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A DEVELOPMENTAL APPROACH TO SIBLING RELATIONSHIPS: DISAGGREGATING THE COMPONENTS OF SIBLING RELATIONSHIP QUALITY OVER TIME FOR SIBLINGS OF INIDIVIDUALS WITH INTELLECTUAL DISABILITY

by

SHANA S. RICHARDSON

Under the Direction of Frank Floyd

ABSTRACT

Siblings can serve as significant companions and caregivers for individuals with ID throughout the lifespan. Yet, the developmental course of sibling relationships for siblings of individuals with ID has not been well addressed in the current literature. Thus, the current study examined change over time in four dimensions of relationship quality (power, intimacy, conflict, and rivalry) as well as how the constellation variables of sex, birth order, and age differences affected the development of relationship quality. Sibling relationships were found to have a stable power structure, with the nondisabled sibling reporting higher levels of power in the relationship. Developmental trajectories indicated that these relationships grew in positive regard while levels of conflict decreased over time. Yet, behaviors characterizing intimate relationships did not show

similar increases. Constellation variables were found to have effects on specific relationship dimensions, including conflict and intimate behaviors.

INDEX WORDS: Siblings, Intellectual disability, Relationship quality

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SHANA S. RICHARDSON

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Georgia State University

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Shana Strickland Richardson
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CHAPTER 1.

INTRODUCTION

Sibling relationships are unique from other family relationships because they usually last longer than any other family dyadic bonds (Cicirelli, 1995). Yet, the development of relationship quality for individuals with Intellectual Disability (ID) and their siblings has not been well addressed. The majority of studies examining sibling relationships within this population typically use cross-sectional data to focus on siblings during a particular developmental period, usually either childhood or adulthood, and fail to address adolescence. Additionally, many of the studies covering adulthood focus on care-giving responsibilities and neglect the topic of relationship quality. Consequently, we do not know the manner in which sibling relationship quality changes over time for sibling dyads where one sibling has an ID.

In addition to a lack of studies providing a continuous view of sibling relationships, little is known about the unique composition of sibling relationship quality for these dyads. The majority of available studies compare relationship quality of dyads involving a sibling with an ID to nondisabled dyads. These studies typically compare relationships across broad categories, such as warmth, which does not provide information on the more specific components of relationship quality for individuals with ID and their siblings. For example, siblings of individuals with ID might experience warm relationships that are similar to levels seen in nondisabled dyads, but it is not clear how specific components of warmth, such as levels of reciprocal disclosure or affection, compare to nondisabled siblings. Thus, there is a need for research addressing how the unique combination of characteristics that define sibling relationships for siblings of individuals with ID develop and change through various developmental stages.

In order to provide for a more detailed characterization of these relationships, this study uses a conceptualization of sibling relationship components and quality that draws from interpersonal theory and family systems theory. Relationship quality is described by focusing on two central dimensions of interpersonal relationships, power and intimacy. As a longitudinal investigation, the study will examine how aspects of power and intimacy unfold over time into trajectories of sibling relationship quality.

Dimensions and Components of Sibling Relationships

Power and intimacy are two main dimensions that characterize interpersonal relationships within family systems (Emery, 1992). Power within an interpersonal relationship is defined as one member of the relationship holding privileges that are not often successfully challenged by the other member of the relationship (Emery & Dillon, 1994). Intimacy, similar to related constructs such as cohesion, companionship, and warmth, is generally defined as emotional closeness (Emery, 1992; Olson, 2000; Sullivan, 1953). The interpersonal process of intimacy consists of a mutual exchange between individuals involving self-disclosure and validation, which is accompanied by positive affect and a commitment to the relationship (Moss & Schwebel, 1993; Reis & Shaver, 1988; Sullivan, 1953).

Emery (1992) proposed that the balance between power and intimacy within families is represented by Baumrind's (1971) model of parenting styles. Baumrind (1971) presented parenting across the two orthogonal dimensions of demandingness and responsiveness. Demandingess is defined as expectations that parents place on children and consists of confrontations, monitoring, and discipline, all of which involve the exercise of power by the parent over the child. Responsiveness refers to the level of warmth, reciprocity, and attachment in the parent-child relationship (Baumrind, 1996), which closely matches notions of intimacy.

The concepts of power and intimacy within families can be applied to the sibling relationship as well. In fact, these concepts map on well to the content of the Sibling Relationship Questionnaire (SRQ; Furman & Buhrmester, 1985), which is one of the main instruments that is used to measure sibling relationship quality in sibling dyads. Scales for the SRQ were created based on categories identified in interviews with school-aged children. A principal component analysis on the identified categories revealed 4 main factors: Warmth/Closeness, Relative Status/Power, Conflict, and Rivalry. The Warmth/Closeness factor is composed of 7 scales, which includes an intimacy scale, that specifically assess intimate disclosure, along with other scales that can be conceptualized as leading to and accompanying an intimate relationship, including prosocial behavior, affection, companionship, similarity, admiration of their sibling, and admiration by their sibling (McPherson, Smith, & Cook, 2001; Moss & Schwebel, 1993). Regarding power, the Relative Status/Power factor measures the level of symmetry in influence over each other and is composed of subscales that include nurturance of sibling, nurturance by sibling, dominance of sibling, and dominance by the sibling. The ratio of the sibling's nurturance and dominance of their brother or sister to the amount of nurturance and dominance the sibling receives from their brother or sister composes the score for relative status. Similar to Emery and Dillon's notion of power and privilege, the Relative Status/Power factor addresses acts of power such as issuing commands but also addresses the status awarded by one sibling being in a caretaker role relative to the other.

The other two factors of the SRQ, Conflict and Rivalry, can be seen as products of the interpersonal process between siblings and other family members, rather than as main dimensions of the relationship. Emery (1992) hypothesized that the meaning of conflict in relationships can be reduced to struggles over power and intimacy. The manner in which affect is expressed during

conflict influences the level and structure of intimacy in the relationship. The outcome of the conflict, and which member of the relationship has more influence on the outcome, is crucial to the power structure. Rivalry as measured by the SRQ is limited to siblings' perceptions of parent partiality in terms of which sibling receives more attention and better treatment. For nondisabled siblings, parent partiality may imply favoritism of one sibling over the other with the exception of parents devoting more attention to a younger sibling who is developmentally more in need of parental assistance than an older sibling (Stoneman, 2001). If children are able to justify why another sibling may require more attention from a parent, differential treatment does not negatively impact intimacy in the sibling relationship (Kowal & Kramer, 1997). However, anger over unjustified parental treatment is associated with conflict and competition in the sibling relationship (Furman & Buhrmester, 1985; Stocker, Dunn, & Plomin, 1989). Thus, rivalry is connected to conflict, both of which are driven by needs for power and intimacy.

Another method for characterizing sibling relationships is to focus on the structure of the relationship, including analyzing the roles siblings assume in relation to one another. Buhrmester (1992) identified different categories of structural characteristics that apply to children's sibling relationships including biosocial structure and social-role structure. Biosocial structure refers to biologically based characteristics, including gender, birth order, and the age difference between the siblings, which affect the status of siblings in relation to one another. These biosocial variables are also referred to as constellation variables. Social-role structure identifies the roles that siblings assume in relation to one another, such as teacher, manager, and helper, which are often identified in observational studies. Constellation variables are important to consider in understanding sibling dyads because research shows that they affect the relationship dimensions addressed in the SRQ. In addition, biosocial structure interacts with social-role structure to influence siblings' roles. That

is, birth order and gender are constellation variables that affect the roles that siblings assume in relation to one another. For example, older siblings are more likely to take on the role of teacher for their younger sibling, with females being most likely to assume teaching and helping roles (Brody, Stoneman, MacKinnon, & MacKinnon, 1985; Stoneman, Brody, & MacKinnon, 1986). Social role structure is also addressed by Stoneman and Brody's (1992) functional role theory, which describes how siblings can organize their roles in response to parental demands and societal values. For example, if a parent asks an older sibling to baby-sit a younger sibling, the older sibling is expected to behave in a manner that is appropriate with a caregiver role.

The Developmental Course of Sibling Relationships for Individuals without Disabilities

There is a larger, more developed literature involving nondisabled dyads that provides a background for understanding sibling relationships for individuals with ID. Studies comparing nondiasabled dyads and dyads involving a child with an ID show many similarities between the sibling relationships in terms of relationship quality, although there are differences in the social-role structure of the relationship (Cuskelly & Gunn, 2003; Eisenberg, Baker, & Blacher, 1998; McHale & Gamble, 1989; Roeyers & Mycke, 1995). A review of research on the developmental course of sibling relationships within nondisabled samples is useful for identifying gaps in the existing literature on sibling relationship development for individuals with an ID.

First, regarding power, research indicates that differential power is an important component of sibling relationships in childhood but is less relevant as siblings reach adolescence and adulthood and move toward egalitarian relationships. The greatest power differential between siblings is seen in childhood, when the older sibling in the dyad generally has higher status or more power than the younger sibling (Furman & Buhrmester, 1985; Vandell, Minnett, & Santrock, 1987). Differences in power and status are evidenced by the teaching and helping roles that older

siblings assume in relation to younger siblings. However, relative status and the amount of teaching and helping given to a younger sibling decrease as younger children grow more competent and the developmental competencies of the siblings become more similar. (Buhrmester & Furman, 1990; Vandell et al., 1987). In a sample of siblings that ranged from school-aged children through young adults, Buhrmester & Furman (1990) found that the majority of the power differential between siblings was eliminated by the time both siblings were at least age 12. The diminished power differential at age 12 is consistent with an age when children generally gain independence and do not require supervision from an older sibling (Buhrmester & Furman, 1990). Power in the sibling relationship is not typically addressed in studies of adult siblings, most likely because egalitarian relationships have already developed by this point. Accordingly, in their creation of the Adult Sibling Relationship Questionnaire (ASRQ), Stocker, Lanthier, and Furman (1997) found that relative status did not emerge as a relevant scale. However, one component of relative status, dominance, was relevant as an index of conflict. Thus, it seems that in the context of relatively egalitarian adult sibling relationships, assertions of dominance evoke conflict because the dominant behaviors are not seen as displays of legitimate differences in status.

Regarding warmth/closeness in sibling relationships, research shows a normative curvilinear pattern. The level of warmth/closeness is highest in childhood, when siblings spend the most time together (Buhrmester & Furman, 1990). As siblings enter adolescence, there are decreases in the level of companionship as siblings begin to spend more time away from home and each other (Buhrmester & Furman, 1990). In addition, adolescents turn to peers as sources of intimate disclosure, thus, there are decreases in the level of intimacy in the sibling relationship, as well as other positive qualities such as affection and admiration for the sibling (Buhrmester & Furman, 1987; Buhrmester & Furman, 1990; Brody, Stoneman, & McCoy, 1994). Following

adolescence, studies show that young adults report increases in warmth, perceived support, and emotional exchange compared to adolescent levels (Furman & Buhrmester 1992; Scharf, Shulman, & Avigad-Spitz, 2005).

Similar to power differentials, levels of conflict and rivalry are highest in childhood and decrease as siblings enter adolescence and young adulthood (Buhrmester & Furman, 1990; Furman & Buhrmester, 1992). Lower levels of conflict and rivalry in adolescence are likely due to decreased time spent together as well as a relationship that is more symmetrical than seen in childhood. Although conflict and rivalry decrease as siblings age, these factors are still seen in low levels in adult relationships (Stocker et al., 1997).

The constellation variables of gender, birth order, and age difference have the potential to affect the various components of sibling relationship quality. For gender, observational studies have found that female siblings spend more time managing, teaching, and helping younger siblings than their male counterparts, indicating more asymmetrical relationships for dyads with an older female sibling than with an older male sibling (Brody, Stoneman, MacKinnon, & MacKinnon, 1985; Cicirelli 1976; Stoneman, Brody, & MacKinnon, 1986). It is possible that females are more likely than males to take on a caretaking role because of gender role socialization in their homes. Consistent with this formulation, Cicirelli (1976) found that, when children were presented with a problem-solving task and were assigned either their mother or an older sibling to provide them with support on the task, mothers were more likely to provide support to children who had older brothers compared to children with older sisters. Additionally, when older siblings were assigned to help their younger siblings, older sisters provided more teaching and feedback about the task compared to older brothers. The author concluded that mothers place more responsibility for caretaking on older sisters but maintain their caretaking role when the older sibling is a male.

It seems likely that the gender difference observed in some studies would translate into higher Relative Status/Power scores on the SRQ for females compared to males. However, studies using the SRQ have not found differences in power by gender (Burhmester & Furman, 1990; Furman & Buhrmester, 1985). The discrepancy between observational studies and those using the SRQ may be explained by the differences in the two scales composing the Relative Status/Power factor on the SRQ. The dominance scale addresses behaviors that could be considered more stereotypically male, such as making the sibling do things, whereas the nurturance scale consists of more stereotypically female behaviors, such as showing and helping the sibling to accomplish tasks. When the scales are combined to form the Relative Status/Power factor, it is likely that gender differences may be lost. Consistent with this formulation, gender differences have been found on a measure that assesses behaviors similar to those found on the dominance scale. Furman & Buhrmester (1992) found that female siblings reported having less power in the relationship compared to males on the Network of Relationships Inventory (NRI). The relative power scale from the NRI includes questions assessing which sibling gives more commands and which sibling is the boss in the relationship. It is likely that females would report more relative status than males when questions assessing nurturing and care-giving behaviors are used. Thus, analyzing the dominance and nurturance scales separately may help to further clarify the effects of gender on power and address discrepancies in the literature.

