context and being exposed to similar influences (Kenny, 1996). Due to this interdependence, members of the dyad may score similarly on measures of personal or relational characteristics (Kenny, 1996; Kenny & Cook, 1999). As a result of this similarity, the responses from partners are often correlated, making it difficult, to determine whether the variance in the outcome variables is related to the specified set of predictors in the study or due to factors associated with dyad membership. Therefore, it has been posited that the analysis of

dyadic data should reflect this interpersonal system as opposed to treating the data as if they were obtained from a set of individuals whose scores are independent (Campbell & Kashy, 2002; Cook & Kenny, 2005; Cook & Synder, 2005; Kenny & Cook, 1999; Kenny & Kashy, 1999). When interdependence is reflected in dyadic data and the individual is treated as the unit of analysis, a bias in the significance testing can result in an increase in Type I or Type II errors (Kashy & Synder, 1995; Kenny, 1995).

When the issue of nonindependence is ignored, research involving dyads has often involved either separately correlating the outcome variable with the predictor scores of each person in the dyad, assuming that each person is affected only by his or her own score on the predictor variable, or conducting separate analyses on the basis of some distinguishing feature (e.g., gender; Kenny & Cook, 1999; Kenny, Kashy, & Cook, 2006). Researchers may also adopt a partner-oriented approach wherein the assumption is that the person is affected by his or her partner's score but is not affected by his or her own score. These methods, however, fail to account for the bi-directional influences that are typical in interpersonal relationships. Consequently, the observed effects may be overestimated due to failure to control for actor or partner effects with either approach. Because dyad members' scores on the predictor variables may be correlated, such controls are necessary. Therefore, given that the sibling dyad represents an interpersonal system, it is necessary for each person to be considered simultaneously (Kenny & Cook, 1999) in order to illustrate the interpersonal nature of such relationships. For example, while an individual's temperamental style may be related to his or her own perceptions of their relationship with the sibling, the sibling's temperamental style may also be related to that individual's perceptions of the relationship.

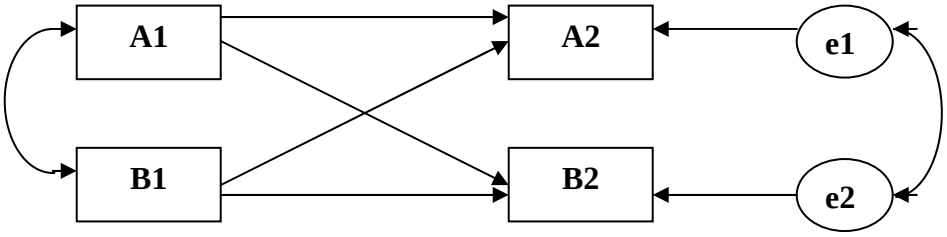
In recent years, multilevel modeling (i.e., hierarchical linear modeling) has become a popular method for analyzing dyadic data because it takes into account the interdependence of observations between partners. In multilevel modeling, the lower level is the individual and the upper level represents the dyad. The variance associated with each level is estimated. Kenny and colleagues (Kashy & Kenny, 2000; Kenny & Cook, 1999) proposed the Actor-Partner Interdependence Model (APIM), which offers several advantages as compared to other data analytic strategies for dyadic data. Specifically, the APIM is a type of multilevel model that addresses the fact that the level of analysis in research involving dyads should represent an interpersonal system such that the unit of analysis is the dyad as opposed to the individual. Therefore, the APIM allows for both individual and partner effects to be examined simultaneously.

Actor-Partner Interdependence Model (APIM). In the APIM (see Figure 1), the dyad is the unit of analysis and each member of the dyad has a score on a particular independent or predictor variable, as denoted by A1 and B1 in the figure. Each member of the dyad also has a score on the dependent or outcome variable, represented by A2 and B2 in the figure. In the model, *actor effects* are defined as the direct effect an individual's independent variable has on his or her own dependent variable (A1.A2; B1.B2). For example, the effect of one sibling's temperamental style on his or her own perceptions of the sibling relationship is an actor effect.

In contrast, partner effects represent the influence that an individual's independent variable has on his or her partner's dependent variable (A1.B2; B1.A2), while controlling for actor effects. Partner effects are a source of non-independence and reflect the mutual or bi-directional influences inherent in interpersonal relationships that

affect each person's outcome (Campbell & Kashy, 2002; Cook & Kenny, 2005; Cook & Snyder, 2005; Kenny, 1996; Kenny & Cook, 1999; Kenny, Kashy, & Cook, 2006). An example is the influence that one sibling's temperamental style has on his or her sibling's perception of the sibling relationship. As previously stated, partner effects essentially reflect the amount of interdependence between members of a dyad and serve as evidence that the dyad is an interdependent system (Kenny & Cook, 1999).

Figure 1.
Actor-Partner Interdependence Model (APIM)



The correlation between the residual scores (e1. e2) in the model indicates that there is still interdependence in siblings' scores even after the effect of interpersonal influence has been controlled.

In the current study, the level of interdependence in sibling attitudes toward their relationship may be due to additional factors associated with being raised in the same family (e.g., level of communication within the family, shared values, goals and interests; Ross & Milgram, 1982). In addition, the degree of nonindependence in siblings' level of functioning may be attributed, but not limited, to other sources of variance including shared genetic background, exposure to marital conflict, abuse/neglect, parental level of functioning, and unshared experiences (e.g., accidents, illness, traumatic events, relationship with peers; Bank, et al., 1996; Barrett-Singer & Weinstein, 2000; Bearsdall

& Dunn, 1992; Boer et al., 1992; Brody et al., 1998; Clark & Phares, 2004; Daniels et al., 1985; O'Leary, 1984; Tejerina-Allen et al., 1994).

The APIM approach was used given the potential of interdependence in the current sample of sibling dyads who, as a function of being raised in the same family, are likely to influence each other's thoughts, emotions, and behaviors both directly and indirectly (Dattilio, 2005; Minuchin, 2002). Specifically, this method was utilized in order to clarify the role that each person has relative to his or her own and his or her sibling's temperamental characteristics and perceptions of differential parental treatment with regards to assessment of the sibling relationship and current level of functioning (i.e., psychological adjustment). The independent variables included perceptions of parental treatment (towards the self, amount of differential treatment, and direction of differential treatment), gender constellation of the sibling dyad, and temperamental style. The dependent variables were perceptions of direct parenting behavior toward the sibling, ratings of the sibling relationship (overall, childhood, and adulthood), and level of functioning. The APIM model was analyzed using Hierarchical Linear Modeling (HLM) in SPSS. Note that in the results presented below, the estimates for actor and partner effects are unstandardized regression coefficients which represent the slope of the regression line and are interpreted as the average amount that the dependent variable changes when the independent changes one unit and other independent variables are held constant. In other words, this coefficient reflects the incremental impact of each predictor variable while controlling for other predictors in the model. The *t* statistic assesses the significance of individual *b* coefficients, specifically testing the null hypothesis that the regression coefficient is zero.

Current Analyses. To test the hypotheses, a total of 11 models were tested based on the APIM. The first model examined each sibling's overall perceptions of the sibling relationship. The next four models assessed participants' perceptions of direct parenting behaviors (i.e., affection and control) exhibited by each parent toward the sibling.

In the sixth model, perceptions of the amount of differential parental treatment were tested against perceptions of sibling interactions during childhood. The seventh model tested perceptions of the amount of differential parental treatment and attitudes toward the sibling relationship during childhood relative to reports of current sibling interactions. The eighth model included the gender constellation of the sibling dyad and overall perceptions of the sibling relationship. In the ninth model, perceptions of the direction of differential parental treatment were tested against reported level of functioning. The last two models assessed reported temperamental style relative to participants' perceptions of sibling interactions during childhood and currently.

Interdependence. To test for the degree of interdependence in siblings' outcome scores (perceptions of direct parenting behavior toward the sibling, ratings of the sibling relationship, and psychological symptoms) and validate the use of multilevel modeling, and the APIM more specifically, intraclass correlations (ICC) were computed. The ICC estimates the proportion of variance in the outcome variable that is due to dyad membership/similarity. The ICC can also be used to test the level of agreement between dyad members' scores on the same measure. The ICCs were estimated within the APIM and were calculated by taking the ratio of the dyad covariance to the total variance. A positive ICC means positive dependence or similarity within dyads, and a negative ICC means negative dependence or dissimilarity within dyads. If the intraclass correlation

has a *p* value of .15 or less, the data are considered to be nonindependent (Cook, personal communication, 2006) and the assumption of independence of observations has been violated. In this instance, individuals' scores within the same dyad should not be considered independent from each other in terms of analyzing the data. Kenny (2004) suggests that a more liberal *p* value of .25 can be used.

Kenny and Cook (1999) recommend that when observations are determined to be independent, however, it is still important to include dyad level effects in the analysis, even when the person is the unit of analysis, in order to avoid bias in the *p* values. Kenny, Kashy, and Bolger (1998) have demonstrated that the loss of power that occurs when the dyad is the unit of analysis is often trivial. According to Kenny and Cook (1999), when conducting dyadic research, it is suggested that nonindependence should be assumed even if it cannot be detected statistically.

Tests of Hypotheses

Perceptions of the Overall Sibling Relationship and Perceptions of Direct Parental Treatment Toward the Self versus the Sibling- Hypothesis 1. In order to test the hypothesis that siblings' overall perceptions of their relationship would be related an intraclass correlation between their total scores on the LSRS was examined. As expected, siblings' ratings of the overall sibling relationship were significantly related, ICC = .535, $p < .001$.

To explore the relationship between each participant's perceptions of parental treatment that occurred during childhood (Hypothesis 1b), partner effects were tested in four models. A partner effect in this model would represent a relation between an

individual's perceptions of how their sibling was treated by the parents and his or her sibling's ratings of their own interactions with the parents.

The variables included in these analyses were each siblings' scores based on ratings of direct parental Affection and Control toward the self and sibling: MA.self, MC.self, PA.self, and PC.self, MA.sibling, MC.sibling, PA.sibling, and PC.sibling subscales of the SIDE-R (for each sibling). For the purpose of these analyses, parental behavior toward the self was denoted as the predictor variable and parental behavior toward the sibling was defined as the outcome variable. Defining of the variables was arbitrary. As expected, individuals whose sibling rated themselves as receiving high/low levels of parental affection/control perceived that the sibling experienced high/low levels of parental affection/control. (MA.self - $b = .286$, $t(157) = 4.78$, $p < .001$; MC.self - ($b = .155$, $t(148) = 2.58$, $p < .05$; PA.self - $b = .244$, $t(150) = 4.24$, $p < .001$; PC.self - $b = .118$, $t(164) = 2.14$, $p < .05$).