Levels of warmth/closeness, conflict, and rivalry are also related to the gender of the siblings. The majority of studies find that females report higher levels of warmth and closeness than males. For example, when comparing same-sex dyads, Furman & Buhrmester (1985) found females to have the highest warmth/closeness scores. In a later study, Buhrmester & Furman (1990) partially replicated their previous findings by showing that female dyads had higher levels

of intimacy, companionship, similarity, and admiration although the overall warmth/closeness score was not significantly higher than males. Female dyads have also been found to report warmer relationships on the Adult Sibling Relationship Questionnaire (Stocker et al., 1997). Additionally, regardless of the sex of the other sibling, females are more positive in their views of their sibling and report receiving more advice and support from their siblings than males (Dunn, Deater-Deckard, Pickering & Golding, 1999; Tucker, Barber, & Eccles, 1997). Studies measuring conflict and rivalry in childhood have not found differences by gender (Buhrmester & Furman, 1985; Furman & Buhrmester, 1990), but Stocker et al. (1997) found adult female dyads to report higher levels of conflict and rivalry than male dyads.

The influence of birth order is mainly found in studies of sibling relationships in childhood. Birth order is the most important variable for determining which sibling holds more power in the relationship. First born children report greater power over younger siblings and are more likely than younger siblings to praise, teach, provide support, and influence their siblings (Buhrmester & Furman 1990, Furman & Buhrmester, 1985; Minnett, Vandell, & Santrock, 1983; Tucker et al., 1997; Vandell et al., 1987). However, birth order likely loses influence as siblings grow older and move towards a more egalitarian relationship. Birth order has not been found to affect levels of warmth/closeness on the SRQ, but it does influence levels of conflict and rivalry. Older siblings report that younger siblings are treated more favorably by parents (Buhrmester & Furman, 1990; Furman & Buhrmester, 1985; Kowal & Kramer, 1997). However, older siblings also report less conflictual relationships than younger siblings (Buhrmester & Furman, 1990; Furman & Buhrmester, 1985), supporting the finding that perceptions surrounding the necessity for differential treatment affect the level of conflict.

The effects of age-spacing in childhood are consistent across the different dimensions of relationship quality. The power differential between older and younger siblings increases with a greater number of years between the siblings, particularly with 4 or more years between the siblings, compared to more closely spaced dyads (Furman & Buhrmester, 1985; Vandell et al., 1987). The age difference between siblings also affects the way in which older siblings demonstrate power over their younger sibling. Older siblings from widely spaced dyads report greater nurturance of their siblings whereas greater dominance is reported in closely spaced dyads (Buhrmester & Furman, 1985; Furman & Buhrmester, 1990). Consistent with reports of providing either more nurturance or dominance, greater age spacing between siblings is associated with more positive relationships, whereas closer age spacing is associated with higher levels of conflict (Buhrmester & Furman, 1985; Furman & Buhrmester; 1990). One exception to the findings on age spacing is that siblings from dyads that are closely spaced report higher levels of intimacy (Buhrmester & Furman, 1990), showing that siblings dyads that are similar in age have higher levels of disclosure.

Overall, the combined findings of longitudinal and cross sectional studies of typically developing siblings suggest that sibling relationships are the most intense in childhood, with the highest levels of warmth and closeness, conflict, rivalry, and the greatest power differential. Conflict and rivalry decrease as children age and siblings move towards a more symmetrical balance of power. A curvilinear trajectory has been identified for the level of warmth and closeness in sibling relationships, with a decrease in warmth seen in adolescence followed by an increase as siblings reach adulthood. The constellation variables also affect the development of the different dimensions of sibling relationships. In general, older female siblings participate in more care-giving of younger siblings than their male counterparts and report higher levels of warmth

and closeness in the relationship. Birth order and the age difference between siblings are important variables affecting the power structure in childhood but lose influence as children enter adolescence and move towards egalitarian relationships. Birth order and age difference also influence levels of warmth/closeness, conflict, and rivalry, with greater age spacing providing for warmer and less conflictual relationships and older siblings generally reporting higher levels of rivalry but lower levels of conflictual interactions.

Sibling Relationships for Individuals with Intellectual Disabilities

One of the main differences between sibling relationships involving individuals with an Intellectual Disability and nondisabled dyads is the nature of the power structure over time. Unlike the distribution of power in nondisabled dyads, studies of siblings in childhood show that dyads including a sibling with an ID do not move towards egalitarian relationships as the siblings develop. For example, in a sample of 6-12 year-old first born children and their younger siblings with an ID aged 4-8 years, Stoneman, Brody, Davis, & Crapps (1989) found that the level of managing from the nondisabled sibling was consistent regardless of the ages of the children. Additionally, in contrast to typical sibling dyads, the level of teaching received from a nondisabled sibling increased rather than decreased with age (Stoneman et al., 1989). The asymmetrical distribution of power between siblings continues into adolescence. Eisenberg et al. (1998) found adolescent siblings of individuals with an ID to report higher levels of relative status on the SRQ than comparison siblings.

The nature of this asymmetry is less clear beyond adolescence and into adulthood. Begun (1989) compared reports on the SRQ from sisters of individuals with a developmental disability, grouped according to whether they were in adolescence, young adulthood, or middle adulthood. Adolescents reported a greater difference in relative status than young and middle adult dyads.

However, the apparent reduced dominance by siblings in adulthood may be an artifact of the way status is measured by the SRQ, which evaluates the amount of dominating and nurturing behaviors the siblings display toward their brothers and sisters. Adult siblings may perform fewer of these behaviors because they usually do not live with their sibling. Thus, the relative status measure might misrepresent the nature of the power structure in these relationships.

The asymmetries in sibling relationships of individuals with intellectual disability are further evidenced in the care-giving responsibilities performed by the nondisabled sibling throughout the lifespan. Siblings of children with ID take on more care-giving responsibilities than comparison children, regardless of whether they are older or younger than their sibling with an ID (Cuskelly & Gunn, 2003; McHale & Gamble, 1989; Stoneman, Brody, Davis, Crapps, & Malone, 1991). Care-giving continues into adulthood with many siblings expecting to assume their parents' roles as primary caregivers when their parents can no longer maintain that responsibility. Greenberg, Seltzer, Orsmond, & Krauss (1999) found that 60% of the adult siblings in their sample expected to assume primary care-giving responsibilities for their sibling in the future. Furthermore, contact between siblings significantly increases after the death of their parents, with an increase in responsibility by the nondisabled sibling for the welfare of their brother or sister (Rimmerman & Raif, 2001).

Sibling relationships for children with an ID have been found to have similar levels of acceptance, support, positive interactions, and companionship when compared to nondisabled dyads (Cuskelly & Gunn, 2003; McHale & Gamble, 1989; Royers & Mycke, 1995; Stoneman, Brody, Davis, & Crapps, 1987). In addition, trends have been found for children of disabled siblings to both report more positive relationship qualities and engage in more positive interactions (Cuskelly & Gunn, 2003; Roeyers & Mycke, 1995). In adulthood, siblings provide

more emotional support and have more contact with their sibling with a disability than nondisabled siblings (Rimmerman & Raif, 2001; Seltzer, Begun, Seltzer, & Krauss, 1991). Thus, it appears that these relationships remain warm over time.

Although research shows that dyads involving a sibling with an ID have high levels of warmth and involvement, these relationships generally lack the level of intimacy seen in other relationships. Begun (1989) compared reports on the SRQ from adolescent and adult females who had both a sibling with a disability and a nondisabled sibling. Compared to their relationship with a nondisabled sibling, the relationship with their sibling with a disability was lacking in intimacy and perceived similarity. Other studies might have failed to detect this difference because they used the factor scores on the SRQ, or similar measures, and have not looked at the individual scales, including the intimacy scale. Intimacy is likely highest in childhood for these dyads but decreases with age as the cognitive gap between siblings increases and the asymmetrical nature of the relationship is further established.

Research on conflict for sibling dyads that include an individual with an ID is inconsistent, with some studies finding levels of conflict similar to nondisabled dyads and others reporting lower levels of conflict. Many observational studies have not found differences in conflict levels for children with ID and comparison dyads (Abramovitch et al., 1987; Brody, Stoneman, Davis, & Crapps, 1991; Stoneman et al., 1987; Stoneman et al., 1989). However, other studies have found mothers and the nondisabled siblings to report less conflict than comparison dyads (Eisenberg et al., 1998; McHale & Gamble, 1989). Additionally, nondisabled siblings often do not reciprocate their sibling's antagonistic actions (Stoneman et al., 1989). Discrepancies between studies may have occurred because assessing conflict can be difficult due to reporting biases, such as social desirability. That is, some siblings who report guilt for feelings of anger toward their sibling with a

disability (Wilson, Baker, & Blacher, 1989) might be unwilling to report times when they acted on their anger by antagonizing or quarreling with their sibling. Since studies show that levels of conflict for siblings with ID are relatively similar, and possibly lower than nondisabled dyads, it seems likely that the trajectory of conflict over time would also be similar. Consistent with this hypothesis, reported conflict has been found to decrease from adolescence to adulthood for dyads that include a sibling with an ID (Begun, 1989).

The implications for the impact of parental differential treatment on the sibling relationship are different for dyads involving a sibling with an ID compared to nondisabled dyads. Greater levels of maternal differential treatment have been found for sibling dyads in which the youngest sibling has an ID, compared to nondisabled dyads. Specifically, mothers spent more time with and devoted more attention to younger siblings with disabilities compared to younger siblings without disabilities (McHale & Pawletko, 1992). However, the increased time devoted to a child with an ID did not take away from the amount of time nondisabled siblings interacted with their parents. Stoneman et al. (1987) found that parents of children with disabilities still spent as much time interacting with the nondisabled siblings as did parents in comparison families. Thus, discrepancies in parental differential treatment do not have the same negative implications for siblings of an individual with an ID that are seen in nondisabled dyads (McHale & Pawletko, 1992). Accordingly, Eisenberg et al. (1998) found adolescents with a sibling with an ID to report less rivalry in the relationship than comparison siblings on the SRQ. Although it is not clear how rivalry changes over time from the current literature, it is likely present at low levels in childhood and declines to even lower levels as children mature and further understand the legitimacy of differential treatment for themselves and a sibling with an ID.

Similar to nondisabled dyads, gender likely influences the power structure of sibling relationships through the differences in roles assumed by males and females in response to their sibling. Beginning in childhood, female siblings, as compared to male siblings, typically assume more of the care-giving responsibilities for their sibling with an ID (Hannah & Midlarsky, 2005; Stoneman, Brody, Davis, Crapps, & Malone, 1991). Sisters' roles typically include greater involvement in physical care, babysitting, more time managing behavior, and a greater amount of time spent teaching and helping the child with an ID than brothers' roles (Brody et al., 1991; Hannah & Midlarsky, 2005; Stoneman et al., 1987; Stoneman et al., 1991). Although male siblings of children with ID participate in more care-giving than comparison siblings, they spend more time interacting with their siblings in a traditional playmate role than females (Brody et al., 1991; Stoneman et al., 1987). However, not all of the research for care-giving in childhood consistently supports the extra responsibilities assumed by sisters. McHale and Gamble (1989) found only a trend for sisters to take on a greater care-giving role compared to brothers, and Cuskelly and Gunn (2003) found no gender differences in care-giving roles in an Australian sample. For adult dyads, research shows that females are generally more involved and provide greater support for their sibling than males (Orsmond & Seltzer, 2000; Rimmerman & Raif, 2001; Seltzer, Begun, Seltzer, & Krauss, 1991). Also, when adult siblings report on their future care-giving expectations, female siblings are more likely than males to expect to take on more responsibilities or co-reside with the adult with an ID (Greenberg, Seltzer, Orsmond, & Krauss, 1999; Krauss, Seltzer, Gordon & Friedman, 1996).

Consistent with research finding females to provide more care-giving, females also provide more emotional support to their sibling throughout the lifespan (Greenberg, Seltzer, Orsmond, & Krauss, 1999; Hannah & Midlarsky, 2005; Rimmerman & Raif, 2001). Additionally, care-giving is

related to positive aspects of the sibling relationship such as increased empathy in the nondisabled sibling and a more involved sibling relationship (Cuskelly & Gunn, 2003; Stoneman et al., 1991). Female siblings report higher levels of warmth and closeness in adolescence and continue to report greater levels of companionship and closeness in adulthood compared to male siblings (Eisenberg et al., 1998; Orsmond & Seltzer, 2000). With a greater involvement in care-giving in adulthood, females' perceptions of closeness with their sibling increase over time whereas males' reports of closeness remain stable (Orsmond & Seltzer, 2000).

Although gender influences levels of involvement and closeness, most studies have not found gender to influence conflict and rivalry. Most studies with this population have not found significant differences between genders on conflict (Stoneman et al., 1987, 1989, 1991), although McHale & Gamble (1989) found that female siblings reported more hostility than male siblings. Eisenberg et al. (1998) did not find significant differences among genders on rivalry as reported on the SRQ.

Since nondisabled siblings are awarded power in the relationship based on their sibling's disability status and irrespective of age, birth order and age difference have relatively less influence on the power structure for these siblings as compared to siblings without disabilities. For example, contrary to normative patterns, younger siblings participate in more care-giving for their older sibling with an ID than comparison younger siblings (Brody et al., 1991; Hannah & Midlarsky, 2005; Stoneman et al., 1991). Consistent with findings for birth order, Brody et al. (1991) did not find a relationship between age difference and relative status based on the siblings' chronological ages. However, differences in the mental ages of the children were positively correlated with role asymmetry. Thus, the difference in children's abilities appears to be more

important than the actual age difference when examining the effects of age difference on relative status.

Few studies have assessed the effects of birth order and age spacing on levels of warmth and conflict in the relationship. Past research that has included these constellation variables has not found birth order to affect sibling reports of warmth or conflict (Cuskelly & Gunn, 2003; Begun et al., 1989). Yet, age differences have been found to influence conflict in the relationship. Consistent with nondisabled dyads, greater age spacing also provides for lower levels of conflict (Begun et al., 1989).

In summary, sibling relationships for individuals with intellectual disabilities have been shown to have similar levels of positive and negative relationship qualities when compared with nondisabled dyads. The main difference seen in sibling relationships for this population is in the structure of the relationship. Nondisabled siblings are established as the dominant sibling in childhood and the power differential remains throughout the lifespan. The power structure seen in these dyads leaves less room for birth order and age differences to have strong effects on relationship quality. However, gender does affect the roles that siblings assume in relation to their sibling with a disability which has implications for different areas of relationship quality.

Purpose

The purpose of this study is to provide growth trajectories to detail the development of sibling relationship quality from childhood to young adulthood for siblings of individuals with ID. The study will also address how sibling constellation variables affect the roles that nondisabled siblings assume in relation to their sibling with an ID over time. Additionally, this study aims to

disaggregate specific factors of the SRQ, which have been proven reliable and valid for describing sibling relationships for nondisabled dyads, in order to more accurately describe the structure and quality of relationships for siblings of individuals with ID. A potential benefit of this study is that the results may be useful for filling in some of the gaps in the present literature on sibling relationships for individuals with ID as well as addressing measurement considerations that can be taken into account when using sibling report measures to assess relationship quality.

Hypotheses

Hypothesis 1

Based on cross-sectional research with siblings of individuals with an ID, which suggests that relatively higher status for the nondisabled sibling is apparent by late child hood, as well as in adolescence and adulthood, longitudinally the power differential between siblings, with the nondisabled sibling having a relatively higher status, is expected to increase in childhood and remain at a high level throughout adolescence and young adulthood. Thus, a greater rate of change is predicted for dyads in childhood compared to older dyads. Sex of the nondisabled sibling is the only constellation variable predicted to affect perceptions of power in the relationship. Effects of gender are predicted for the scales of the Relative Status/Power factor, with the expectation that females will report higher levels of nurturance than males, congruent with literature addressing care-giving and showing greater levels of teaching, helping, and emotional support for females, similar to the behaviors addressed in the nurturance scale.

Hypothesis 2

In order to better understand changes in the level of intimacy and warmth in sibling relationships for individuals with ID, the scales of the Warmth/Closeness factor will be analyzed separately. Prosocial behaviors, affection, and admiration by the sibling with an ID are expected

to be high in childhood and remain consistently high through young adulthood, fitting with cross-sectional research comparing levels of warmth in this population to that of comparison dyads. Research shows that warmth in sibling relationships for children with ID is similar to that seen in comparison dyads, with trends for siblings of individuals to report more positive relationship qualities than siblings from nondisabled dyads in both childhood and adulthood.

Also, based on cross-sectional research showing lower levels of similarity and intimacy in adolescence for siblings with an ID as compared to nondisabled dyads, similarity and intimacy are expected to be high in childhood but reported levels are predicted to decrease as the relationship becomes increasingly asymmetrical as siblings enter adolescence. Companionship is also expected to be highest in childhood yet demonstrate slight decreases as the nondisabled sibling ages and begins to spend more time away from the home, consistent with patterns found in the literature with siblings from nondisabled dyads reporting decreases in levels of companionship beginning in adolescence. Admiration of their sibling with an ID is expected to increase from childhood levels as siblings gain a greater understanding of the challenges that their sibling must face because of their disability status.

The sex of the nondisabled sibling is the only constellation variable predicted to affect growth trajectories on specific Warmth/Closeness scales. The effects of sex will be tested for all scales but predictions are only made for the growth trajectories of the companionship and affection scales, based on research addressing care-giving and gender difference in levels of warmth for this population. Consistent with greater levels of care-giving in adulthood, research shows that females report higher levels of companionship and increases in closeness throughout adulthood, compared with males who report lower levels of involvement and stability in perceptions of closeness. Therefore, females' reports of companionship are expected to remain

consistently high through adolescence and young adulthood, whereas males' reports of companionship are expected to decrease from childhood levels. Females are also expected to demonstrate increases in affection over time whereas males will remain relatively stable.

Hypothesis 3

Levels of conflict and rivalry are predicted to be at their highest in childhood and decrease throughout adolescence and young adulthood, based on combined findings from literature with this population and nondisabled dyads. Previous research has found sibling dyads including an individual with an ID to have similar levels of conflict when compared to nondisabled dyads, with both groups reporting lower conflict with age in cross-sectional studies. Additionally, siblings of individuals with ID report lower levels of rivalry, which has been found to decrease over time in nondisabled dyads. The only constellation variable that is expected to affect this area of relationship quality is the age difference between siblings. Age differences are predicted to affect the level of conflict, with siblings from widely spaced dyads reporting less conflictual interactions than siblings from closely spaced dyads.

CHAPTER 2.

METHOD

Longitudinal Design Overview

Data from this study come from a larger longitudinal study of family interactions and adaptation in families of individuals with ID. The original study followed 200 families of children with ID with 4 data collection points. Researchers divided families into cohorts based on the time of their recruitment into the study and the age of the child with an ID. Cohort A is composed of 90 families who were originally recruited at time 1 (T1) and had a 6-11 year old child at that time. The second cohort, Cohort B, is composed of 81 families with an adolescent (aged 12-18) at the original T1 recruitment. The final cohort, Cohort C, is composed of 29 families recruited at T3 with children aged 5-15 years old. All participants were sought out at T4 to participate, including those that may have dropped out of the study after the first or second time point.

Families were selected for the current research project if a sibling was living in the home at the time of the first data collection. For families with more than one sibling living in the home, the respondent sibling was randomly selected from children between 6 and 18 years old. However, questionnaire data was only collected from siblings age 8 or older. Since siblings did not report on sibling relationship quality at the first data collection point, this study begins with time 2 data. There was approximately a 3-year gap between T2 and T3 and a 9-year gap between T3 and T4. For the sibling dyads, 73 respondent siblings provided data for only one time point, 29 supplied data for two time points, and 29 had data for all three time points.

Participants

This sample consists of 131 siblings of an individual with an ID that reported on their relationship during at least one time point. Families of school-aged children with a mild or moderate ID were originally recruited through the public school systems of Lansing, Michigan and surrounding areas. For the original recruitment, families of children and adolescents that had a child enrolled in special education classes for mild and moderate ID were mailed letters describing the project. Children and adolescents with ID were identified by previous diagnoses described in their Individual Education Planning (IEP) reports that were obtained from the schools. For this study, 83 of the participants' siblings have a diagnosis of Mild ID and 48 are diagnosed with Moderate ID. The diagnostic criteria for Intellectual Disability includes below average general intellectual functioning that is accompanied by limitations in adaptive functioning. Individuals with a Mild ID have an IQ score ranging from 50-55 to approximately 70; individuals with a Moderate ID have an IQ score ranging from 35-40 to 50-55, both with similar deficits in adaptive functioning.

With data from T2-T4, this study includes data from respondent siblings ranging from age 8-34 over a 12-year span. Their siblings with an ID ranged in age from 6 to 33 years-old across the 3 time points and included 66 males and 65 females. For the respondent siblings, there are 32 older brothers, 32 older sisters, 25 younger brothers, 41 younger sisters and one set of different-sex twins. The average age difference between siblings is 3.63 years (SD = 2.29). In this sample, 87% of the participants are Caucasian, 7% are African American, and 6% are of "mixed" racial background or "other".

Measures

The nondisabled, respondent siblings completed the Sibling Relationship Questionnaire – Revised (SRQ; Furman & Buhrmester, 1985) at the 2nd and 3rd data collection points, and a shortened version of the measure at Time 4. This self-report measure is composed of 48 items, forming 16 scales (see Table 1). Each scale is composed of 3 questions. Items included in the questionnaire were derived from open-ended interviews with children in the fifth and sixth grades. Children's responses were organized by categories, which were derived from the different relationship characteristics the children described. The main categories of relationship qualities identified by the children were grouped together to form the 16 scales. A principal component analysis identified 4 factors from the scales: Warmth/Closeness, Relative Status/Power, Conflict, and Rivalry.

Correlations between all factor and scaled scores that were used in the analyses to address change over time are presented in Table 2 and Table 3. The factor scores, Relative Status/Power, Conflict, and Rivalry, were weakly correlated with each other and only weakly to moderately correlated with the Warmth/Closeness scales. Regarding associations among the Warmth/Closeness scales, the average correlation across time points was .50. Correlations that were greater than .70 include the Prosocial scale with the Companionship and Admiration of Sibling scales at time 2, the Admiration of Sibling and Admiration by Sibling scales at time 3, and the Affection and Admiration of Sibling scales at time 4. Additionally, the Affection, Prosocial, and Companionship scales were consistently relatively highly correlated with each other. Correlations between the Intimacy scale and other Warmth/Closeness scales were somewhat lower overall compared to the relationships among other scales.

Table 1
Content of Scales on the Sibling Relationship Questionnaire

Scales Grouped by Factors	Content
Relative Status/Power Factor	
Nurturance of Sibling	Showing, helping, and teaching provided for the sibling
Nurturance by Sibling	Showing, helping, and teaching received from the sibling
Dominance of Sibling	Telling, making, and ordering the sibling to perform tasks
Dominance by Sibling	Telling, making, and ordering received from the sibling
Warmth/Closeness Factor	
Prosocial	Doing nice things, cooperating, and sharing
Affection	Caring about each other, loving each other, sharing a strong bond
Companionship	Sharing activities, playing, and spending time together
Similarity	Liking similar things, amount of things in common, how alike the siblings are
Intimacy	Telling each other everything, sharing secrets and private information
Admiration of Sibling	Admiration, respect, pride, and holding the sibling in high regards
Admiration by Sibling	Admiration, respect, pride, perceptions of being held in high regard by the sibling
Conflict Factor	
Antagonism	Insults, name-calling, mean behaviors, picking on each other
Competition	Trying to out-do each other, competing, trying to do things better than each other
Quarreling	Disagreements, getting mad at each other, arguments
Rivalry Factor	
Maternal Partiality	Which sibling the mother treats better, favors, and provides more attention to
Paternal Partiality	Which sibling the father treats better, favors, and provides more attention to

The questionnaire assesses the respondent's perceptions of the relationship and behaviors towards their sibling. Specific scales on the Relative Power/Status factor, as well as one Warmth/Closeness scale, also assess the respondent's impression of his/her sibling's perceptions of the relationship and specific behaviors. Items are rated with a 5-point Likert scale ranging from "hardly at all" to "extremely much," with the exception of the Rivalry scale in which possible choices range from "my sibling almost always gets treated better, more attention, etc." to "I almost always get…" At time 4, respondent siblings completed a modified version of the SRQ that included only the items from the Warmth/Closeness and Conflict factors.

Table 2

Correlations among the Factors and Scales at Time 2 and Time 3

	Relative Status/Power Factor	Prosocial	Affection	Companionship	Similarity	Intimacy	Admiration of	Admiration by	Conflict Factor	Rivalry Factor
Relative Status/ Power Factor	-	-.12	.12	-.18	-.22	**-.34**	.03	.04	.24	-.20
Prosocial	.05	-	**.63**	**.75**	**.65**	**.45**	**.73**	**.63**	**-.40**	-.07
Affection	.02	**.59**	-	**.57**	**.46**	**.26**	**.69**	**.55**	-.21	**-.26**
Companionship	-.19	**.53**	**.43**	-	**.70**	**.58**	**.69**	**.51**	-.10	-.08
Similarity	-.18	**.49**	**.41**	**.52**	-	**.53**	**.61**	**.64**	-.20	-.01
Intimacy	**-.43**	**.28**	**.30**	**.26**	**.43**	-	**.31**	.25	-.08	-.08
Admiration of	-.15	**.62**	**.69**	**.49**	**.46**	**.42**	-	**.69**	-.24	-.08
Admiration by	-.06	**.64**	**.66**	**.49**	**.56**	.21	**.73**	-	-.15	.17
Conflict Factor	.08	**-.45**	**-.50**	-.13	-.22	-.13	**-.45**	**-.32**	-	-.19
Rivalry Factor	-.19	.09	-.04	.02	.11	.06	-.13	.07	**.27**	-

Note. Correlations for time 2 are shown in the top half of the table and correlations for time 3 are shown in the bottom half. Correlations significant at $p \leq .05$ are shown in bold.