Perceptions of the Childhood and Adult Sibling Relationship-Hypothesis 2. To explore the relationship between each participant's perceptions of his or her interactions with the sibling during childhood relative to how they view their current relationship, actor effects were tested while controlling for partner effects. The variables included in this model were each sibling's scores based on the Total Child and the Total Adult scale scores on the LSRS. For the purpose of this analysis the variables were defined such that ratings of the childhood sibling relationship were denoted as the predictor variable and perceptions of the adult sibling relationship were defined as the outcome variable.

Accordingly, an intraclass correlation was calculated to determine the proportion of variation in participants' ratings of the relationship with their sibling during adulthood

that was due to the sibling dyad to which one belongs. The positive intraclass correlation indicated that 43% of the variation in ratings of the adult sibling relationship was due to the particular sibling dyad to which an individual belongs, ICC = .428, $p < .01$.

Although the primary interest was actor effects when examining the relationship between these variables, it was necessary to control for the partner effect in the analysis to avoid overestimation of the actor effect. A significant actor effect for siblings' ratings of the childhood sibling relationship revealed that, in support of Hypothesis 2, participants' reports of positivity in the relationship during childhood were associated with positivity in the adult sibling relationship, $b = .343$, $t(156) = 3.90$, $p < .001$. The results are listed in the last row of Table 4.

Perceptions of the Childhood and Young Adult Sibling Relationship and the Amount of Disparity in Parental Treatment- Hypothesis 3. To test the degree of nonindependence in siblings' ratings of their current relationship as well as in their interactions during childhood, intraclass correlations were computed. As previously mentioned above, the positive intraclass correlation for siblings' perceptions of their relationship during childhood indicated that 43% of the variation in ratings of the childhood sibling relationship was due to the particular sibling dyad to which an individual belongs [ICC = .428, $p < .01$]. In addition**,** the significant intraclass correlation for siblings' ratings of their current relationship revealed that 60% of the variation in scores for perceptions of the adult sibling relationship were accounted for by sibling dyad [ICC = .600, $p < .001$].

Two models based on the APIM were used to examine the relationship between siblings' perceptions of the amount of disparity in parental treatment and the quality of

the childhood and current sibling relationship. In the first model, absolute levels of differential maternal and paternal Control and Affection were entered as predictors and ratings of the childhood sibling relationship were defined as the outcome variable. For the second model, the same predictor variables were used while ratings of the current sibling relationship were defined as the outcome variable. Absolute differential treatment scores were created by computing the absolute values from the relative differential treatment score, which was derived by subtracting the score for perceived treatment of sibling from the score for perceived treatment of self. Table 4 lists the significant results.

Table 4. Significant Predictors of Perceptions of the Sibling Relationship

	Childhood		Adult	
Effect	b	t	b	t
Amount of MA				
Actor	-5.91	-1.89	-7.88	-2.75**
Partner	-1.95	-.62	.50	.17
Gender x MA	-6.22	-3.45**		
Amount of MC				
Actor	-9.46	-2.63*	-4.15	-1.27
Partner	-1.59	-.46	-6.63	-2.11*
Partner x Age	-6.98	-2.08*		
Amount of PA				
Actor	-6.05	-1.54	-5.96	-1.66
Partner	-1.43	-.36	-9.10	-2.53*
Amount of PC				
Actor	.62	.19	2.82	.98
Partner	4.43	1.38	2.64	.92
Perceptions of the Childhood Sibling Relationship				
Actor			.34	3.90***

MA = Maternal Affection; MC = Maternal Control; PA = Paternal Affection; PC = Paternal Control.

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

Exploratory analyses were conducted to determine whether gender, gender constellation of the sibling dyad (i.e., mixed- versus same-gender), and birth order moderated the relationship between perceptions of differential parental treatment and ratings of childhood and current sibling interactions. Given that there was only one pair of brothers in the sample, data from this dyad were not included when examining effects due to gender constellation of the sibling dyad.

In the first model, each sibling's perceptions of the amount of differential maternal affection, amount of differential maternal control, amount of differential paternal affection, and amount of differential paternal control based on the Affection and Control subscales of the SIDE-R were examined as predictors relative to perceptions of the childhood sibling relationship (Total Child scale score based on the LSRS), which was the outcome variable. Consistent with Hypothesis 3, a significant actor effect for maternal control (b = -9.46, $t(142)$ = - 2.63, $p < .05$) revealed that the more differentially controlling mothers were perceived to be toward siblings, the less positively the participants rated their interactions with their sibling during childhood. It is noteworthy that the actor effect for maternal affection approached significance (b = -5.91, $t(135)$ = -1.89, p = .06). Exploratory analyses revealed that the association between differential maternal control and perceptions of the sibling relationship was moderated by gender. The results revealed a stronger effect for females in comparison to males. Specifically, this finding indicated that females whose mothers were perceived to be differentially affectionate toward siblings reported less positive interactions with their sibling during childhood (b = -6.22, $t(124)$ = - 3.45, $p < .01$).

Contrary to expectations, actor effects for the amount of affection and control displayed by fathers were not found to be related significantly to perceptions of the sibling relationship during childhood (Paternal Affection – b = -6.05, t(137) = -1.54, p = .13; Paternal Control – b = .620, t(152) = .19, p = .85).

Partner effects. Partner effects for the amount of differential parental control and affection were not found to be related significantly to perceptions of the sibling relationship during childhood (Maternal Affection - b = -1.95, t(135) = -.62, p = .53; Maternal Control - b = -1.59, t(153) = -.46, p = .65 ; Paternal Affection - b = -1.43, t(137) = -.36, p = .72; Paternal Control - b = 4.43, t(152) = 1.38, p = .17). These findings suggest that one sibling's perceptions of the childhood sibling relationship were not related significantly to the other sibling's perceptions of the amount of differential affection and control exhibited by either parent.

Exploratory analyses revealed that the relationship between reported amount of maternal control and perceptions of the sibling relationship during childhood was moderated by age (b = -6.98, t(136) = -2.08, p < .05). Specifically, this finding indicated that, for younger in contrast with older siblings, having a sibling who perceived that the mother was differentially controlling was associated with reports of less positivity in sibling interactions during childhood.

The exploratory analyses did not reveal significant moderating effects of the gender constellation of the sibling dyad for the relationship between reported amount differential parenting behaviors and perceptions of the sibling relationship during childhood.

In the second model, the same predictor variables were examined for their effects on perceptions of the adult sibling relationship (Total Adult scale score based on the LSRS). A significant actor effect for the amount of differential maternal affection revealed that, as expected, the more differentially affectionate mothers were perceived to be toward siblings, the less positively the participants rated their current interactions with their sibling (b = -7.88, t(118) = -2.75, $p < .01$). Contrary to what was expected, significant actor effects were not found for the amount of differential maternal and paternal control or for differential paternal affection (Maternal Control – b = -4.14, t(126) = -.31, p = -1.27; Paternal Control – b = 2.81, t(135) = .98, p = .33; Paternal Affection – b = -5.96, t(120) = -1.66, p =.10). These findings indicated that perceptions of the amount of differential affection and control from fathers and differential control displayed by mothers were not related significantly to perceptions of the adult sibling relationship.

Partner effects. The results revealed negative partner effects for the amount of differential maternal control (b = -6.63, t(126) = -2.11, $p < .05$) and amount of differential paternal affection (b = -9.10, t(120) = -2.53, $p < .05$). That is, having a sibling who perceived that their mother was more differentially controlling toward the siblings was associated with less positivity in ratings of the current relationship with the sibling. In addition, participants whose sibling reported that their father exhibited greater discrepancies in affection toward the siblings also reported less positivity in sibling interactions during adulthood. Significant partner effects were not found for degree of differential maternal affection and paternal control, indicating that one sibling's perceptions of these parenting behaviors were not related significantly to the other

sibling's perceptions of the adult sibling relationship (Maternal Affection - $b = .50$, $t(118) = .17$, $p = .86$; Paternal Control - $b = 2.64$, $t(135) = .92$, $p = .36$).

Exploratory analyses did not reveal any significant moderating effects of gender, gender constellation of the sibling dyad, or age (i.e., older versus younger sibling) on the relationship between reported amount differential parenting behaviors and perceptions of the current sibling relationship. Overall, there was mixed support for Hypothesis 3.

Gender Constellation of the Sibling Dyad and Overall Perceptions of the Sibling Relationship- Hypothesis 4. The hypothesis that sibling dyads consisting of at least one sister would report more positive sibling relations than would all male sibling dyads could not be tested given that there was only one pair of brothers in the sample. The results revealed, however, positive actor and partner effects for gender indicating that females and individuals reporting on a sister rated overall sibling interactions more positively than did males and individuals reporting on a brother (actor gender - $b = 13.97$, $t(124) = 3.48$, $p < .01$; partner gender - $b = 9.21$, $t(124) = 2.22$, $p < .05$). The actor-partner interaction comparing same- versus opposite-gender sibling pairs revealed no significant differences in ratings of the overall sibling relationship for sisters and mixed gender sibling dyads ($b = .47$, $t(125) = .12$, $p = .90$).

Perceptions of Relative Differential Parental Treatment and Psychological Symptoms - Hypothesis 5. The intraclass correlation of .157 ($p = .07$) indicates that approximately 16% of the variance in reported psychological symptoms was shared between siblings. This correlation is similar to results of other studies examining differential parenting behaviors and adjustment (Buss & Plomin, 1984; Daniels et al., 1985).

Actor and partner effects for siblings' perceptions of the direction of differential treatment were examined with respect to reported level of psychological functioning. A relative differential parental treatment score was derived by subtracting the score for the participants' ratings of each parents' behavior toward their sibling from the score based on how they rated each parents' behavior toward themselves for Control and Affection. The predictors for this model included: direction of differential maternal affection, direction of differential maternal control, direction of differential paternal affection, and direction of differential paternal control based on the Affection and Control subscales of the SIDE-R. The outcome variable was the Global Severity Index (GSI) score based on the BSI. The results are listed in Table 5.

Table 5. Perceptions of Relative Differential Parental Treatment and Level of Psychological Functioning

Effect	b	t
Direction of MA		
Actor	.08	1.02
Partner	.03	.36
Direction of MC		
Actor	-.10	-1.12
Partner	-.16	-1.83
Direction of PA		
Actor	-.04	-.45
Partner	-.04	.44
Direction of PC		
Actor	.10	1.33
Partner	.17	2.22*

MA = Maternal Affection; MC = Maternal Control; PA = Paternal Affection; PC = Paternal Control.

*p < .05

Actor effects. Contrary to what was expected, significant actor effects were not found for relative maternal or paternal affection and control (Maternal Affection – b =.08, $t(132) = 1.02$, p =.31; Maternal Control - b = -.10, $t(139) = -1.12$, p =.26; Paternal Affection - b = -.04, $t(144) = -.45$, $p = .66$; Paternal Control - b = .10, $t(164) = 1.33$, p = .19).