Table 3

Correlations among the Factors and Scales at Time 4

	Prosocial	Affection	Companionship	Similarity	Intimacy	Admiration of	Admiration by	Conflict
Prosocial	-	**.63**	**.66**	**.49**	**.50**	**.56**	**.42**	-.18
Affection		-	**.61**	**.37**	**.23**	**.85**	**.54**	**-.30**
Companionship			-	**.54**	**.37**	**.58**	**.36**	-.07
Similarity				-	**.38**	**.44**	**.27**	-.08
Intimacy					-	.18	.19	.06
Admiration of						-	**.53**	**-.33**
Admiration by							-	**-.26**
Conflict								-

Note. Correlations significant at $p \leq .05$ are shown in bold.

The scales of the SRQ have been found to have good internal consistency (Furman & Buhrmester, 1985). For this study, item-level data was not available at time 2 so reliability estimates presented are from times 3 and 4. The internal consistency of the items that compose the Conflict Factor were alpha = .84 at T3 and alpha = .88 at T4. For the Rivalry and Relative Status/Power Factors, which were not given at T4, alpha = .66 on Rivalry and alpha = .73 on Relative Status/Power. Since only scale scores from the Warmth/Closeness Factor were used in the analyses, the average item total correlations are presented from T3 and T4 for all of the three-item composites that make up each scale. The average item total correlation for the Prosocial scale at T3 and T4 was .44 and .52, the Affection scale was .58 and .82, the Companionship scale was .43 and .67, the Similarity scale was .67 and. 66, the Intimacy scale was .52 and.77, the Admiration of sibling scale was .67 and.78, and the Admiration by sibling scale was .83 and .75. The measure also has high test-retest reliability (mean r = .71) with a range of .58 - .86 among all of the scales (Furman & Buhrmester, 1985). The SRQ has been used before in studies of children and adolescents that have a sibling with an intellectual or developmental disability (Begun, 1989; Eisenberg et al., 1998). When collecting pilot data, it was observed that children under 8 years old had difficulty understanding the measure. Thus, the SRQ was only given to children over age 8 in this study. Children over age 8 that had difficulty reading the items were administered the questionnaire in interview format.

Procedure

During the 2nd and 3rd data collection points, each family completed two sessions lasting approximately two hours. Sessions were conducted by graduate and undergraduate students in psychology and took place in the family's home, typically one week apart. Parents gave informed consent for themselves and their children to participate and children provided verbal assent.

Respondent siblings 8 years old or older completed a battery of questionnaires during the first session that included the SRQ. In general, the SRQ was considered too complex for most of the participants with an ID to complete, so it was not administered to them. Families received financial rewards for their participation.

At time 4, respondent siblings were mailed a packet of questionnaires that included the modified version of the SRQ. The measure was shortened to decrease the amount of time necessary to complete the packet, with the goal of increasing participation. Participants were mailed cards to remind them to return the surveys after one week and phone calls were made if the measures were not received in 2 weeks. Research assistants scanned returned measures for incomplete or inaccurate responses and called participants if necessary to correct any errors. The sibling received 10 dollars for their participation at this time point. Approximately 122 siblings were contacted at Time 4 and 89 siblings returned their questionnaires, resulting in a response rate of 73%.

CHAPTER 3

RESULTS

Statistical Analyses

Sibling relationship variables with 2 waves of data, including the Relative Status/Power and Rivalry factors, were analyzed using correlations and hierarchical regressions. Correlations were used to assess the relationship between sibling age and the factor scores. Hierarchical regressions were used to conduct residualized change analyses that assessed the amount of change in the factor scores between time 2 and time 3. The factor score from T2 was entered in the first step of the equation with scores at T3 serving as the criterion. Age of the sibling was entered as a covariate in the second step to control for age in assessing the effects of other predictors. The sibling constellation variables (gender, birth order, age difference) were entered in the third step to test for differences in the rate of change based on these variables. Gender and birth order were dummy coded and age difference was entered as a continuous variable. Age difference was calculated by subtracting the younger sibling's age from the older sibling's age. Separate regressions were run to test for each constellation variable in the second step to maximize the subject-to-variable ratios for these analyses. The sibling's level of disability (mild, moderate) and cohort (recruited at T1, recruited at T3) were tested as covariates but were not included in the regressions because no significant effects were found.

Additional analyses were conducted on the Relative Status/Power and Rivalry factors to address specific hypotheses on each factor. The Relative Status/Power factor is a ratio score created by subtracting the Nurturance by Sibling and Dominance by Sibling scales from the Nurturance of Sibling and Dominance of Sibling Scales. To assess which sibling held more power in the relationship, paired-sample *t*-tests were used to compare reported levels of nurturance and

dominance of the respondent sibling to the level of nurturance and dominance received from the sibling with an ID. In the regressions for the Relative Status/Power Factor, sibling age was squared and entered into the equation to test for any curvilinear effects of age. To assess for any differences in the rate of change on the Relative Status/Power Factor based on birth order that may be dependant on the age of the respondent, an interaction term for age and birth order was also entered into the regression equation. Hypotheses predicting gender differences on the scales composing this factor were tested with Analyses of Variance (ANOVA's) since hypotheses predicted differences in the overall level of these scores and not on the rate of change for the factor. Separate ANOVA's were run on ratios that were created to assess the balance of nurturance and the balance of dominance in the relationship. On the Rivalry Factor, paired-sample *t*-tests were used to assess whether or not there was a decrease in scores between T2 and T3.

Sibling relationship variables with three waves of data, including the Conflict Factor and the seven individual scales of the Warmth/Closeness Factor, were analyzed using Hierarchical Linear Modeling. In order to assess individual change over time in the respondent sibling's perceptions of relationship quality, sibling age was included as the measure of time at Level-1 to create an unconditional growth model. Eight growth trajectories were created with the respondent sibling's age centered on the average age at the first wave of data collection for this study. To examine the effects of sibling constellation variables on the relationship variables, these variables were entered into the model at Level-2 (Equation 1). Predictor variables at Level-2 allowed for the model to account for between-person variations in the level of the outcome variable and the rate of change. The sibling's level of ID, cohort, and whether or not they lived with their sibling were tested at Level-2 as a possible covariate in every model. Since siblings had to be living with their sibling to be included in the study at T2 and T3, the living location variable contrasted the

siblings living together at T3 and T4 to the siblings living apart at T4. Cohort and living location of the sibling were not found to have significant effects, so they did not remain in any of the models presented. Level of ID only remained in the models where it significantly affected the intercept or slope of the models.

1. Level-1 model: Y (relationship variable) = $\pi_0 + \pi_1$ (Age – 13.48) + *e*

   Level-2 model: $\pi_0 = \beta_{00} + \beta_{01}$ (ID level) + β_{02} (constellation variable) + r_0

   $\pi_1 = \beta_{10} + \beta_{11}$ (ID level) + β_{12} (constellation variable) + r_1

At Level-1, π_0 represents a given individual's mean score on the outcome variable at age 13.48. Level-2 specifics the population average for the intercept (β_{00}) as it varies across groups based on the level of ID (β_{01}) and constellation variables (β_{02}). At Level-1, π_1 represents an individual's rate of change on the relationship variable. Level-2 predicts population average rate of change (β_{10}) and differences in slope based on ID Level (β_{11}) and the constellation variables (β_{12}) (Singer & Willett, 2003). The error terms for the intercept and slope were set to vary at random in the Level-2 model. All analyses used full maximum likelihood estimation (FML). Since FML has the potential to provide biased estimates of the random effects with small, unbalanced data (Singer & Willet, 2003), models were also estimated using restricted maximum likelihood estimation (RML). Since the fixed effects estimated with FML and RML were nearly indistinguishable, only the results of FML are presented.

Effects of Age and Constellation Variables on Siblings' Reports of Relationship Quality

The first hypothesis predicted that the power differential between siblings, with nondisabled siblings reporting higher levels of power, would increase throughout childhood and stabilize at a high level in adolescence and adulthood. Thus, a greater rate of change was predicted for younger dyads compared with older dyads. Sex of the respondent sibling was

predicted to affect the scales of the Relative Status/Power with females reporting higher levels of nurturance than males and males reporting higher levels of dominance.

Consistent with predictions, respondent siblings reported that they provided higher levels of nurturance, t (62)= 8 .18, p < .001 and dominance $t(62) = 4.36$, p <.001 compared to the level of these behaviors that they received from their sibling. There were no significant correlations of sibling age with the Relative Status/Power Factor at T2 or T3, showing that siblings' perceptions of power were not related to their age (Table 4). In the regression analysis, reports of Relative Status/Power at T2 significantly predicted scores at T3 showing stability in reports over time as predicted (Table 5). Sibling age did not contribute significantly to the prediction, showing that age did not affect the rate of change in scores. The curvilinear effect of age was also not a significant predictor in the model. An additional interaction variable with birth order and sibling age was included in the last step of the model to test for possible effects of birth order that were dependent on the age of the sibling. However, the interaction term was insignificant, so there was no evidence that birth order had differential effects on change in power depending on the age of the sibling. The hypotheses about gender differences in changes in power over time were not supported because there were no significant effects of gender on the ratios of the nurturance scales $F(1,62) = 1.03$, ns, and the dominance scales $F(1,62) = 1.15$, ns.

Hypothesis 2 was tested with HLM, and predicted differing trajectories for the slopes of the individual scales that make up the Warmth/Closeness factor. Predictions for change over time were not made for the prosocial behaviors, affection, and admiration by the sibling scales, which were expected to remain consistently high. Consistent with expectations, the slope in the level-1 model on the prosocial scale did not reach a level of significance (Table 6).

Table 4

Correlations between Sibling Age and Relative Status/Power and Rivalry Factors

Relationship Variable	Sibling Age at T2	Sibling Age at T3
Relative Status at T2	.17	
Rivalry at T2	-.23	
Relative Status at T3		.06
Rivalry at T3		-.10

Table 5
Regression Analyses for Relative Status/Power and Rivalry Factors

Relationship Variable		B	SE B	β
Relative Status/Power	Step 1			
	Factor Score at T2	.43	.17	.40*
	Step 2			
	Factor Score at T2	.44	.17	.41*
	Respondent Sibling Age	-.07	.31	-.04
Rivalry	Step 1			
	Factor Score at T2	.39	.13	.46*
	Step 2			
	Factor Score at T2	.34	.13	.40*
	Respondent Sibling Age	-.20	.15	-.21

*p<.05, **p<.01, ***p<.001

Contrary to expectations, there was a significant increase over time on the affection scale, shown in Table 6 by a significantly positive slope associated with age at Level-1. A significant positive slope associated with age at Level-1 was also found on the admiration by sibling scale, indicating an increase in reports of admiration by the sibling with an ID over time (see Figure 1).

The hypothesis further proposed that the slope of affection would differ depending on the sex of the respondent sibling, with only female siblings predicted to demonstrate increases in their reports of affection over time. In order to test whether the positive slope for affection was accounted for by females only, the sex of the respondent sibling was tested as a level-2 predictor

of slope. Contrary to expectations, sex of the respondent sibling did not have a significant effect on the slope at Level-2 (Table 7).

Table 6
Growth Trajectories for Sibling Relationship Variables

Relationship Variable	Parameter	Coefficient	SE
Prosocial	For average rate at age 13.48, β_{00}	9.34***	0.22
	For linear change, β_{01}	.04	0.02
Affection	For average rate at age 13.48, β_{00}	11.81***	0.24
	For linear change, β_{01}	.09***	0.02
Admiration by Sibling	For average rate at age 13.48, β_{00}	10.9***	0.29
	For linear change, β_{01}	.11***	0.03
Similarity	For average rate at age 13.48, β_{00}	8.22***	0.24
	For linear change, β_{01}	.01	0.03
Intimacy	For average rate at age 13.48, β_{00}	6.66***	0.25
	For linear change, β_{01}	-.02	0.03
Companionship	For average rate at age 13.48, β_{00}	9.59***	0.24
	For linear change, β_{01}	-.07**	0.03
Admiration of Sibling	For average rate at age 13.48, β_{00}	10.71***	0.26
	For linear change, β_{01}	.10***	0.02
Conflict	For average rate at age 13.48, β_{00}	24.14***	0.66
	For linear change, β_{01}	-.58***	0.08

*p<.05, **p<.01, ***p<.001
Note: All estimations of fixed effects are reported with robust standard errors.