Partner effects. The results revealed a positive partner effect for direction of differential paternal control. Interestingly, participants whose sibling perceived being relatively less controlled by their father reported fewer psychological symptoms (b = .17, t (164) = 2.22, $p < .05$). Significant partner effects were not found for direction of maternal affection and control or for direction of paternal affection, indicating that one sibling's perceptions of these parenting behaviors were not related significantly to the other sibling's reported level of functioning (Maternal Affection – b =.03, $t(132) = .08$, p = .72; Maternal Control - b = -.16, $t(139) = -1.82$, $p = .07$; Paternal Affection - b = .04, $t(144) = .44$, $p = .66$).

Exploratory analyses did not reveal any significant moderating effects of gender, gender constellation of the sibling dyad, or age on the relationship between reported direction of differential parental behaviors and level of functioning.

Temperament and Perceptions of the Childhood and Adult Sibling Relationship - Hypothesis 6. Intraclass correlations were calculated to determine the proportion of variance in perceptions of the sibling relationship during childhood and adulthood that was due to the sibling dyad to which participants belonged. The findings indicated that 43% of the variation in ratings of the childhood sibling relationship and 60% of the variation in scores for perceptions of the adult sibling relationship was due to the

particular sibling dyad to which an individual belongs [ICC = .428, $p < .01$; ICC = .600, $p < .001$].

Two models were tested to examine actor and partner effects for temperamental style in relation to siblings' attitudes toward the childhood and adult sibling relationship. In the first model, reported levels of sociability, activity, emotionality, and anger were entered as predictors and ratings of the childhood sibling relationship were defined as the outcome variable. For the second model, the same predictor variables were used while ratings of the current sibling relationship were defined as the outcome variable. The results are listed in Table 6.

Table 6. Temperamental Style and Perceptions of the Sibling Relationship

	Childhood		Adult	
Effect	b	t	b	t
Sociability				
Actor	5.37	3.34***	6.50	2.14***
Partner	.35	.21	2.19	1.51
Activity				
Actor	1.97	.97	2.19	.99
Partner	-2.21	-1.09	.63	.35
Emotionality				
Actor	-1.16	-.59	-1.69	-.97
Partner	2.39	1.21	-1.06	-.60
Anger				
Actor	-2.41	-1.22	-1.02	-.58
Partner	-2.25	1.13	-2.10	-1.20

MA = Maternal Affection; MC = Maternal Control; PA = Paternal Affection; PC = Paternal Control.

* p < .05; ** p < .01; *** p < .001

The model examining the effects of reported levels of sociability, activity, emotionality, and anger (subscale scores based on the TSA) on perceptions of the

childhood sibling relationship (Total Child scale score based on the LSRS), offered partial support for Hypothesis 6. Specifically, a significant actor effect for sociability indicated that participants who rated themselves as sociable perceived higher levels of positivity in the childhood sibling relationship than did individuals who rated themselves as less sociable (b = 5.37, t (153) = 3.34, $p < .01$). Contrary to what was expected, actor effects for individuals' reported levels of activity (b = 1.97, t (151) = .97, p = .33), emotionality (b = -1.16, t (141) = -.59, p = .56) and anger (b = -2.41, t (143) = -1.22, p = .23) were not related significantly to participants' perceptions of the childhood sibling relationship.

Partner effects. Significant partner effects were not found for sociability (b =.35, t (153) = .21, p = .83), activity (b = -2.21, t (152) = -1.09, p = .28), emotionality (b = 2.39, t (141) = 1.21, p = .23), and anger (b = -2.25, t (143) = -1.13, p = .26), suggesting that one sibling's reported levels of these temperamental characteristics were not related to the other sibling's perceptions of the childhood sibling relationship.

For the model testing the degree to which participants' temperamental characteristics predicted perceptions of the adult sibling relationship, results offered minimal support for the hypothesis in that a positive actor effect was found for sociability (b = 6.50, t (139) = 4.48, $p < .001$). That is, individuals who reported being more sociable rated the adult sibling relationship more positively than did siblings who rated themselves as less sociable. Contrary to what was expected, significant actor effects were not found for reported levels of activity (b = 2.19, t (136) = .99, p = .32), emotionality (b = -1.69, t (126) = -.97, p = .34) and anger (b = -1.02, t (128) = -.58, p =

.56), indicating that these temperamental characteristics were not related to siblings' perceptions of the adult sibling relationship.

Partner effects. Significant partner effects were not found for sociability (b = 2.19, t (139) = 1.51, p = .13), activity (b = .63, t (136) = .35, p = .73), emotionality (b = -1.06, t (126) = -.60, p = .55), and anger (b = -2.10, t (128) = -1.20, p = .23), indicating that one sibling's reported levels of these temperamental characteristics were not related to the other sibling's perceptions of the adult sibling relationship.

Exploratory analyses did not reveal any significant moderating effects of gender, gender constellation of the sibling dyad, or age on the relationship between the reported temperamental characteristics and perceptions of the sibling relationship. Thus, there was little support for Hypothesis 6.

Post-Hoc Analyses – Temperament and Direction of Differential Parental Treatment

Four models were tested using multilevel analyses based on the APIM to examine the relationship between siblings' temperamental characteristics (predictor) and perceptions of the direction of parental differential treatment (outcome). Only significant findings are presented.

Actor Effects. Temperament was significantly related to reported direction of parental differential treatment. Specifically, individuals who rated themselves as being more angry perceived that they received less maternal affection than did their siblings (b = -.154, t (156) = -2.15, $p < .05$). In addition, a positive actor effect for anger revealed that individuals who reported experiencing more anger perceived that they received more paternal control relative to their sibling (b =.141, t (155) = 2.13, $p < .05$).

Partner Effects. A negative partner effect for anger revealed that individuals whose sibling reported being more angry reported receiving less paternal control than did their siblings (b = -.133, t (155) = -2.00, $p < .05$). None of the other models were significant.

Discussion

Overall, the current findings offer support for the literature which suggests that early life experiences, particularly those occurring within an individual's family of origin, are related to adjustment later in life. Specifically, young adult siblings' retrospective perceptions of differential parental treatment were found to be associated with perceptions of the childhood and adult sibling relationship. The findings also indicated that other factors, including gender and temperamental characteristics, were related to perceived sibling relationship quality for some characteristics.

Analyses conducted to determine whether significant differences between students whose sibling did versus did not participate in the study revealed reports of higher levels of differential maternal control and anger for participants whose sibling did not participate. These findings suggest that those individuals who experience more anger and perceived that their mothers were more differentially controlling toward the siblings are likely to have had more complicated interactions with their sibling than the students whose sibling did participate in the study. This, in turn, may have been related to their sibling's lack of willingness to participate in the study.

It is noteworthy that the exploratory analyses did not reveal any significant effects of the gender constellation of the sibling dyad with respect to the relationship between perceptions of differential parental treatment, temperament, ratings of the sibling relationship, and level of functioning. In other words, temperamental characteristics predicted perceptions of the sibling relationship in a similar manner for males and

females in same- and mixed-gender sibling dyads. In addition, reports of differential parental treatment predicted perceptions of the sibling relationship as well as level of psychological functioning similarly for same- and mixed-gender sibling dyads. Therefore, it appears that temperament and perceptions of parenting behaviors were better predictors of participants' current level of functioning and attitudes toward the sibling relationship moreso than the gender of one's sibling. In addition, it may be suggested that participants included in this sample may better adjusted and have comparatively healthier relationships with their siblings and parents than those participants whose sibling did not participate in the study. However, inclusion of all solicited sibling pairs may not have altered the current findings significantly given the relatively small differences in reported levels of anger and amount of differential maternal control of students who did or did not participate. Given that there were no other major differences between students who did or did not participate, the current sample appears to be representative of young adults at this university.

Consistency in Sibling Ratings

As predicted, significant associations were found relative to young adult siblings' overall attitudes toward the sibling relationship as well as in their perceptions of differential parental treatment. These findings provide support for the literature regarding the consistency in siblings' perceptions of the sibling relationship (Stocker et al., 1997) and reports of parenting behaviors (Brody et al., 1998; Daniels & Plomin, 1985; Kowal et al., 2002; Kowal et al., 2006; McCrae & Costa, 1988; Schwarz, Barton-Henry, & Pruzinsky, 1985).

The findings also supported the hypothesis that participants' perceptions of their interactions with their sibling during childhood would be similar to their ratings of the current sibling relationship. This finding is consistent with the literature which suggests that thoughts, feelings, and behaviors associated with the childhood sibling relationship persist through the transition to adulthood (Bedford, 1992, 1998; Riggio, 2000; Ross & Milgram, 1982).

Perceptions of Differential Treatment and Quality of the Sibling Relationship

As expected, participants who perceived that their mothers were differentially controlling toward the siblings rated their relationship with their sibling during childhood less positively. This pattern appeared to be more salient for younger siblings whose siblings perceived that their mothers were differentially controlling, suggesting the possibility of an interpersonal power differential in the relationship. That is, during childhood, younger siblings are more likely to take direction from the older sibling who may engage in such a manner with his/her sibling that sets the tone and characterizes the nature of sibling interactions during childhood. Disparities in maternal control toward siblings may have been most related to perceptions of the childhood sibling relationship given the fact that such parenting behaviors involve discipline and punishment which are more likely to occur during this earlier period in life. Exploratory analyses, however, revealed that for females, perceptions of differential affection exhibited by mothers were related to less positive attitudes toward the sibling relationship during childhood. The fact that this relationship was not found for males suggests that females may be more sensitive to such differential behavior by mothers with whom they are likely to identify with closely. The overall findings support the literature which suggests that differential

parental treatment, regardless of who is favored, has the potential of compromising the sibling relationship (Boer et al., 1992; Boll et al., 2003; Brody & Stoneman, 1994; Furman & Giberson, 1995).

Contrary to what was predicted, perceptions of the amount of differential affection and control exhibited by fathers were not related to perceptions of the sibling relationship during childhood. These findings are consistent with those of Furman and Giberson (1995). Other studies that have found that differential behaviors exhibited by fathers were related to siblings' perceptions of their relationship have either relied on the report of one sibling, examined perceptions of fairness of parents' differentiating behaviors, or analyzed the effects of mothers and fathers separately. Thus, many times perceptions of mothers and fathers behaviors are analyzed in different models without considering that one parent's behavior may account for more variance in outcome over the other or simple correlations are computed (Boer et al., 1992, Boll et al., 2003; Brody & Stoneman, 1994; Kowal et al., 2006; McHale et al., 2000). Although the literature suggests that fathers have become more involved in childrearing responsibilities (Brody & Stoneman, 1994; Jones & Heermann, 1992; Smith & Reid, 1986) than in the past when mothers traditionally assumed the role as primary caregiver, research indicates that mothers continue to be more involved in the majority of day-to-day care-taking activities and spend more time with their children than do fathers (Lamb, 2004). The current findings suggest that differences in mothers' interactions with their children are more salient and emotionally significant than fathers' behaviors (Furman & Giberson, 1995) and thus related more to how siblings interact and perceive the quality of their relationship during childhood. This appears to have been particularly relevant for

females regarding perceptions of their mothers' differentially affectionate behaviors. In the future, researchers may want to consider parental availability as a factor related to the salience of parenting behaviors for males and females with respect to both parents.

Regarding perceptions of the adult sibling relationship, as predicted, participants who perceived that their mothers were differentially affectionate reported less positivity in current interactions with their sibling. This finding supports other research which indicates that siblings experience less warmth in their relationship in response to their parents' differentiating behaviors toward siblings (Boer et al., 1992; Boll et al., 2003; Brody & Stoneman, 1994; Furman & Giberson, 1995). Contrary to what was expected, participants' perceptions of differential affection exhibited by fathers and reported disparities in control displayed by both parents toward siblings were not related significantly to their feelings about the current sibling relationship. Based on the previously described literature which suggests that mothers tend to spend more time with their children during childhood and have traditionally taken on the role as nurturer, disparities in affection from mothers are likely to be more salient to children than those exhibited by fathers. Research suggests that this trend continues into adulthood wherein mothers are more likely to provide emotional support than fathers, who primarily gave advice to their adult children (Miller & Lane, 1991). In addition, parental controlling behaviors may be less influential for participants' current perceptions of their relationship with their sibling, given that parents do not typically discipline their young adult children. Interestingly however, one sibling's perceptions of differential parental control and affection were related to the other sibling's attitudes about their current relationship. Specifically, individuals whose siblings perceived that their parents were differentially

affectionate (fathers) and controlling (mothers), rated their current relationship with their sibling less positively. These findings suggest that siblings are mutually influenced by each other's experiences of differential parental treatment with respect to their attitudes toward their current relationship.

The fact that this bi-directionality was not reflected to the same degree in siblings' perceptions of their relationship during childhood may be suggestive of a developmental shift in one's ability to make the connection between interpersonal relationships within the family of origin and current relationship dynamics. Specifically, children may only be focused on how they are affected by their own experiences within the family but may lack insight regarding the extent to which they are influenced by their siblings' experiences as well. Adults, who have had time to reflect on early life experiences, however, may possess a level sophistication that allows them to identify the reciprocal dynamics in their relationships with both parents and siblings. Young adults, therefore, may be better able to recognize the manner in which these experiences have possibly shaped their current relationships with family members, particularly their interactions with siblings.

Given the bi-directional influence between siblings with respect to parenting behaviors and feelings about their current relationship, these findings appear to extend equity theory which suggests that in social relationships, being either favored or disfavored can be experienced as inequitable and may lead to conflicted interactions as a result of attempts to achieve a sense of equilibrium (Walster, Berscheid, & Walster, 1978). In addition, these findings offer support regarding the significance of considering both actor and partner level effects when conducting sibling research to explore whether

similar or unique patterns of associations would be revealed. Furthermore, the fact that these bi-directional associations were found across all participants (i.e., not moderated by age or gender) may offer additional evidence of the significant role of parenting behaviors in siblings' attitudes toward their current relationship.

Gender Constellation of the Sibling Dyad and Perceptions of the Sibling Relationship

The hypothesis that sibling dyads consisting of at least one sister would report more positivity in the adult sibling relationship than male sibling dyads could not be tested given that there was only one pair of brothers in the sample. The findings revealed, however, that females and individuals reporting on a sister rated the overall sibling relationship more positively than did males and participants reporting on a brother. Sister pairs and mixed-sex sibling dyads did not differ significantly in their overall attitudes toward the sibling relationship. These findings offer support for the literature regarding sibling relationships during adulthood (Buhrmester, 1992; Riggio, 2000; Riggio, 2006; Tucker et al., 2001) which suggests that feelings of closeness to siblings tend to gradually increase with age, particularly throughout the transition from late adolescence through adulthood and into old age with sibling dyads consisting of at least one sister reporting higher levels of closeness than brother-only dyads (Cicirelli, 1989; 1995, 1996; Panish & Stricker, 2001; Riggio, 2000; Riggio, 2006; Stocker, Lanthier, & Furman, 1997; Weaver et al., 2003).

Direction of Differential Parental Treatment and Psychological Adjustment

Contrary to what was expected, participants' level of psychological adjustment was not significantly predicted by their perceptions of the direction of differential

parental treatment. These findings are inconsistent with the literature which suggests that children, adolescents, and young adults who perceive that they were disfavored by more parental control and less parental affection relative to their sibling also reported poorer adjustment than individuals who felt that they were favored by such treatment exhibited by either parent (Barrett-Singer & Weinstein, 2000; Brody et al., 1998; Daniels et al., 1985; Dunn et al., 1990; Feinberg, Neiderhiser, Simmens, Reiss, & Hetherington, 2000; Katz & Gottman, 1993; Kowal et al., 2002; McHale et al., 2000; Richmond et al., 2005; Shebloski et al., 2005; Tamrouti-Makkink et al., 2004). The inconsistency in findings may be related to differences in the manner in which level of functioning was defined. Whereas the previous studies assessed adjustment in terms of perceived ability, self-esteem, self-worth, internalizing/externalizing problem behaviors, delinquency, and disobedience, the current study conceptualized adjustment as overall global functioning. Therefore, the discrepancy in findings appear to be related to the level of specificity in defining problem behaviors which may suggest that the results of the current study may have been more comparable with the literature by exploring outcome in a similar manner. Interestingly, however, participants who, according to their siblings, received less control from fathers reported more psychological symptoms than participants who were perceived by their siblings to be less controlled by their father. This finding suggests a paradoxical effect of fathers' behavior toward siblings such that control may be perceived in a positive light. That is, according to the literature that indicates that significant differences in the amount of time that mothers and fathers spend with their children (Lamb, 2004; Wilson, Tolson, Hinton, & Kiernan, 1990), control from fathers that is not overly harsh or punitive may be interpreted by the child as favoritism. Based on the

possibility that the ideal father is perceived as someone who provides strong guidance that involves disciplinary behavior and monitoring (Sheehan & Noller, 2002), such behavior may serve as a protective factor with respect to overall adjustment.

Although the literature indicates that the behaviors of both parents are related to children's and adolescent's level of psychological functioning (Barrett-Singer & Weinstein, 2000; Brody et al., 1998; Dunn et al., 1990; Katz & Gottman, 1993; McHale et al., 2000; Tamrouti-Makkink et al., 2004), perceptions of maternal behaviors during childhood were not found to be related significantly to adjustment later in life. This finding suggests that differences in the availability of and/or the amount of time spent with mothers versus fathers may become more evident as the role of each parent is considered relative to current level of functioning. Therefore, fathers' behaviors may begin to carry more meaning for siblings, particularly if the father was perceived to be less available than the mother during childhood. If the father was relatively less involved than the mother and mainly perceived as the disciplinarian, this primary mode of interaction may be considered or valued as a form of attention. Therefore, as young adults reflect on these early life experiences with the father, differences in this perceived level of "attentiveness" may impact the manner in which each sibling views his/her relative importance within the family. Consequently, one's experiences with his/her father may contribute to his/her self-perception and ultimately level of psychological functioning later in life.

The finding that participants' level of functioning was more strongly related to their sibling's perception of disparities in control displayed by their fathers than to their own perception of such parenting behavior may be indicative of the degree to which

social comparison processes occur between siblings. Specifically, sibling comparison theory (Feinberg et al., 2000) proposes that when siblings are influenced by social comparison, children will experience more positive adjustment if their sibling is disfavored by parental treatment and more negative adjustment if their parents' behavior favors the sibling. Children who are less concerned about sibling comparison, however, may be less influenced by how their sibling is treated and experience outcomes that are related to how they perceive their own interactions with their parents (Feinberg et al., 2000). It appears that sibling comparison processes may explain the current findings such that fathers' display of control may be perceived in a positive manner wherein the participant whose sibling is perceived to be "favored" by such behavior is more likely to be better adjusted than participants whose sibling is perceived to be less "favored" by their father (Sheehan & Noller, 2002).

The lack of age and gender-moderated findings as well as the non-significant findings for other parenting behaviors (i.e., relative differential affection displayed by both parents and direction of differential maternal control) may offer support for the salience of early experiences with fathers, particularly the level of significance that siblings may attribute to paternal control, relative to their current level of functioning (Sheehan & Noller, 2002).

Temperament and Perceptions of the Sibling Relationship

As expected, individuals who rated themselves as sociable reported higher levels of positivity in childhood and adult sibling interactions. This finding is supported by the literature which suggests that individuals with more positive temperamental characteristics report more positivity in interactions with siblings (Brody et al., 1998;

Brody & Stoneman, 1994; Furman & Lanthier, 1996; Pike & Atzaba-Poria, 2003). The non-significant partner effect for sociability indicates that a person's own level of sociability is more strongly related to his/her own attitudes toward the sibling relationship than to that individual's sibling's perceptions of their relationship. Furthermore, individuals who are sociable tend to enjoy interacting with others and are likely to experience more positive social interactions in general than those who are less sociable (Pike & Atzaba-Poria, 2003). These findings suggest that the desire and tendency to seek out social interactions may influence the nature and quality of sibling relationships moreso than do other temperamental qualities.

Contrary to what was expected, reported activity level, emotionality, and anger were not related significantly to perceptions of the sibling relationship. These findings are inconsistent with the literature which suggests that individuals with more difficult temperaments tend to experience more interpersonal conflict, particularly in their interactions with siblings, than individuals with more of an agreeable temperamental style (Brody et al., 1998; Brody & Stoneman, 1996; Furman & Lanthier, 1996; Tucker, McHale & Crouter, 2003). The lack of findings for the other temperamental characteristics suggests that, even when one or both siblings possess negative temperamental characteristics, the positive attribute of sociability may function as a buffer to protect the sibling relationship from the detrimental effects of the difficult or negative temperamental quality. However, the non-significant findings may suggest that the current sample consists of individuals who possess more of an agreeable temperamental style.

Post-Hoc Analyses –Temperament and Direction of Differential Parental Treatment

Post-hoc analyses revealed a significant relationship between participants' reported temperamental qualities and siblings' perceptions of who was favored/disfavored by their parents. Specifically, individuals who had a tendency to experience more anger also perceived that they received more control from their fathers and less affection from their mothers than did their sibling. These findings are consistent with previous research which suggests that parents may reciprocate their children's temperamental behavior in their interactions with the child such that less positive and more negative affect may be exhibited with that child in contrast to a sibling who may have more of an agreeable temperamental style (Brody et al., 1998; Brody & Stoneman, 1994; Hetherington, 1988). In addition, research with young adults has found that negative emotionality is related to less positivity in parent-child interactions during adulthood (Belsky et al., 2003).