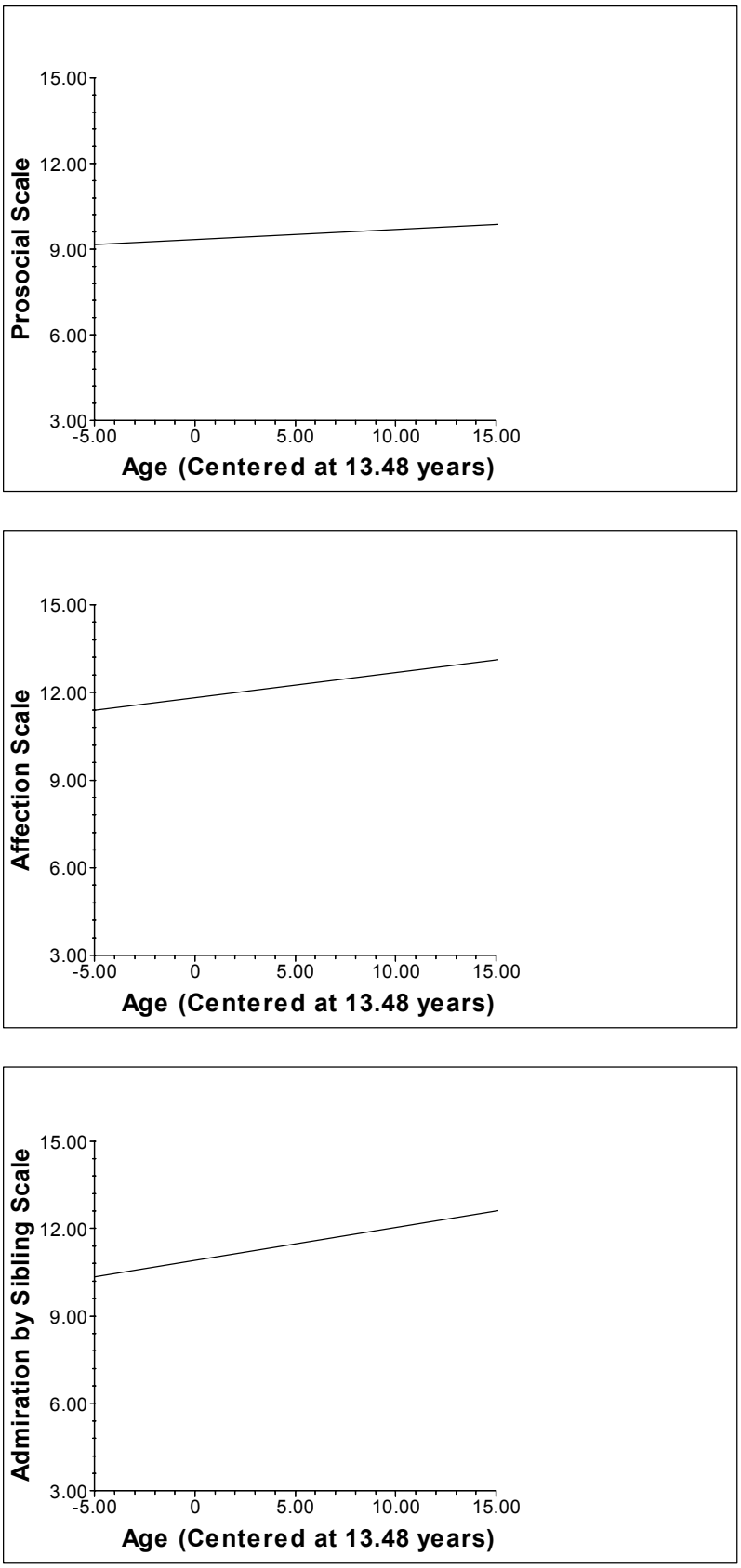


Figure 1. Growth trajectories for the prosocial, affection, and admiration by sibling scales.

Table 7
Relationship Variables with Predictions made at Level-2 for the Effect of Constellation Variables

Relationship Variable	Parameter	Coefficient	SE
Affection	For average rate at age 13.48		
	Intercept, β_{00}	11.36***	.39
	Respondent Sex, β_{01}	.80	.48
	For linear change		
	Intercept, β_{10}	.10**	.03
	Respondent Sex, β_{11}	-.03	.04
Companionship	For average rate at age 13.48		
	Intercept, β_{00}	9.26***	.37
	Respondent Sex, β_{01}	.59	.48
	For linear change		
	Intercept, β_{10}	-.07^	.04
	Respondent Sex, β_{11}	-.01	.05
Conflict	For average rate at age 13.48		
	Intercept, β_{00}	23.9***	.66
	Age Difference, β_{01}	-.81**	.28
	For linear change		
	Intercept, β_{10}	-.54***	.08
	Age Difference, β_{11}	.11***	.03

*p<.05, **p<.01, ***p<.001
Note: All estimations of fixed effects are reported with robust standard errors.

Also in hypothesis 2, levels of reported similarity, intimacy, and companionship in the relationship were predicted to decrease over time. Contrary to expectations, the slopes in the Level-1 model for the similarity and intimacy scales were not significant (Table 6). Thus, reported levels of similarity and intimacy did not demonstrate reliable linear change over time. As shown in Table 6, findings for the companionship scale were consistent with expectations. A significant negative slope at Level-1 indicated that reported levels of companionship decreased over time (see Figure 2). Predictions were also made at Level-2 for the companionship scale,

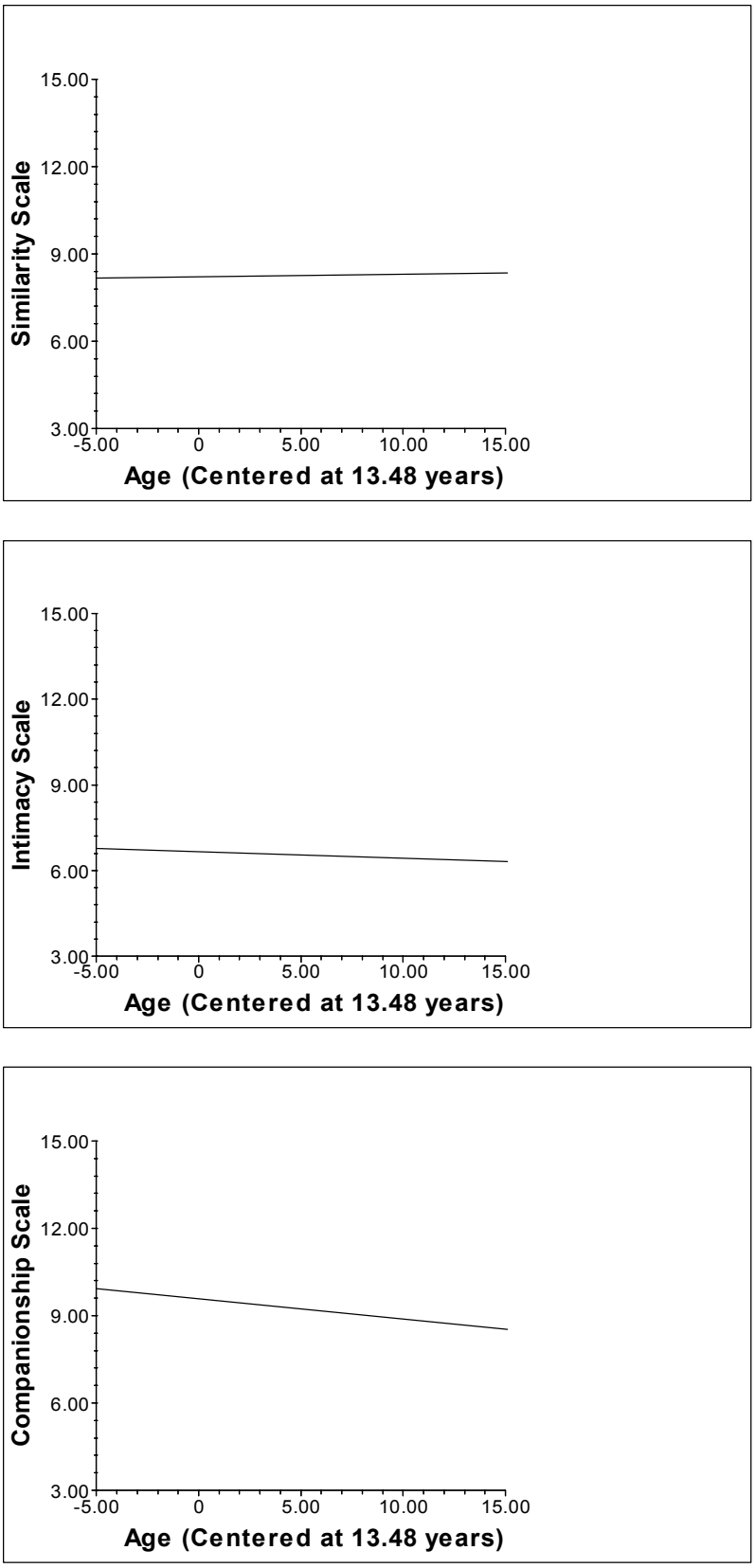


Figure 2. Growth trajectories for the similarity, intimacy, and companionship scales.

with male siblings predicted to demonstrate decreases over time while females' responses remained more consistent. Contrary to expectations, there were no significant effects of respondent sibling sex predicting slope at Level-2 (Table 7).

The last prediction in hypothesis 2 concerned change in admiration of the sibling with an ID over time. Reported admiration of the sibling was predicted to increase over time. Consistent with expectations, the slope of the admiration of sibling scale was positive and significant at Level-1, indicating an increase in admiration over time (Table 6, Figure 3).

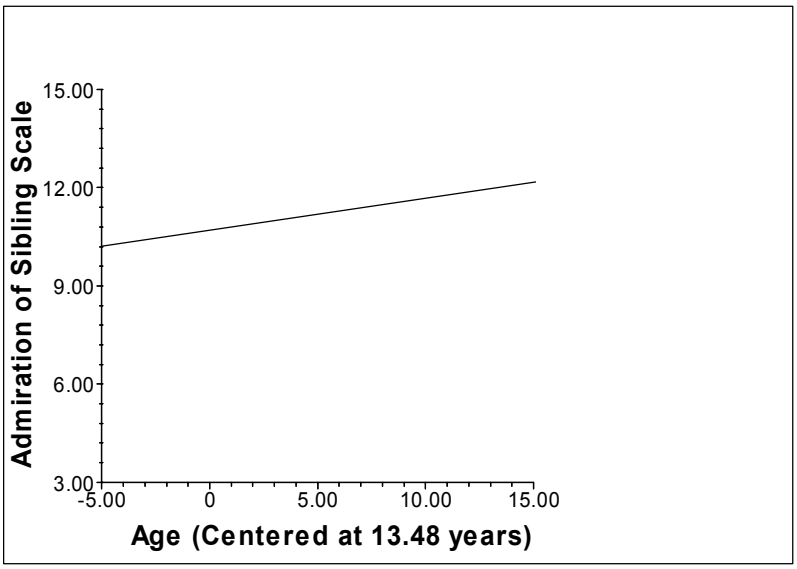


Figure 3. Growth trajectory for the admiration of sibling scale.

Overall, on the scales of the Warmth/Closeness factor, hypotheses regarding growth trajectories were supported on the prosocial, companionship, and admiration of sibling scales. Prosocial behaviors remained consistent over time, companionship decreased as siblings aged, and admiration of the sibling with an ID increased over time. However, hypotheses were not supported on the affection, admiration by sibling, similarity, and intimacy scales. We did not expect linear change over time for the affection and admiration by sibling scales, yet reports of affection and admiration by the sibling with an ID increased over time. Similarity and intimacy

were predicted to decrease over time yet these scales did not demonstrate a significant linear pattern.

Hypothesis 3 predicted that conflict would decrease over time and that siblings from more closely spaced dyads would report a greater level of conflictual interactions than siblings from more widely spaced dyads. As predicted, a significant negative slope was found at Level-1 showing that reported levels of conflict decreased over time (Table 6). Also as predicted, there was a significant effect for age spacing predicting the intercept at Level-2, showing that more closely spaced dyads reported higher levels of conflict at age 13.48 than did widely spaced dyads (closely spaced = 23.90, widely spaced = 23.09; see Table 6). Although predictions were only made for the intercept at Level-2, age difference also had a significant effect on the slope at Level-2 with closely-spaced dyads demonstrating a greater decline in conflict over time compared to more widely spaced dyads (see Figure 4).

Hypotheses 3 also predicted that reported levels of rivalry would decrease over time, which was tested using correlations, paired-sample *t*-tests, and regressions. Only a trend was found for the correlation between respondent sibling age at T2 and the Rivalry factor at T2. The relationship between age and rivalry was negative, as expected, suggesting that reports of rivalry showed a trend toward decreasing with older ages for the respondent siblings. However, rivalry was not correlated with the age of the sibling at T3 (Table 4). Contrary to expectations, there was not a significant decrease between scores at T2 and T3, $t(36)= -.26$, ns. In the regression analysis, scores at T2 significantly predicted scores at T3 showing stability in rivalry over time (Table 5). Age of the sibling did not contribute significantly to the regression, so there was no evidence that age affected the rate of change between time points.