The current findings suggest that in response to negative emotionality, particularly anger, which is often associated with acting out behaviors, fathers may be likely to exert more control while mothers may withdraw more emotionally from the child than his/her sibling who exhibits less anger. The difference in parents' responses to such behavior may be accounted for by the manner in which their roles are defined within the family. Specifically, in families where the mother's primary role is nurturer and fathers take on more of the role as disciplinarian, it is possible that mothers display relatively more warmth and fathers exhibit relatively less control in response to a child whose sibling engages in more angry acting out behaviors.

Unlike the child measure, the adult temperament measure assesses for anger as an aspect of emotionality. Therefore, this temperamental characteristic may be more strongly related to parents' differentiating behaviors toward their children than degree of sociability, activity level and general feelings of distress. It may be that activity level in adults is not perceived as a negative attribute; when associated with sociability, it may be perceived as extraversion. When paired with emotionality and low persistence, however, activity level for children has been found to be related to negative parental response (Brody et al., 1998; Brody & Stoneman, 1996; Furman & Lanthier, 1996). In addition, the non-significant findings for participants' reported level of sociability may indicate that this characteristic is not necessarily associated with the degree to which parents engage in differentiating behaviors toward siblings, but may be more related to the quality of parents' direct interactions with their children.

The finding that anger was found to be a stronger predictor of differential parenting behaviors than the other temperamental characteristics offers support for the literature which suggests that differential parental treatment is more related to children's externalizing behavioral problems than internalizing behaviors (Boyle, Jenkins, Georgiades, Cairney, Duku, & Racine, 2004; Kowal, Cramer, Krull, & Crick, 2002; Richmond, Stocker, & Rienks, 2005). Thus, children who exhibit acting out behaviors may receive harsher treatment than their sibling whose behaviors are not as problematic. Such differentiation by parents may result in an increase in acting out by the disfavored sibling and further exacerbate parents' disparite treatment (Richmond et al., 2005). Unfortunately, unlike longitudinal experimental research, the correlational design of the current study does not allow for determination of the direction of effects.

Strengths and Limitations

Major strengths of the study are the inclusion of the perspective of both siblings and the manner in which the data were analyzed. While sibling research conducted with children and adolescents has typically included both siblings, the adult literature is primarliy based on the perspective of one sibling. Obtaining input from both siblings is significant from a validity standpoint as well as when exploring variables that are interpersonal in nature. By including both siblings, it was possible to analyze the current data using the APIM data analytic technique that addresses and controls for the issue of nonindependence that can be problematic with dyadic data. This approach was appropriate based on the sample which consisted of sibling dyads who, as a function of being raised in the same family, are likely to influence and be influenced by each other's thoughts, feelings, attitudes, behaviors, and experiences within the family. By analyzing the data based on the APIM, which is a method typically utilized in couples' research (Campbell & Kashy, 2002; Cook & Kenny, 2005; Cook & Synder, 2005; Kenny & Kashy, 1999), the current findings offer new insight regarding the reciprocal dynamics that are assumed to be integral to relationships among family members, particularly siblings. By controlling for the interdependence between siblings, the findings extend the current literature and demonstrate statistically, the manner in which siblings may be affected by each other's experiences within the family.

In addition, by controlling for both actor and partner effects, the current study was able to delineate circumstances in which participants' attitudes toward their relationship with their sibling and level of functioning were more strongly predicted by their own versus their sibling's perceptions of differential parental treatment. In fact, the

interdependent processes that were observed between siblings appear to be the most salient during adulthood with respect to current perceptions of the sibling relationship and overall adjustment. Such bi-directional influences may, therefore, be indicative of a developmental progression in one's ability to identify aspects of those early life experiences that have the most impact on current relationships and level of functioning. The APIM data analytic technique also improved upon the manner in which the data were previously analyzed wherein nonindependence between siblings observations was not controlled for. By ignoring the issue of nonindependence, it was assumed that individuals were not affected by factors associated with being members of the same family. Therefore the individual was used as the unit of analysis which led to an increase in Type II errors. Specifically, the previous analyses failed to detect the distinct manner in which differential behaviors displayed by both parents were associated with siblings' perceptions of their relationship as well as the unique contributions of fathers' perceived parenting behaviors in relation to the psychological adjustment of their adult children. The findings regarding the role of fathers in their children's level of functioning offer additional support for the significance of including fathers, or at least perceptions of fathers, in family research (Lamb, 2004).

One shortcoming of the study is the limited number of males in the sample. Future researchers may consider emphasizing the recruitment of young adult male sibling pairs to explore more thoroughly perceptions of the adult sibling relationship as a function of the gender constellation of the sibling dyad. Given that the data were collected from the Psychology and Communication Science and Disorders Departments, both dominated by females, recruiting efforts could focus on soliciting both male and

female participants from departments that have a higher percentage of males (e.g., math, physical sciences, and engineering). Within those departments, specific efforts could be made to target males with a brother, both of whom meet the age specifications required for participating in the study. Inclusion of brother dyads would allow for a full test of the hypothesis that sibling pairs consisting of at least one female report closer sibling relationships when compared to brothers (Cicirelli, 1989; 1995; 1996).

The data obtained in this study were partially based on recollections of childhood experiences. An issue often arises regarding the validity of retrospective reports because these recollections may be subject to distortions due to limitations in memory and mood-congruent processes (Brewin et al., 1993). Research has suggested, however, that current mood or psychological distress does not have a significant impact on the recall of parenting behaviors given that, for such a personally significant experience as parenting**,** individuals tend to access the same set of highly selected and rehearsed memories (Brewin et al., 1993). However, schema theory suggests that one's cognitive schema influences the manner in which one attends to and recalls information (Birkeland, Thompson, Herbozo, Roehrig, Cafri, & van den Berg, 2005; Dattilio, 2005; Mandler, 1979; 1984). Based on this theory, schemata are formed or developed from repeated exposure or experience with specific people, events, and objects (Birkeland et al., 2005; Mandler, 1979; 1984). Therefore, individuals who experienced frequent conflicted interpersonal relations with family members are likely to have developed a schema that is consistent with these negative experiences. Consequently, such persons may recall events that occurred during childhood based on this schema. Specifically, individuals whose interactions with their sibling and parents were characterized by negativity are

likely to attend to information that is consistent with this schema. For such persons, certain behaviors exhibited by family members may be more salient, and thus recall of these early life experiences may differ from the recollections of individuals who experienced more positive interactions.

Although one's current schema may contribute to how information about childhood experiences are recalled, the significant relationship found between siblings' ratings of the parenting behaviors and perceptions of the sibling relationship is consistent with previous research regarding the similarity in siblings' reports of various aspects of family dynamics (Brewin et al., 1993; Kowal, Krull & Kramer, 2004; 2006; Schwarz et al., 1985). Furthermore, the findings of longitudinal research assessing the stability of adolescents' reports of parenting behaviors over time indicated that regardless of any cognitive distortions that affecting children's ratings, reports were the most stable beginning between the ages of 19 and 23 (Schlette, Brandstrom, Eismann, Sigvadsson, Nylander, Adolfsson, & Perris, 1997; Winefield & Goldrey, 1990) which is the average age of participants in the current study. Therefore, the current data provide further support for the validity of siblings' retrospective reports of childhood experiences.

Future Directions

The current findings provide a good foundation for which aspects of family relationships/functioning can be explored in the future. Future researchers are encouraged to examine both actor and partner effects using the APIM to allow for a more thorough examination of factors that may facilitate and/or interfere significantly with family functioning and individual outcome. Specifically, longitudinal research with siblings would be helpful in exploring whether similar or unique patterns would be

observed during childhood and adulthood. Such a research design would allow future researchers to examine the extent to which a developmental shift occurs between childhood and adulthood in terms of considering how one may be impacted by his or her sibling's experiences within the family.

In addition, future research examining the relationship between differential parental treatment and psychological functioning in adulthood should also have a longitudinal design. Future studies could also examine issues regarding perceptions of parental availability as well as each parent's primary role in terms of discipline and emotional support. Such research may further clarify the association between siblings' perceptions of who was favored/disfavored by parents and overall adjustment during childhood and adulthood. Specifically, given that previous research on children and adolescents has primarily examined externalizing and internalizing behaviors, it would be interesting to observe whether a similar trend involving global functioning would be revealed for siblings during childhood and continuing through their transition to adulthood.

Clinical Implications

Despite the limitations of this study, the findings provide additional insight regarding the relationship between perceptions of differential parental treatment, attitudes toward the sibling relationship, temperamental style, and psychological adjustment in young adulthood. The unique pattern of associations that were revealed between these variables have useful clinical implications.

First, these findings offer support for a family systems approach to treatment (Minuchin, 2002). In particular, when a child is referred for services, it is not only

important to obtain input from the parents, it would also be beneficial to include the child's sibling(s) in the treatment process. Although it may appear that the child who is initially targeted for treatment should be the focus of intervention, these findings suggest that each child in the family may be impacted in similar or unique ways by various family dynamics (e.g., differential parental treatment) as well. Therefore, it may be beneficial to include all members of the family in the treatment process. Within the context of therapy, clinicians should increase family members' awareness of the potential role that each person has in facilitating healthy and unhealthy functioning in the family. More specifically, the extent to which differential parental treatment may be contributing to and maintaining poor adjustment and negativity in sibling and parent-child interactions should be explored. To facilitate this process, open communication between parents and children should be encouraged regarding each child's perceptions of their parent's behavior as well as parents' rationale for engaging in such behavior (Tucker, McHale, & Crouter, 2003). Intervention may also emphasize building positive relationships within the family by allowing family members to identify and focus on each other's strengths, with the goal of reducing problem behaviors that may lead to parents' disparity in treatment as well as sibling negativity. Parents should also be introduced to strategies that will assist in dealing with problem behaviors that may include conflict between siblings.

In addition, parents could be informed about the potentially detrimental effects for both the favored and disfavored child relative to how each perceives the quality of their relationships within the family (Boer et al., 1992). Information on differential parental treatment could also be included in parent education literature or workshops focused on

enhancing parenting skills and dealing with sibling rivalry (Tucker et al., 2003). In working with parents, clinicians could also describe characteristics of children that are often associated with differential treatment and under which circumstances such behavior is normative (e.g., having one child with special needs or children who are widely-spaced in terms of age).

When working with adult clients, this issue could also be examined when exploring relationship patterns within the family of origin to determine the extent that such family dynamics are associated with the presenting problem. In this event, the therapist should assist the client in working through their feelings about such experiences. The therapist's focus would be to help him/her to explore whether the parents' differentiating between siblings was justified based on individual characteristics of each child or the extent to which such parenting behaviors appeared to be unfair. It would also be helpful to assist the client in processing any negative emotions associated with these early life experiences to facilitate positive resolution. To the extent that it is feasible, it may also be important to encourage the client to resolve these issues with the parent(s) and sibling(s) given the significant role of the parent-child and sibling relationships for well-being (Bank et al., 1996; Barrett-Singer & Weinstein, 2000; Brody et al., 1998; Daniels et al., 1985; Dunn et al., 1990; Feinberg et al., 2000; Hetherington, 1988; Howe & Ross, 1990; Katz & Gottman, 1993; Kowal et al., 2002; Kramer & Kowal, 2005; McElwain & Volling, 2005; McHale et al., 2000; Richmond et al., 2005; Shebloski et al., 2005; Tamrouti-Makkink et al., 2004).

Summary

Overall, this study provided further evidence of the connections between parental treatment, the sibling relationship, and psychological functioning from recollections of childhood and current reports in young adulthood. The APIM data analytic techniques appear to be appropriate for exploration of sibling and parent relationships given the bi-directional influences in these relationships.

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Appendices

Appendix A.

Demographics Questionnaire

Please write in or circle your responses to the following questions.

1. Your age: _____

2. Your race/ethnicity:
   (0) White
   (1) Black/African-American
   (2) Latino/Latina
   (3) Asian
   (4) Native American
   (5) Other

3. Sex:
   (0) Male
   (1) Female

4. Where are you currently living?
   (1) Dormitory
   (2) Apartment
   (3) With parents
   (4) with sibling(s)
   (5) With other family members or spouse
   (6) Other

5. Your biological/adoptive parents' current marital status:
   (1) Still married to each other
   (2) Separated/divorced and neither is remarried
   (3) Divorced and mother is remarried, father is not
   (4) Divorced and father is remarried, mother is not
   (5) Divorced and both are remarried
   (6) Mother has passed away and father is single
   (7) Mother has passed away and father is remarried
   (8) Father has passed away and mother is single
   (9) Father has passed away and mother is remarried
   (10) Both have passed away
   (11) Other

6. If your parents are not married currently, how old were you when they separated? _____

7. If your mother remarried, how old were you when she remarried? _____

8. If your father remarried, how old were you when he remarried? _____

9. Number of times your mother has been married ____.

10. Number of times your father has been married ____.

11. While growing up, who is it that you considered to be your mother?
    (1) Biological mother
    (2) Adoptive mother
    (3) Stepmother
    (4) Grandmother
    (5) Relative (aunt, female cousin)
    (6) Other

12. While growing up, who is it that you considered to be your father?.
    (1)Biological father
    (2)Adoptive father
    (3)Stepfather
    (4)Grandfather
    (5)Relative (uncle, male cousin)
    (6)Other

13. How many siblings do you have?
    ____ Biological
    ____ Step
    ____ Half
    ____ Adopted

14. While growing up, how many siblings did you live with?

    ___Biological Ages _____

    ___Step Ages_____

    ___Half Ages_____

15.We are going to ask that one of your siblings complete some brief questionnaires. Please write the name, age, and gender of a sibling who is **within 3 years of your age and who is at least 18 years old**. If you have more than one sibling in this age range, please select the sibling whose first name comes first alphabetically.

_____	_____	_____
Sibling Name	Gender	Age

16. On average, how many times a month do you see this sibling? ____

17. On average, how many times a month are you in contact with this sibling (**NOT including the times you see him/her**). In other words, how many times a month do you have phone, written, or e-mail contact with this sibling? ____

18. On average, how many times a month do you see your mother? ____

19. On average, how many times a month are you in contact with your mother (**NOT including the times you see her**). In other words, how many times a month do you have phone, written, or e-mail contact with your mother? ____

20. On average, how many times a month do you see your father? ____

21. On average, how many times a month are you in contact with your father (**NOT including the times you see him**). In other words, how many times a month do you have phone, written, or e-mail contact with your father? ____

Please fill out your selected sibling's contact information on the mailing label below

*****Please answer the following questionnaires with these parents and THIS SIBLING in mind.**

Appendix B.

Sibling Demographics Questionnaire

Please write in or circle your responses to the following questions.

1. Your age: _____

2. Your race/ethnicity:
   (0) White
   (1) Black/African-American
   (2) Latino/Latina
   (3) Asian
   (4) Native American
   (5) Other

3. Sex:
   (0) Male
   (1) Female

4. Where are you currently living?
   (1) Dormitory
   (2) Apartment
   (3) With parents
   (4) With sibling(s)
   (4) With other family members or spouse
   (5) Other

5. Your selected sibling is _____.

6. On average, how many times a month do you see this sibling? ____

7. On average, how many times a month are you in contact with this sibling (**NOT including the times you see him/her**). In other words, how many times a month do you have phone, written, or e-mail contact with this sibling? ____

8. On average, how many times a month do you see your mother? ____

9. On average, how many times a month are you in contact with your mother (**NOT including the times you see her**). In other words, how many times a month do you have phone, written, or e-mail contact with your mother? ____

10. On average, how many times a month do you see your father? ____

11. On average, how many times a month are you in contact with your father (**NOT including the times you see him**). In other words, how many times a month do you have phone, written, or e-mail contact with your father? ____

***Please think of same set of parents as your sibling as well as the sibling indicated above when you answer the following questionnaires**.

Appendix C.

Brief Symptom Inventory (BSI)

Instructions: Below is a list of problems people sometimes have. Please read each one carefully, and circle the number to the right that best describes **HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE PAST 7 DAYS INCLUDING TODAY**. Circle only one number for each problem and do not skip any items. If you change your mind, erase your first mark carefully. Read the example below before beginning, and if you have any questions please ask about them.

0 = NOT AT ALL

1 = A LITTLE BIT

2 = MODERATELY

3 = QUITE A BIT

4 = EXTREMELY

HOW MUCH WERE YOU DISTRESSED BY:

1. Nervousness or shakiness inside	0	1	2	3	4
2. Faintness or dizziness	0	1	2	3	4
3. The idea that someone else can control your thoughts	0	1	2	3	4
4. Feeling others are to blame for most of your troubles	0	1	2	3	4
5. Trouble remembering things	0	1	2	3	4
6. Feeling easily annoyed or irritated	0	1	2	3	4
7. Pains in heart or chest	0	1	2	3	4
8. Feeling afraid in open spaces	0	1	2	3	4
9. Thoughts of ending your life	0	1	2	3	4
10. Feeling that most people cannot be trusted	0	1	2	3	4
11. Poor appetite	0	1	2	3	4
12. Suddenly scared for no reason	0	1	2	3	4
13. Temper outbursts that you could not control	0	1	2	3	4
14. Feeling lonely even when you are with people	0	1	2	3	4
15. Feeling blocked in getting things done	0	1	2	3	4

0 = NOT AT ALL

1 = A LITTLE BIT

2 = MODERATELY

3 = QUITE A BIT

4 = EXTREMELY

HOW MUCH WERE YOU DISTRESSED BY:

16. Feeling lonely	0	1	2	3	4
17. Feeling blue	0	1	2	3	4
18. Feeling no interest in things	0	1	2	3	4
19. Feeling fearful	0	1	2	3	4
20. Your feeling being easily hurt	0	1	2	3	4
21. Feeling that people are unfriendly or dislike you	0	1	2	3	4
22. Feeling inferior to others	0	1	2	3	4
23. Nausea or upset stomach	0	1	2	3	4
24. Feeling that you are watched or talked about by others	0	1	2	3	4
25. Trouble falling asleep	0	1	2	3	4
26. Having to check and double check what you do	0	1	2	3	4
27. Difficulty making decisions	0	1	2	3	4
28. Feeling afraid to travel on buses, subways, or trains	0	1	2	3	4
29. Trouble getting your breath	0	1	2	3	4
30. Hot or cold spells	0	1	2	3	4
31. Having to avoid certain things, places, or activities because they frighten you	0	1	2	3	4
32. Your mind going blank	0	1	2	3	4
33. Numbness or tingling in parts of your body	0	1	2	3	4

0 = NOT AT ALL

1 = A LITTLE BIT

2 = MODERATELY

3 = QUITE A BIT

4 = EXTREMELY

HOW MUCH WERE YOU DISTRESSED BY:

34. The idea that you should be punished for your sins	0	1	2	3	4
35. Feeling hopeless about the future	0	1	2	3	4
36. Trouble concentrating	0	1	2	3	4
37. Feeling weak in parts of your body	0	1	2	3	4
38. Feeling tense or keyed up	0	1	2	3	4
39. Thoughts of death or dying	0	1	2	3	4
40. Having urges to beat, injure, or harm someone	0	1	2	3	4
41. Having urges to break or smash things	0	1	2	3	4
42. Feeling very self-conscious with others	0	1	2	3	4
43. Feeling uneasy in crowds	0	1	2	3	4
44. Never feeling close to another person	0	1	2	3	4
45. Spells of terror or panic	0	1	2	3	4
46. Getting into frequent arguments	0	1	2	3	4
47. Feeling nervous when you are left alone	0	1	2	3	4
48. Others not giving you proper credit for your achievements	0	1	2	3	4
49. Feeling so restless you couldn't sit still	0	1	2	3	4
50. Feelings of worthlessness	0	1	2	3	4

51. Feeling that people will take advantage of you if you let them	0	1	2	3	4
52. Feelings of guilt	0	1	2	3	4
53. The idea that something is wrong with your mind.	0	1	2	3	4

Appendix D.
Lifespan Sibling Relationship Scale (LSRS)

Instructions:.In this questionnaire, you will read statements about your sibling. For all questions, please answer with one sibling relationship in mind. Please answer each item indicting the degree to which you agree or disagree with the statement concerning your sibling relationship.

1= Strongly Disagree2= Disagree 3= Neither Agree nor Disagree 4= Agree 5= Strongly Agree

1. My sibling makes me happy.	1	2	3	4	5
2. My sibling's feeling are very important to me.	1	2	3	4	5
3. I enjoy my relationship with my sibling.	1	2	3	4	5
4. I am proud of my sibling.	1	2	3	4	5
5 My sibling and I have a lot of fun together.	1	2	3	4	5
6. My sibling frequently makes me angry.	1	2	3	4	5
7. I admire my sibling.	1	2	3	4	5
8. I like to spend time with my sibling.	1	2	3	4	5
9. I presently spend a lot of time with my sibling.	1	2	3	4	5
10. I call my sibling on the telephone frequently.	1	2	3	4	5
11. My sibling and I share secrets.	1	2	3	4	5
12. My sibling and I do a lot of things together.	1	2	3	4	5
13. I never talk about my problems with my sibling.	1	2	3	4	5
14. My sibling and I borrow things from each other. 1	2	3	4	5	
15. My sibling and I 'hang out' together.	1	2	3	4	5
16. My sibling talks to me about personal problems.	1	2	3	4	5
17. My sibling is a good friend.	1	2	3	4	5
18. My sibling is very important in my life.	1	2	3	4	5
19. My sibling and I are not very close.	1	2	3	4	5
20. My sibling is one of my best friends.	1	2	3	4	5

1= Strongly Disagree 2= Disagree 3= Neither Agree nor Disagree 4= Agree 5= Strongly Agree