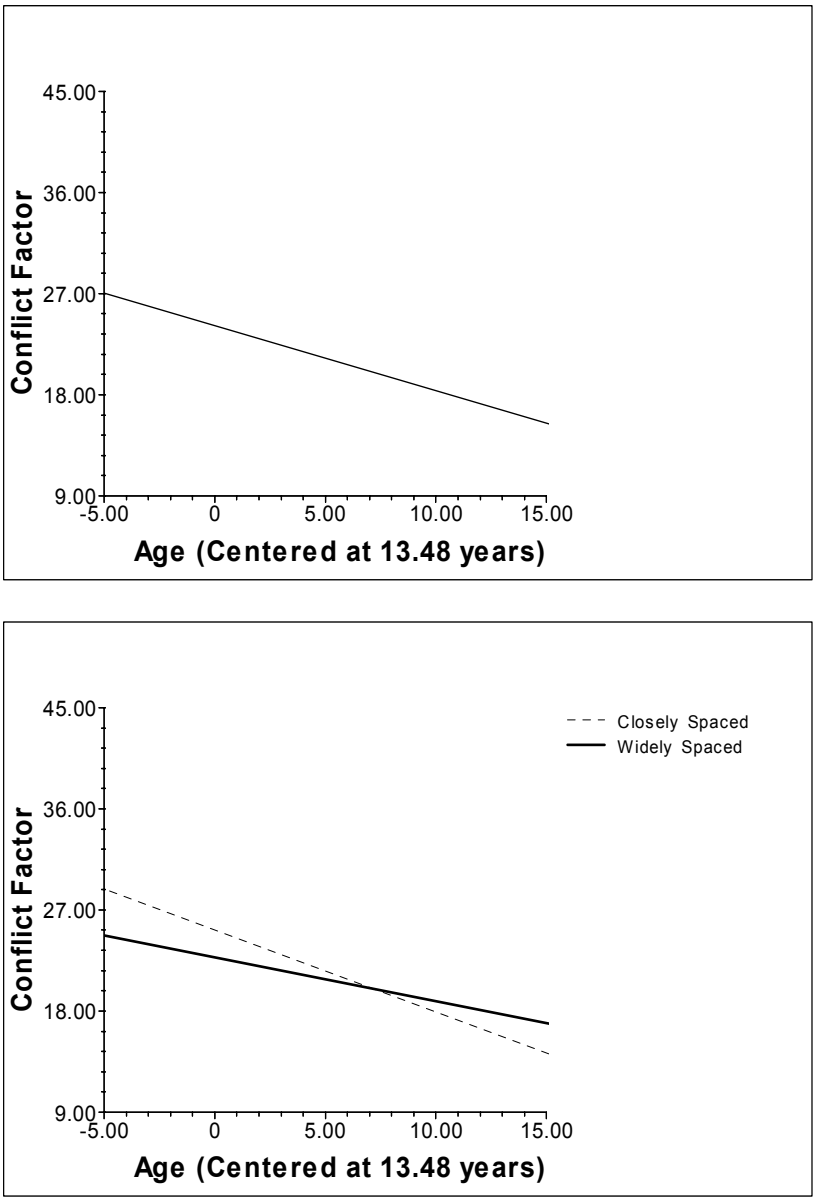


Figure 4. Change in conflict over time and the effect of age difference.

Exploratory Analyses of Sibling Constellation Effects

Although predictions regarding the sibling constellation variables at Level-2 were only made on certain scales, every constellation variable (sex of the respondent sibling, birth order, and age difference) was tested at Level-2 on the intercepts and slopes of all of the models created with HLM. As shown in Table 8, additional effects that were not predicted were found for all of the constellation variables on the companionship, intimacy, and similarity scales and the Conflict

factor. The constellation variables were also tested in the regression analyses but no significant effects were found for these variables on the Relative/Status Power or Rivalry factors. An additional variable that was added to test for the effects sex correspondence (same, different) of the dyad was found to have effects on the intimacy and companionship scales.

Sex of respondent sibling had significant associations with change on the slope of the Similarity scale and with intercept scores on the Conflict factor. For the Similarity scale, brother's reports of similarity were found to increase over time whereas sister's reports were relatively more stable. Respondent sibling sex also had a significant effect on the intercept of the Conflict Factor at Level-2, with male siblings reporting higher levels of conflict than female siblings at age 13.48 (males = 25.81, females = 22.88; see Table 8, Figure 5). Birth order of the respondent sibling had significant effects on the overall levels of scores on the similarity and companionship scales. As shown in Table 8, birth order had significant effects on the intercepts at Level-2 on these scales. Older respondent siblings reported higher levels of similarity (older siblings = 8.90, younger siblings = 7.74) and companionship (older siblings = 10.07, younger siblings = 9.13) with their younger, intellectually disabled siblings at age 13.48 compared to younger respondent siblings (see Figure 6).

The age differences variable was found to be significant in predicting features of scores on the intimacy, similarity, and companionship scales. Age difference had a significant effect on the intercept at Level-2 of the intimacy scale, with siblings from more closely spaced dyads reporting greater levels of intimacy than those from more widely spaced dyads (closely spaced = 6.60, widely spaced = 6.35).

On the similarity scale, age difference had a significant effect on the slope at Level-2. Siblings from more widely spaced dyads reported a greater increase in similarity over

Table 8.
Exploratory Analyses of Constellation Variables on the SRQ

Constellation Variable	Relationship Variable	Parameter	Coefficient	SE
Respondent Sibling Sex	Similarity	For average rate at age 13.48		
		Intercept, β_{00}	8.04***	.37
		Respondent Sex, β_{01}	.28	.49
		For linear change		
		Intercept, β_{10}	.09*	.04
		Respondent Sex, β_{11}	-.12*	.05
	Conflict	For average rate at age 13.48		
		Intercept, β_{00}	25.81***	1.02
		Respondent Sex, β_{01}	-2.93*	1.31
		For linear change		
		Intercept, β_{10}	-.62***	.12
		Respondent Sex, β_{11}	.09	.16
Birth Order	Similarity	For average rate at age 13.48		
		Intercept, β_{00}	8.90***	.33
		Birth Order, β_{01}	-1.26**	.47
		For linear change		
		Intercept, β_{10}	-.04	.04
		Birth Order, β_{11}	.08^	.05
	Companionship	For average rate at age 13.48		
		Intercept, β_{00}	10.07***	.30
		Birth Order, β_{01}	-.94*	.46
		For linear change		
		Intercept, β_{10}	-.07*	.04
		Birth Order, β_{11}	-.01	.05
Age Difference	Intimacy	For average rate at age 13.48		
		Intercept, β_{00}	6.60***	.24
		Age Difference, β_{01}	-.25*	.10
		For linear change		
		Intercept, β_{10}	-.02	.03
		Age Difference, β_{11}	.02	.01
	Similarity	For average rate at age 13.48		
		Intercept, β_{00}	8.16***	.24
		Age Difference, β_{01}	-.20^	.11
		For linear change		
		Intercept, β_{10}	.02	.02
		Age Difference, β_{11}	.03*	.01
	Companionship	For average rate at age 13.48		
		Intercept, β_{00}	9.53***	.24
		Age Difference, β_{01}	-.18^	.10
		For linear change		
		Intercept, β_{10}	-.06*	.02
		Age Difference, β_{11}	.03**	.01

*p<.05, **p<.01, ***p<.001

time. Age difference also had a significant effect on the slope of the companionship scale, with reports from more closely spaced dyads decreasing at a greater rate compared to siblings from more widely spaced dyads (see Table 8, Figure 7).

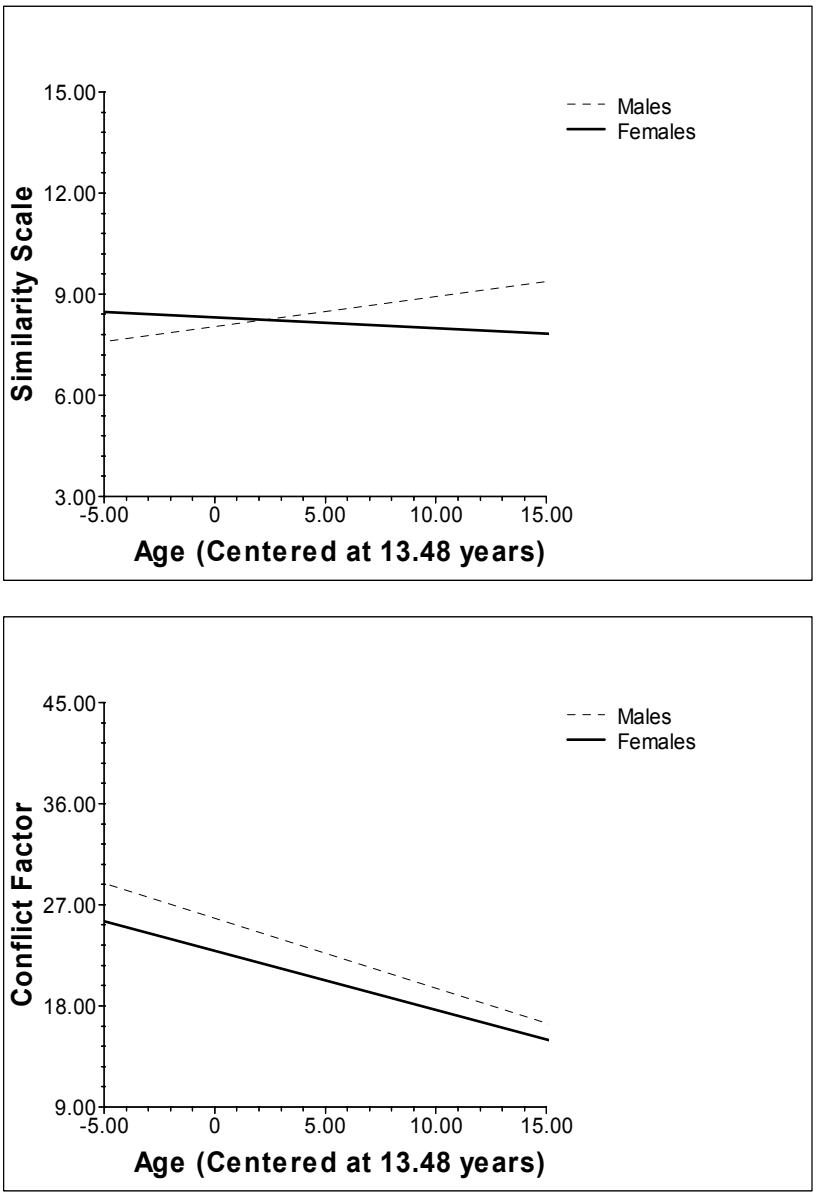


Figure 5. The effects of respondent sibling sex on similarity and conflict.

Sex correspondence had significant effects on scores over time on the intimacy and companionship scales. As shown in Table 9, sex correspondence was a significant predictor of the slope of the intimacy scale after covarying for level of ID on the slope. Respondent siblings from a

same-sex dyad decreased in their reports of intimacy over time, whereas siblings from a different sex dyad remained relatively stable. On the Companionship scale, sex correspondence was a significant predictor of the slope at Level-2. Reports of companionship by siblings from a same-sex dyad decreased at a greater rate compared to reports from siblings from a mixed-sex dyad (see Figure 8).

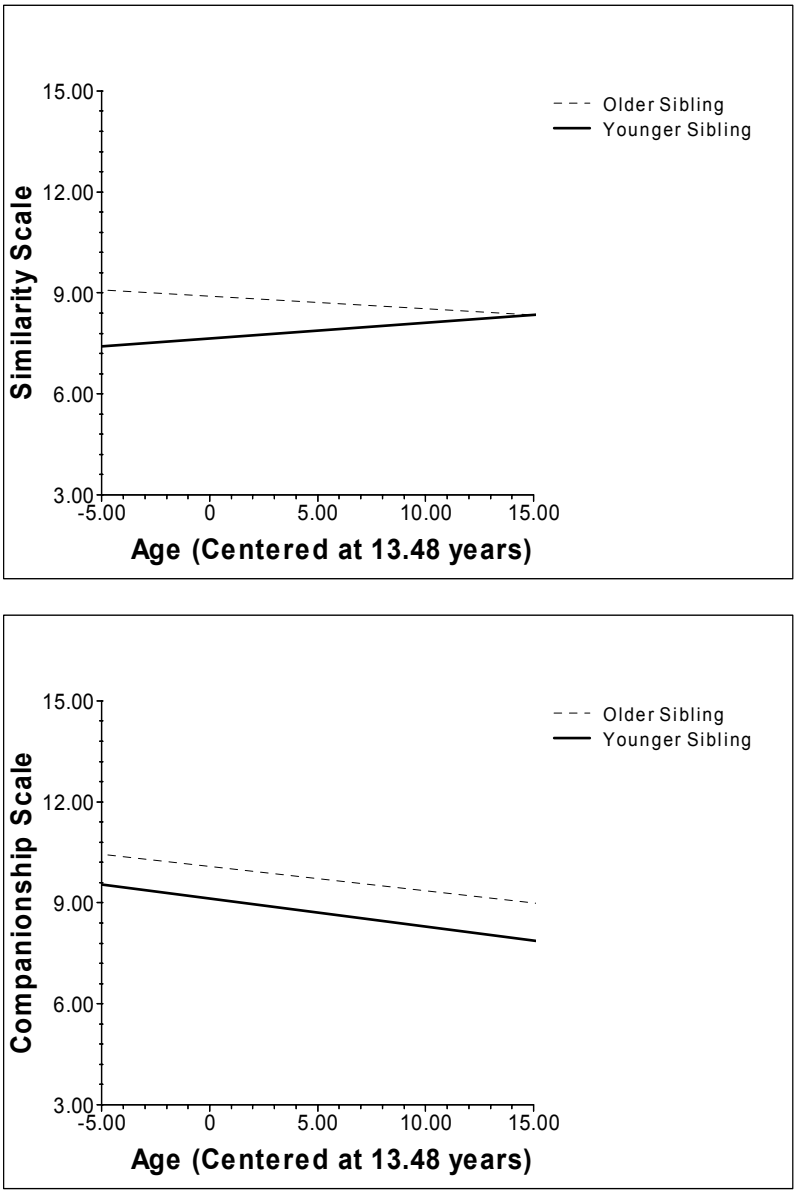


Figure 6. The effects of birth order on similarity and companionship.