21. My sibling and I have a lot in common	1	2	3	4	5
22. I believe I am very important to my sibling.	1	2	3	4	5
23. I know that I am one of my sibling's best friends.	1	2	3	4	5
24. My sibling is proud of me.	1	2	3	4	5
25. My sibling bothered me a lot when we were children.	1	2	3	4	5
26. I remember loving my sibling very much when I was a child.	1	2	3	4	5
27. My sibling made me miserable when we were children	1	2	3	4	5
28. I was frequently angry at my sibling when we were children.	1	2	3	4	5
29. I was proud of my sibling when I was a child.	1	2	3	4	5
30. I enjoyed spending time with my sibling as a child.	1	2	3	4	5
31. I remember feeling very close to my sibling when we were children.	1	2	3	4	5
32. I remember having a lot of fun with my sibling when we were children.	1	2	3	4	5
33. My sibling and I often had the same friends as children.	1	2	3	4	5
34. My sibling and I shared secrets as children.	1	2	3	4	5
35. My sibling and I often helped each other as children.	1	2	3	4	5
36. My sibling looked after me (OR I looked after my sibling) when we were children.	1	2	3	4	5
37. My sibling and I often played together as children.	1	2	3	4	5
38. My sibling and I did not spend a lot of time together when we were children.	1	2	3	4	5
39. My sibling and I spent time together after school as children.	1	2	3	4	5
40. I talked to my sibling about my problems when we were children.	1	2	3	4	5

1= Strongly Disagree 2= Disagree 3= Neither Agree nor Disagree 4= Agree 5= Strongly Agree

41. My sibling and I were 'buddies' as children.	1	2	3	4	5
42. My sibling did not like to play with me when we were children.	1	2	3	4	5
43. My sibling and I were very close when we were children.	1	2	3	4	5
44. My sibling and I were important to each other when we were children.	1	2	3	4	5
45. My sibling had an important positive effect on my childhood.	1	2	3	4	5
46. My sibling knew everything about me when we were children.	1	2	3	4	5
47. My sibling and I liked all the same things when we were children.	1	2	3	4	5
48. My sibling and I had a lot in common as children.	1	2	3	4	5

Appendix E.

Temperament Survey for Adults (TSA)

Instructions: Please rate each of the items on a scale of 1 (not characteristic or typical of yourself) to 5 (very characteristic or typical of yourself).

	Not Typical				Very Typical
1. I like to be with people.	1	2	3	4	5
2. I usually seem to be in a hurry.	1	2	3	4	5
3. I am easily frightened.	1	2	3	4	5
4. I frequently get distressed.	1	2	3	4	5
5. When displeased, I let people know it right away.	1	2	3	4	5
6. I am something of a loner.	1	2	3	4	5
7. I like to keep busy all the time.	1	2	3	4	5
8. I am known as hot-blooded and quick-tempered.	1	2	3	4	5
9. I often feel frustrated.	1	2	3	4	5
10. My life is fast paced.	1	2	3	4	5
11. Everyday events make me feel troubled and fretful.	1	2	3	4	5
12. I often feel insecure.	1	2	3	4	5
13. There are many things that annoy me.	1	2	3	4	5
14. When I get scared, I panic.	1	2	3	4	5
15. I prefer working with others rather than alone.	1	2	3	4	5

Appendix E (Continued).

	Not Typical				Very Typical
16. I get emotionally upset easily.	1	2	3	4	5
17. I often feel as if I'm bursting with energy.	1	2	3	4	5
18. It takes a lot to make me mad.	1	2	3	4	5
19. I have fewer fears than most people my age.	1	2	3	4	5
20. I find people more stimulating than anything else.	1	2	3	4	5

Appendix F.

The Sibling Inventory of Differential Experiences - Revised (SIDE-R)
Inventory of Family Experiences – Self

Instructions: This questionnaire is designed to ask you about things that happen in families and about what life was like **for you and your parents/guardians** over the years when you were growing up and living at home. If your parents were divorced or if one died, answer the questions for the mother/guardian and father/guardian with whom you lived for the longest period of time. Each statement says something that is true in some families, and not true in other families. For example, some parents/guardians make a lot of rules for their children, other parents/guardians do not. Please mark the circle which best represents your answer.

For the entire questionnaire, think about your experiences in your family over the years when you were growing up and living at home

My Relationship with My Mother/Guardian Over the Years When I Was Growing Up And Living At Home

	Almost Never	**Some-times**	**Often-**	**Almost Always**
1. My mother/guardian has been strict with me.	1	2	3	4
2. My mother/guardian has been proud of the things I have done.	1	2	3	4
3. My mother/guardian enjoyed doing things with me	1	2	3	4
4. My mother/guardian has been sensitive to what I think and feel.	1	2	3	4
5. My mother/guardian has punished me for my misbehavior.	1	2	3	4
6. My mother/guardian has shown interest in the things I like to do.	1	2	3	4
7. My mother/guardian has blamed me for what another family member did.	1	2	3	4
8. My mother/guardian has tended to favor me.	1	2	3	4
9. My mother/guardian has disciplined me.	1	2	3	4

Appendix F (Continued).

My Relationship with My Father/Guardian Over the Years When I Was Growing Up And Living At Home

	Almost Never	**Some-times**	**Often-**	**Almost Always**
1. My father/guardian has been strict with me.	1	2	3	4
2. My father/guardian has been proud of the things I have done.	1	2	3	4
3. My father/guardian enjoyed doing things with me	1	2	3	4
4. My father/guardian has been sensitive to what I think and feel.	1	2	3	4
5. My father/guardian has punished me for my misbehavior.	1	2	3	4
6. My father/guardian has shown interest in the things I like to do.	1	2	3	4
7. My father/guardian has blamed me for what another family member did.	1	2	3	4
8. My father/guardian has tended to favor me.	1	2	3	4
9. My father/guardian has disciplined me.	1	2	3	4

Appendix G.

The Sibling Inventory of Differential Experiences - Revised (SIDE-R)

Inventory of Family Experiences – Sibling

For the entire questionnaire, answer the questions for the SIBLING that you identified on the demographics questionnaire.

This sibling's age: _____. This sibling is male / female (circle one).

Instructions: This questionnaire is designed to ask you about things that happen in families and about what life was like **for your sibling who is closest in age to you and your parents/guardians** over the years when you were growing up and living at home. If your parents were divorced or if one died, answer the questions for the mother/guardian and father/guardian with whom you lived for the longest period of time. Each statement says something that is true in some families, and not true in other families. For example, some parents/guardians make a lot of rules for their children, other parents/guardians do not. Please mark the circle which best represents your answer.

For the entire questionnaire, think about <u>your sibling's experiences</u> in your family over the years when you were growing up and living at home

My Sibling's Relationship with My Mother/Guardian Over the Years When I Was Growing Up And Living At Home

	Almost Never	Some-times	Often-	Almost Always
1. My mother/guardian has been strict with my brother or sister.	1	2	3	4
2. My mother/guardian has been proud of the things my brother/sister has done.	1	2	3	4
3. My mother/guardian enjoyed doing things with my brother/sister.	1	2	3	4
4. My mother/guardian has been sensitive to what my brother/sister thinks and feels.	1	2	3	4
5. My mother/guardian has punished my brother/sister for his/her misbehavior.	1	2	3	4
6. My mother/guardian has shown interest in the things my brother/sister likes to do.	1	2	3	4
7. My mother/guardian has blamed my brother/sister for what another family member did.	1	2	3	4
8. My mother/guardian has tended to favor my brother/sister.	1	2	3	4
9. My mother/guardian has disciplined my brother/sister.	1	2	3	4

Appendix G (Continued).

My Sibling's Relationship with My Father/Guardian Over the Years When I Was Growing Up And Living At Home

	Almost Never	**Some-times**	**Often-**	**Almost Always**
1. My father/guardian has been strict with my brother or sister.	1	2	3	4
2. My father/guardian has been proud of the things my brother/sister has done.	1	2	3	4
3. My father/guardian enjoyed doing things with my brother/sister.	1	2	3	4
4. My father/guardian has been sensitive to what my brother/sister thinks and feels.	1	2	3	4
5. My father/guardian has punished my brother/sister for his/her misbehavior.	1	2	3	4
6. My father/guardian has shown interest in the things my brother/sister likes to do.	1	2	3	4
7. My father/guardian has blamed my brother/sister for what another family member did.	1	2	3	4
8. My father/guardian has tended to favor my brother/sister.	1	2	3	4
9. My father/guardian has disciplined my brother/sister.	1	2	3	4

Appendix H.

USF Student Consent Form

UNIVERSITY OF SOUTH FLORIDA

INFORMATION FOR PEOPLE WHO TAKE PART IN RESEARCH

The following information is being presented to help you decide whether or not you want to be a part of a minimal risk research study. Please read carefully. Anything you do not understand, ask the Person in Charge of the Study.

Title of Study: College Students, Siblings, and Current Functioning
Principle Investigator: Dr. Vicky Phares
Person in Charge of the Study: Tangela Clark
Study Location: Psychology and Communication Disorders (PCD) Building at the University of South Florida

General Information about the Research Study
This study will assess various aspects of sibling relationships among young adults. Your participation has been solicited because of your current enrollment as a college student. Participants will be administered a packet consisting of several questionnaires. There will be approximately 400 participants in the study. These questionnaires will ask participants about their perceptions of the current sibling relationship and during childhood, perceptions of each parent, and current feelings. The information that will be obtained in this study may assist in understanding factors that influence the sibling relationship across the lifespan.

Benefits of Being Part of this Research Study
Participation in this study is entirely voluntary. You will earn one (1) experimental point per half hour of participation. In addition, by taking part in this research study, you may increase your overall knowledge and understanding of the relationship between your past and current functioning. If you elect to withdraw at any point of the study, you may do so without penalty. The time commitment for this study is approximately 30 to 45 minutes. You must be at least 18 years old to participate.

Risks of Being a Part of this Research Study
It is expected that this study poses minimal risk to participants. Because of the nature of the questions, however, some students may find the study to be distressing. Therefore, all participants will receive an Educational Debriefing form that will provide information about free counseling services available to them through USF's Counseling Center for Human Development (CCHD). The CCHD may be contacted at (813) 974-2831. Other referrals are available upon request.

Alternatives of Being Part of this Research Study
An alternative to participating in this study is to participate in another one of the various research projects being conducted through the Department of Psychology.

In Case of Illness or Injury
In the event that you get sick or injured while on this study, call Tangela R. Clark, at (813) 655-3534. If you have an emergency, go to the closest emergency room or clinic for treatment. After

you have been treated for your illness or injury, call the USF Self Insurance Programs, at (813) 974-8008. They will investigate the matter.

Confidentiality of Your Records

All information will be kept strictly confidential and will be maintained in a secure manner. The information from this study will not be repeated in any way that is associated with your identification for any reason. All forms will only be coded with an identification number and will not be matched with your name. The consent form on which you will have written your name will not be coded with a number and will be separated from the completed questionnaires when you hand them to the person running the study. The completed forms will be kept locked in a file cabinet in a secure laboratory. Only the researcher and the research team will have access to the information from this study. However, authorized research investigators, agents of the Department of Health and Human Services and the USF Institutional Review Board may inspect your records from this research project. The results of the study may be published. However, the data obtained from you will be combined with data from other people in the publication. The published results will not include your name or any other information that would in any way personally identify you.

If you agree to participate, please sign this consent as well as the copy provided for your own records. If you have any questions or concerns regarding this study, you may contact the researcher, Tangela R. Clark, at (813) 655-3534, or her faculty advisor, Dr. Vicky Phares at (813) 974-0493. If you have any questions about your rights as a person that is participating in a research study, you may contact a member of the Division of Compliance Services at the University of South Florida at (813) 974-5638.

I agree to participate in this study of college students' sibling relationships. I understand all of the above information and have had any questions answered to my satisfaction. I understand that I may withdraw at any time without being penalized. I will receive one experimental point per half hour of time volunteered. I am at least 18 years old.

By signing this form I agree that:

* I have fully read or someone has read and explained to me in my native language, this informed consent form describing this research project.
* I have had the opportunity to question the persons in charge of this research and have received satisfactory responses.
* I understand that I am being asked to participate in research. I understand the risks and benefits, and I freely give my consent to participate in the research project outlined in this form, under the conditions indicated in it.
* I have been provided a signed copy of this informed consent form, which is for my personal records.

_____	_____	_____
Signature of Participant	Printed Name of Participant	Date

INVESTIGATOR STATEMENT:

I have carefully explained to the subject the nature of the study. I hereby certify that to the best of my knowledge, the subject signing this consent form understands the nature, demands, risks, and benefits involved in participating in this study.

_____	_____	_____
Signature of Investigator Or Authorized research investigators designated by the Principal Investigator	Printed Name of Investigator	Date

INSTITUTIONAL APPROVAL OF STUDY AND INFORMED CONSENT:

This research project and informed consent form were reviewed and approved by the University of South Florida Institutional Review Board for the protection of human subjects. This approval is until the date provided below. This board may be contacted at (813) 974-5638.

Approval Consent Form Expiration Date:

Revision Date:_____

Appendix I.

Educational Debriefing

This study examined the relationship between perceptions of the family environment in which young adults were raised, sibling relationships, and their current levels of adjustment. Participants were asked questions regarding perceptions of differential parental treatment, childhood and current sibling relationships, and psychological well-being. Because very little research has been conducted relative to the association between differential parental treatment sibling relationships, and individual outcome in young adults, this research is expected to provide insight regarding sibling and emotional/behavioral problems experienced by young adults as a function of experiencing differential parental treatment during childhood. Based on the literature, it appears that the extent to which the negative effects of differential parental treatment persist into adulthood depends on several factors including perceptions of the treatment, the quality of the parent-child relationship, and negative sibling interactions during childhood.

For further reading, please consult the following references:

Barrett-Singer, A.T. & Weinstein, R.S. (2000). Differential parental treatment predicts achievement and self-perceptions in two cultural contexts. Journal of Family Psychology, 14(3), 491-509.

Stocker, C., Lanthier, R., Furman, W. (1997). Sibling relationships in early adulthood. Journal of Family Psychology, 11(2), 210-221.

Riggio, H. (2000). Measuring attitudes toward adult sibling relationships: The lifespan sibling relationship scale. Journal of Social and Personal Relationships, 17(6), 707-728.

If you have experienced any distress related to this study or to this topic, please feel free to contact the researcher, Tangela R. Clark, at 813-655-3534. In addition, free counseling services are available for students at the USF Counseling Center for Human Development (CCHD). The CCHD is located in the Student Services Center (SVC) in Room 2124. You may also contact them at 974-2831. You may also contact the following agencies to locate low-cost resources that are available in your city:

The American Psychological Association (APA)
1400 K Street, NW
Washington, DC 20005
1-888-357-7924
www.psych.org

NMHA: National Mental Health Association
1021 Prince Street
Alexandria, VA 22314
1-800-969-NMHA(6642)
www.nmha.org

Thank you for participating in this research project!

Appendix J.

Sibling Information and Instructions Form

Please **write <u>YOUR NAME</u> in the space below** to ensure that your sibling completes the forms with you in mind.

Your sibling _____, participated in a study on college students, siblings, and current functioning. You were selected by your sibling to participate in this study because you are within three years of his/her age. Your participation is voluntary, however if you complete the following questionnaires, your name will be entered in a drawing for the possibility to win **ONE** of two cash prizes of $100 each or **ONE** of a selection of small gift certificates to local merchants. If you agree to participate, please read and sign the consent form that is attached. The information from the study will not be repeated in any way that is associated with your identification for any reason. All forms will only be coded with an identification number and will not be matched with any names. The consent form on which your name is written **<u>will not</u>** be coded with a number and will be separated form the completed questionnaires when the person running the study receives your packet. The completed forms will be kept in a separate file cabinet in a secure laboratory.

INSTRUCTIONS:

After signing the consent form, please complete the following forms with the sibling indicated above in mind. The forms are to be completed in this order: Demographics Questionnaire, BSI, TSA, LSRS, and the SIDE-R. After completing the questionnaires which will take approximately 30 to 45 minutes, please place all information in the self-addressed, stamped envelope provided and place in the mail. Thank you in advance for your participation!

Appendix K.

Sibling Consent Form

UNIVERSITY OF SOUTH FLORIDA

INFORMATION FOR PEOPLE WHO TAKE PART IN RESEARCH

The following information is being presented to help you decide whether or not you want to be a part of a minimal risk research study. Please read carefully. Anything you do not understand, please contact the Person in Charge of the Study (Tangela Clark (813) 655-3534 or tclark@luna.cas.usf.edu).

Title of Study: College Students, Siblings, and Current Functioning
Principle Investigator: Dr. Vicky Phares
Person in Charge of the Study: Tangela Clark
Study Location: Psychology and Communication Disorders (PCD) Building at the University of South Florida (Siblings complete questionnaires at their own home)

General Information about the Research Study
This study will assess various aspects of sibling relationships among young adults. Your participation has been solicited because your sibling participated in this study and selected you to participate because you are within three years of his/her age. Participants will be administered a packet consisting of several questionnaires. There will be approximately 400 participants in the study. These questionnaires will ask participants about their perceptions of the current sibling relationship and during childhood, perceptions of each parent, and current feelings. The information that will be obtained in this study may assist in understanding factors that influence the sibling relationship across the lifespan.

Benefits of Being Part of this Research Study
Participation in this study is entirely voluntary. Your name will be entered into a drawing for the possibility to win one of two cash prizes of $100 each or one of a selection of small gift certificates to local merchants. In addition, by taking part in this research study, you may increase your overall knowledge and understanding of the relationship between your past and current functioning. If you elect to withdraw at any point of the study, you may do so without penalty. The time commitment for this study is approximately 30 to 45 minutes. You must be at least 18 years old to participate.

Risks of Being a Part of this Research Study
It is expected that this study poses minimal risk to participants. Because of the nature of the questions, however, some individuals may find the study to be distressing. Therefore, all participants will receive an Educational Debriefing form that will provide information about free or reduced cost counseling services available to them.

Alternatives of Being Part of this Research Study
An alternative to participating in this study is to choose not to participate in the study.

In Case of Illness or Injury
In the event that you get sick or injured while on this study, call Tangela R. Clark, at (813) 655-3534. If you have an emergency, go to the closest emergency room or clinic for treatment. After

you have been treated for your illness or injury, call the USF Self Insurance Programs, at (813) 974-8008. They will investigate the matter.

Confidentiality of Your Records

All information will be kept strictly confidential and will be maintained in a secure manner. The information from this study will not be repeated in any way that is associated with your identification for any reason. All forms will only be coded with an identification number and will not be matched with your name. The consent form on which you will have written your name will not be coded with a number and will be separated from the completed questionnaires when you hand them to the person running the study. The completed forms will be kept locked in a file cabinet in a secure laboratory. Only the researcher and the research team will have access to the information from this study. However, authorized research investigators, agents of the Department of Health and Human Services and the USF Institutional Review Board may inspect your records from this research project. The results of the study may be published. However, the data obtained from you will be combined with data from other people in the publication. The published results will not include your name or any other information that would in any way personally identify you.

If you agree to participate, please sign this consent as well as the copy provided for your own records. If you have any questions or concerns regarding this study, you may contact the researcher, Tangela R. Clark, at (813) 655-3534, or her faculty advisor, Dr. Vicky Phares at (813) 974-0493. If you have any questions about your rights as a person that is participating in a research study, you may contact a member of the Division of Compliance Services at the University of South Florida at (813) 974-5638.

I agree to participate in this study of college students' sibling relationships. I understand all of the above information and have had any questions answered to my satisfaction. I understand that I may withdraw at any time without being penalized. My name will be entered into a drawing for the opportunity to win one of two cash prizes on one-hundred dollars or one of a selection of small gift certificates to local merchants. I am at least 18 years old.

By signing this form I agree that:

* I have fully read or someone has read and explained to me in my native language, this informed consent form describing this research project.
* I have had the opportunity to question the persons in charge of this research and have received satisfactory responses.
* I understand that I am being asked to participate in research. I understand the risks and benefits, and I freely give my consent to participate in the research project outlined in this form, under the conditions indicated in it.
* I have been provided a signed copy of this informed consent form, which is for my personal records.

_____	_____	_____
Signature of Participant	Printed Name of Participant	Date

INVESTIGATOR STATEMENT:

I have carefully explained to the subject the nature of the study. I hereby certify that to the best of my knowledge, the subject signing this consent form understands the nature, demands, risks, and benefits involved in participating in this study.

_____	_____	_____
Signature of Investigator Or Authorized research investigators designated by the Principal Investigator	Printed Name of Investigator	Date

INSTITUTIONAL APPROVAL OF STUDY AND INFORMED CONSENT:

This research project and informed consent form were reviewed and approved by the University of South Florida Institutional Review Board for the protection of human subjects. This approval is until the date provided below. This board may be contacted at (813) 974-5638.

Approval Consent Form Expiration Date:

Revision Date:_____

About the Author

Tangela Clark Culpepper received a Bachelor's and Master's Degree in Psychology and Community Psychology, respectively, from Florida A&M University in 1992 and 1995. She entered the Clinical Psychology Ph.D. program at the University of South Florida in 1997 where she was the recipient of the Graduate Education Opportunity Grant for four years.

While in the Ph.D. program at the University of South Florida, Mrs. Clark Culpepper committed herself to working with children and adolescents ranging in a variety of emotional and behavioral issues. She provided many of these services through the Psychological Services Center and the Hillsborough County School District in Tampa, Florida. Mrs. Clark Culpepper is also the co-author of publications in the Encyclopedia of Pediatric and Child Psychology and The Family Journal: Counseling and Therapy for Couples and Families.