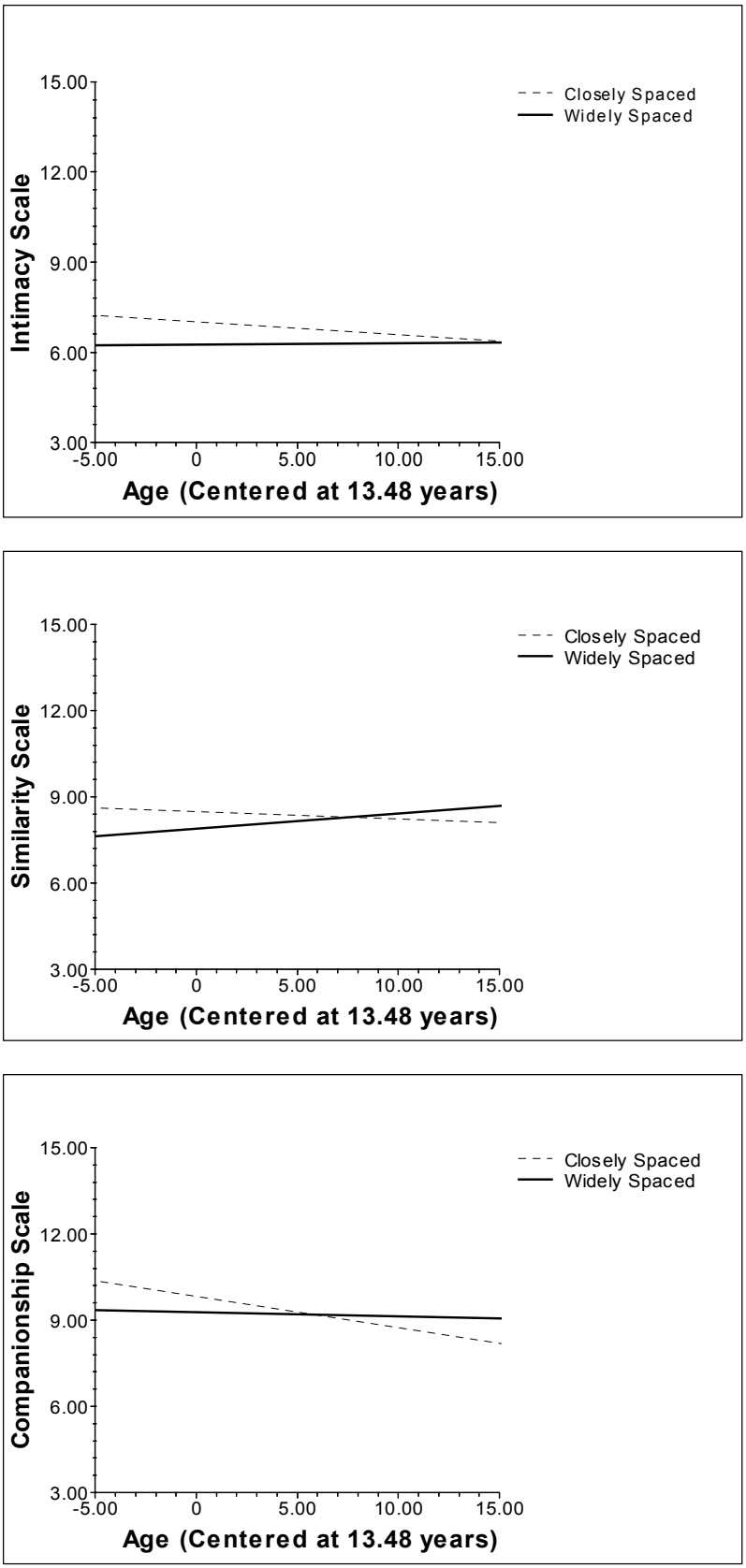


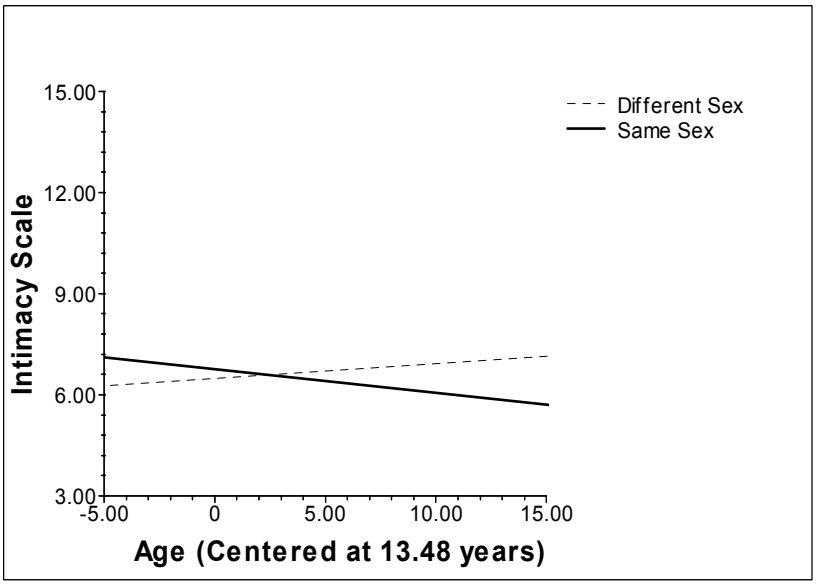
Figure 7. The effects of age spacing on intimacy, similarity, and companionship.

Table 9
Exploratory Analyses of Additional Variables on the SRQ

Constellation Variable	Relationship Variable	Parameter	Coefficient	SE
Sex Correspondence	Intimacy	For average rate at age 13.48		
		Intercept, β_{00}	6.45***	.40
		Sex Correspondence, β_{01}	.30	.51
		For linear change		
		Intercept, β_{10}	-.01	.05
		ID Level, β_{11}	.09*	.05
		Sex Correspondence, β_{12}	-.12*	.05
	Companionship	For average rate at age 13.48		
		Intercept, β_{00}	9.18***	.41
		Sex Correspondence, β_{01}	.68	.50
		For linear change		
		Intercept, β_{10}	-.01	.03
		Sex Correspondence, β_{11}	-.09*	.05

*p<.05, **p<.01, ***p<.001
Note: All estimations of fixed effects are reported with robust standard errors.

In summary, constellation variables had unexpected effects on the similarity, intimacy, and companionship scales as well as the conflict factor. Sibling dyads with closer age spacing reported more involved relationships in childhood and early adolescence, with higher levels of conflict and closeness. In general, dyads in which siblings were more similar to each other (age difference, sex correspondence) evidenced greater declines in their level of involvement over time. When examining the sex of the respondent sibling, males reported more involved relationships with higher levels of conflict and growth in similarity over time. Finally, older respondent siblings reported more positive involvement with their sibling, with higher levels of similarity and companionship.



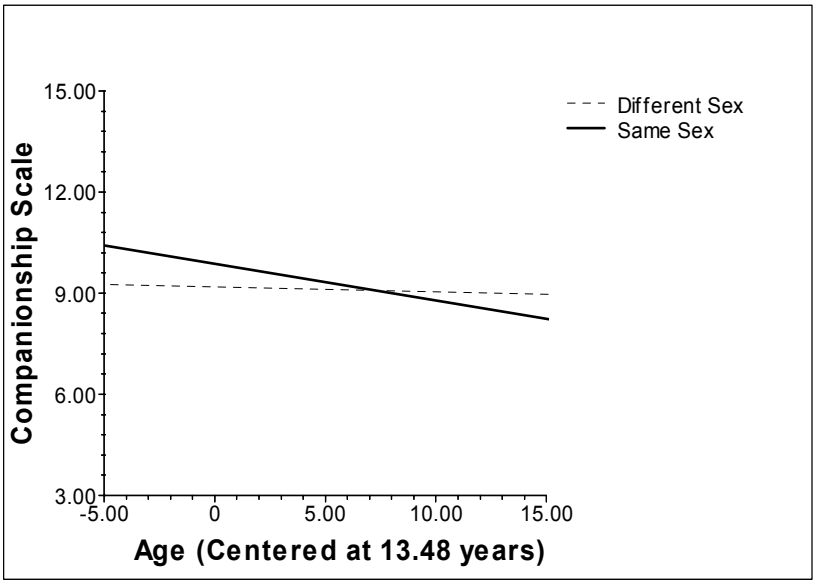


Figure 8. The effects of sex correspondence on intimacy and companionship.

CHAPTER 4

DISCUSSION

The purpose of this study was to understand how relationship quality changes over time for siblings of individuals with intellectual disability. This study examined change over time in four areas: power and intimacy, which have been conceptualized as two main dimensions that characterize all interpersonal relationships, and conflict and rivalry, which can be seen as products of the interpersonal process between siblings. The second goal of the study was to examine how biologically based constellation variables, such as sex, birth order, and age differences, affect the roles that siblings assume in relation to one another and, consequently, affect the development of relationship quality. This study adds to the current literature by providing a more in-depth view of the different dimensions of relationship quality throughout developmental stages. This study achieved its goals by showing how different dimensions of relationships demonstrate different patterns over time as well as uncovering some unexpected patterns and ways that constellation variables influenced change.

In general, sibling relationships including one member with an ID were found to have a power structure that did not change in ways that were detectable with the self-report measure used in this investigation. However, as expected, the findings indicated that these relationships grew in positive regard while levels of conflict decreased as the siblings grew from childhood to young adulthood. Yet, siblings' perceptions of the behaviors that accompany intimate relationships did not display change over time. Constellation variables were found to have effects on the specific dimensions assessing conflict, intimacy, similarity, and companionship.

Regarding the balance of power in these relationships, the finding that nondisabled siblings reported holding more power in the relationship from childhood through adolescence and into

young adulthood is consistent with previous research finding nondisabled siblings to report higher levels of power and provide care-giving for their sibling with an ID (Cuskelly & Gunn, 2003; Eisenberg et al., 1998; Greenberg et al., 1999; Stoneman et al., 1989). It was predicted that a greater rate of change in the power differential would be evidenced in childhood when siblings were establishing their roles in relation to one another. Contrary to expectations, there was no difference in the rate of change in the power differential based on the age of the nondisabled sibling. Thus, the results suggest that the power differential has already been established by the time the nondisabled sibling is in middle childhood. Also, additional analyses to test for a possible curvilinear effect of power, where the differential increased in childhood, when it was being established, and decreased in adulthood, when siblings likely had less frequent contact, did not find such a pattern.

The failure to identify a significant curvilinear pattern of change is inconsistent with a previous study using the same measure of relative power from the Sibling Relationship Questionnaire. Begun (1989) found that females who had an adolescent sibling with a disability reported a greater power differential than those with an adult sibling. The discrepancy in results may be due to methodological differences; Begun used a cross-sectional design that compared three different age groups (adolescence, early adulthood, middle adulthood) designated by the age of the sibling with a disability. This study only included participants through early adulthood, as designated by the age of the nondisabled sibling. Therefore, the pattern that Begun found may not occur until later in adulthood.

Additional analyses were used to assess the possibility that birth order may interact with age to affect the power differential in childhood but not in later years. Farber (1959) first hypothesized that a role crossover occurs when the younger sibling cognitively advances ahead of

their older sibling with an ID, forcing the sibling with a disability to give up their position of dominance that was originally based on their birth order. Yet, this study did not find a significant interaction for age and birth order on the rate of change of power over time. Although it is not clear from the current literature at what ages the process of role crossover occurs, observational studies including an older sibling with an ID, with an average age of 9 to 10, and their younger, nondisabled sibling, on average 6 to 7 years-old, have found that the younger, nondisabled sibling already holds more power in the relationship (Brody et al., 1991; Stoneman et al., 1991). Thus, the respondent siblings' perceptions of elevated dominance at all ages might have occurred because role crossover has already taken place by the ages represented in this sample.

Contrary to expectations, gender did not affect the levels of nurturance or dominance in the sibling relationships, which are the two scales composing the Relative Status/Power factor. The lack of gender differences seems inconsistent with previous studies finding that sisters of individuals with ID typically provide more care-giving for their siblings than their male counterparts. Previous findings showing females' greater involvement with their sibling, teaching and helping roles, and provision of emotional support (Hannah & Midlarsky, 2005; Orsmond & Seltzer, 2000; Seltzer et al., 1991; Stoneman et al., 1987; Stoneman et al., 1991) suggested that gender differences would be found on the nurturance scale of the SRQ. In some cases, the discrepancy from previous research may be explained by methodological differences. For example, Stoneman et al., (1987, 1989) found gender differences during behavioral observations. Although the nurturance scale used in the present study targets similar behaviors as Stoneman et. al's studies (helping, teaching), the sibling's perceptions of these behaviors might not capture such behavioral differences. Since studies have also found that male siblings of individuals with ID provide more care-giving and support than siblings from comparison dyads (Hannah & Midlarsky,

2005; Stoneman et al., 1987), males likely perceive that they are engaging in high levels of these behaviors. Therefore, even though males may actually be engaging in fewer care-giving behaviors than females, based on findings from observational studies, their perceptions of the amount of care that they provide likely cause their ratings to be similar to female's ratings.

There are also discrepancies among the findings of this study and other studies that relied on report measures. Orsmond & Seltzer (2000) found adult females to report that they were more involved in the care of their sibling than male siblings. Hannah & Midlarsky (2005) found similar patterns by gender with children and adolescents' self-report, but only after accounting for family background variables. Discrepancies between studies may be due to differences in the method used to select the nondisabled, respondent sibling. Orsmond & Seltzer (2000) used the most involved sibling as the respondent, who was more likely to be a female. Compared to this study, which used a randomly selected sibling, the previous study may have been more likely to find gender differences. It is possible that female siblings nominated as the most involved engage in a level of involvement that is not seen among all siblings, causing gender differences to be found when comparing the most involved males and females that do not generalize to all siblings. The level of disability may also affect findings; Hannah & Midlarsky (2005) studied siblings of individuals with moderate and severe ID, who likely required higher levels of care-giving than the individuals represented in this sample, pulling for more of the care-giving behaviors that tend to differ across gender. The mixed findings regarding the effects of gender on care-giving, and how this affects perceptions of power, highlights an area for future research including examining how the level of care-giving required influences gender roles and comparing reports between a randomly selected sibling and the most involved sibling.

Intimacy and related constructs, such as positive affect, companionship, and closeness, were examined individually to provide a detailed description of the development of these constructs over time for this population. The findings showed that although siblings report spending less time together as they get older, as shown by decreases on the companionship scale, the time that they do spend with each other is positive. For the scales that assessed the level of positive affect, including affection, admiration of the sibling with an ID, and admiration by the sibling with an ID, the findings demonstrating that these features of sibling relationships grew as siblings aged are consistent with previous research using cross-sectional designs, which has found these relationships to be positive in childhood as well as in adulthood (Cuskelly & Gunn, 2003; McHale & Gamble, 1989; Rimmerman & Raif, 2001; Royers & Mycke, 1995). However, siblings' perceptions of closeness and intimacy demonstrated a different pattern, supporting the need to measure these constructs separately in this population.

Intimacy and similarity, which were predicted to decrease from childhood levels as the cognitive gap betweens siblings increased, did not evidence change over time. This finding may be understood by research examining the development of intimacy in typical peer relationships. Sullivan's model (1953) has proposed that intimacy, the need for which develops in preadolescence, involves pursing similar interests, reciprocal sharing and disclosure within an egalitarian relationship. Accordingly, research has shown that intimate behaviors, including shared affect, openness, sensitivity, and self-disclosure with friends increase during adolescence as the shared playmate activities that compose children's friendships decrease (Buhrmester & Furman, 1987; McNelles & Connolly, 1999; Philipsen, 1999; Sharabany, Gershoni, & Hofman, 1981). The development of the capacity for a deeper level of intimacy parallels maturation in the adolescent brain that allows for more complex forms of social cognition and improved emotion regulation.

(Blakemore & Choudhury, 2006). However, due to limitations in social-cognitive development for adolescents with ID, their relationships with their siblings cannot involve the reciprocal disclosure that composes intimate exchange. Since siblings already reported low levels of intimacy with their sibling with an ID in childhood, declines in intimacy were not evidenced even though the discrepancy in social-cognitive skills between the siblings likely grew as the siblings developed. Thus, despite growth in appreciation and affection as viewed by the nondisabled sibling, the trend for intimacy remained flat.

Contrary to expectations, sex of the nondisabled sibling did not affect the development of affection or companionship. This finding is inconsistent with Orsmond & Seltzer's (2000) finding that female, as opposed to male, siblings of an individual with ID reported more closeness in their relationship and increased in levels of closeness over time, and with other findings from the same research group showing that adult female siblings report greater levels of companionship, are more involved with their siblings, and are most likely to plan on living with their sibling in the future (Greenberg et al, 1999; Krauss et al., 1996; Orsmond & Seltzer, 2000). The difference in findings may be due to the different phase of the lifespan addressed by Orsmond & Seltzer's study, which covers ages 18-60 and may be picking up on a change in the relationship that occurs later in adulthood in samples where most of the siblings lived apart. Additionally, all of the studies that found gender differences used the most involved sibling or closest sibling as the respondent.

Expectations about decreases in levels of conflict and rivalry over time were confirmed only for conflict. In this regard, reports from siblings of individuals with ID resembled those of nondisabled siblings whom have also been found to decrease in conflict over time (Furman & Buhrmester, 1992). In addition, the finding that siblings from more closely spaced dyads report greater levels of conflict in childhood and adolescence, which declined more rapidly over time,

also was consistent with findings from nondisabled dyads (Buhrmester & Furman, 1985b; Furman & Buhrmester, 1992), highlighting a relationship dimension where sibling constellation variables appear to be more influential than the disability status of the sibling.

In contrast, regarding rivalry, the failure to identify expected declines might reflect a unique meaning for the nondisabled sibling's perception of rivalry in these relationships. Whereas the SRQ assessed rivalry in terms of perceptions of parental differential treatment, McHale & Pawletko (1992) found that differential treatment does not necessarily have negative meaning when siblings can justify the need for it, as is the case when one of the children has special needs. It is possible that levels of rivalry remain stable because, by the ages represented in this sample, nondisabled siblings are already able to acknowledge the legitimate reasons that parents may have for any differential treatment of the siblings. Therefore, rivalry, in the form of differential treatment, might not decrease even as other features of the relationship change, particularly the growth of positive regard.

Additional Findings

In addition to the predicted effects of specific constellation variables, additional analyses showed that respondent sibling sex, sex correspondence, birth order, and the age difference between siblings had a greater impact on the sibling relationship than expected. Constellation variables affected findings on the conflict factor and the intimacy, similarity, and companionship scales. The additional findings for constellation variables highlight possible areas, including conflict and close behaviors, where the composition of the dyad may have effects beyond the disability status of the sibling. However, continued research will be necessary to further assess the implications of constellation variables on the relationship.

The sex of the respondent sibling was found to affect the trajectory of similarity and the level of conflict. Male siblings of an individual with an ID reported increases in similarity over time, whereas female siblings demonstrated a slight decline. For conflict, both male and female respondent siblings reported decreases over time, although males were found to report consistently higher levels of conflict. These gender differences may be explained by the different roles that males and females assume in relation to their sibling with a disability. The similarity scale assess how much siblings like similar things and how much they have in common, and ratings are likely influenced by the types of activities the siblings enjoy doing together. Even though female siblings of a child with an ID have been found to adjust their style of interaction to compensate for the adaptive level of the sibling, males interact with their sibling in a playmate role more frequently than females (Brody et al., 1991; Stoneman et al., 1987). Additionally, females have been found to be more involved in the physical care of their sibling, compared to males, which is associated with less time spent in the playmate role and lower levels of conflict (Stoneman et al., 1991). Therefore, male siblings may report that their relationships grow in similarity, and have higher levels of conflict, because they continue to spend time interacting with their siblings as social companions, whereas female siblings move into roles dominated by care-giving responsibilities.

Apart from the sibling's sex, sex correspondence was found to affect the trajectory of intimacy and companionship, with siblings from same-sex dyads reporting decreases over time on both of these scales. The closeness reported by siblings from same-sex dyads in childhood found in this study is consistent with sex correspondence effects seen in nondisabled dyads in childhood (Furman & Buhrmester, 1985). Given this relatively high level of closeness early on, reports of closeness likely decrease for same-sex dyads as siblings spend less time together and nondisabled

siblings turn to others as sources of intimate disclosure. Different-sex dyads may also spend less time together as they get older, but change has little effect on feelings of closeness that were already somewhat low.

Birth order of the respondent sibling and age spacing were also found to affect reports of closeness. Older siblings reported higher levels of similarity in childhood and adolescence compared to younger siblings, yet this difference decreased as siblings moved into adulthood. Older siblings also reported consistently higher levels of companionship over time compared to younger siblings. The findings regarding older siblings are similar to findings from Seltzer et al. (1991) where mothers were more likely to nominate siblings that were older than the sibling with an ID as the most involved sibling. It is possible that older siblings, who have always been in a position of providing care to their sibling, may be more likely than younger siblings to assume the role of companion for their sibling with an ID and perceived similarity might follow from companionship. However, future research is needed to replicate these findings and to examine the interpretations presented regarding the roles assumed by older siblings. For age spacing, findings showed that siblings from more closely spaced dyads reported closer, more involved relationships in childhood, compared to those with a greater age difference. However, differences in reported closeness decreased over time as siblings from dyads with a greater age difference demonstrated increases in similarity and a less rapid decline in companionship, compared to more closely spaced dyads. Since few studies have included these constellation variables in the past, and the studies that did include them have not found differences when using the Warmth/Closeness factor score (Begun et al., 1989), future research will be necessary to confirm that these findings are not unique to this sample.

Limitations and Future Implications

There are several limitations to this study that are important to consider when interpreting the findings. First, the number of participants that completed more than one wave of data is notably small, meaning that findings should be interpreted with caution. Particularly in the HLM analyses that used all 3 waves of data, the lack of multiple data points may have affected the level of within-group variation and, consequently, the accuracy of variance components (Singer & Willet, 2003). Thus, future research could focus on replicating these results with a larger sample size.

Other limitations involve characteristics of the sample. Although this study is unusual in the wide range of ages represented, including even younger participants and following them for a greater period of time may capture more changes in relationship that occur at both earlier and older ages than examined in this study. For example, including younger dyads may provide information on the establishment of the power differential while information gained from older dyads could further assess for gender differences in warmth in middle adulthood. Although the level of ID had little effects on the relationship variables, considering the etiologies of disability may provide more specific information while increasing the generalizability of findings to specific groups. Children diagnosed with Autism at the time of the recruitment were not included in this sample since differences in sibling interactions and relationship quality have been found for siblings of children with Autism compared to ID (Bagenholm & Gillberg, 1991). However, it is possible that increased awareness of Autism Spectrum Disorders and advanced screening methods that have developed since the time of the original recruitment would identify some of the individuals with ID in this sample as also meeting criteria for an Autism Spectrum Disorder.

Only including the perspective of the nondisabled sibling is another limitation to this study. To fully understand sibling interactions and relationship quality, it will be important to include both siblings' perceptions of the relationship. The information gained from this study on the development of relationship quality provides valuable information for future studies that may address how having a sibling affects the individual with an ID. However, it will also be important to understand how the individual with ID views the relationship. Finally, it is important to remember that the sibling relationship develops within the context of the family, which might include more than one sibling relationship. Only measuring one of these relationships limits the findings when, for example, high levels of conflict or a large power differential may be balanced by a more warm and less asymmetrical relationship with another sibling.

In addition to including more respondents, including data on the adaptive competencies of the siblings may have added to the findings of this study. Assessing differences in adaptive functioning of the siblings may be particularly important when exploring the power differential. Brody et al. (1991) found that the discrepancy between siblings' scores on measures of adaptive behavior and language competence were related to the level of asymmetry in the relationship. This finding also shows how the difference between the mental ages of the sibling may serve as a more important constellation variable for this population than the difference in chronological ages.

In summary, the findings from this study highlight the importance of studying the different components of relationships individually and over time. Sibling interactions with an individual with an ID take place in the context of an asymmetrical relationship with an established power structure that did not evidence change from middle childhood through young adulthood. The power structure was not influenced by constellation variables, demonstrating the impact of disability status on the power differential. Sibling relationships involving an individual with an ID

were found to be warm relationships, growing in affection and admiration, regardless of sibling constellation variables. However, levels of intimacy did not demonstrate the same growth, consistent with the difference in cognitive and adaptive abilities seen in an asymmetrical relationship. Unexpectedly, some characteristics of the dyad did affect levels of intimacy, with same-sex siblings reporting decreases over time. As levels of warmth increased, conflict decreased from childhood levels. Finally, rivalry was not found to demonstrate changes over time, suggesting that perceptions of parental differential treatment do not have strong, changing impacts on the relationship.

Constellation variables were found to impact specific areas of the relationship, including levels of conflict, intimacy, similarity, and companionship. The patterns found for males and females suggest that gender differences in sibling relationships that begin in childhood, where sister's roles have a greater emphasis on care-giving and brother's roles have a greater emphasis on social relating, continue to affect the relationship into adulthood. For birth order, older siblings appear more likely to enjoy similar activities and provide companionship for their sibling with an ID, compared to younger nondisabled siblings. Age spacing also affects the relationship with more closely spaced dyads reporting more emotionally involved relationships in childhood and adolescence, with higher levels of closeness and conflict, compared to more widely spaced dyads. However, these differences based on age spacing decrease over time. Overall, findings demonstrate the importance of including constellation variables when examining sibling relationships for this population.

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