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RISK AND PROTECTIVE EFFECTS OF SIBLING RELATIONSHIPS AMONG AFRICAN AMERICAN ADOLESCENTS: THE ROLE OF FAMILISM VALUES AND BIRTH ORDER

A Thesis in

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by

Anna Ruth Soli

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The thesis of Anna Ruth Soli was reviewed and approved* by the following:

Susan M. McHale
Director, Social Science Research Institute
Professor of Human Development & Family Studies
Thesis Adviser

Mark E. Feinberg
Senior Research Associate, Prevention Research Center for the Promotion of Human Development

Douglas M. Teti
Professor of Human Development & Family Studies and Psychology
Graduate Professor-in-Charge, Human Development & Family Studies

*Signatures are on file in the Graduate School.

ABSTRACT

This study investigated associations between sibling relationship qualities and positive and negative adjustment among African American adolescents (after controlling for family characteristics), and tested familism values and birth order as potential moderators of sibling relationship-adjustment linkages. Participants were mothers, fathers, and 2 siblings (M = 16.22 and M = 12.58 years of age) from 179 working and middle class 2-parent families. Two-level random intercept models revealed that familism values moderated links between sibling relationship qualities and adjustment, generally suggesting that youth who reported both a strong orientation to family and harmonious sibling relationships showed the most positive outcomes. Moderator effects were more consistent for older than for younger siblings. Findings highlight the role of cultural values and birth order in shaping family dynamics.

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Chapter 1

Introduction

Siblings are a central part of adolescents' lives. In the mid-1990s, nearly 90% of youth in the United States lived in a home with a sibling (e.g., Hernandez, 1997), and a body of evidence suggests that sibling warmth and conflict/hostility have important implications for internalizing and externalizing behaviors. Fewer studies have moved beyond sibling warmth and conflict or examined siblings' potential to impact *positive* adjustment. And, despite the fact that minority families typically include more siblings than European American families (U. S. Census Bureau, 1993), we know little about minority sibling relationships, especially how cultural values may affect these relationships. To address these gaps in the literature, this study investigated the links between sibling warmth, relational aggression, and hostility and both positive and negative youth adjustment, and tested moderating effects of familism values and birth order in a sample of African American adolescents.

Sisters and brothers have the potential to influence one another in many ways. A number of previous studies have established links between sibling relationship qualities and psychosocial adjustment (e.g., Branje, van Lieshout, van Aken, & Haselager, 2004; Dunn, Slomkowski, Beardsall, & Rende, 1994; Kim, McHale, Crouter, & Osgood, 2007; Stocker, Burwell, & Briggs, 2002). At a basic level, research is consistent with a risk/protective framework which suggests that family relationship dynamics can serve as both risk and protective factors (Reese, Vera, Simon, & Ikeda, 2000; Rutter, 1987). In terms of protective factors, a positive and supportive sibling relationship may promote healthful adjustment through modeling and reinforcement of adaptive behaviors. The same mechanisms could result in adjustment problems in a sibling relationship characterized by high levels of conflict and rivalry when sibling negativity serves as a risk factor. Further, a cultural-ecological

perspective (Spencer, 1995) suggests that these processes may depend upon cultural forces, measured here by youths' familism values.

Sibling Relationship Qualities and Adolescent Adjustment

Internalizing and externalizing problems. There is strong concurrent and longitudinal evidence linking high levels of sibling negativity with both internalizing and externalizing problems. Longitudinal research on older children and adolescents demonstrates that sibling conflict predicts changes over time in anxiety, delinquent behavior, and depressive symptoms among European Americans, even after controlling for parent-child relationship quality and family background characteristics (Kim et al., 2007; Stocker et al., 2002). Sibling hostility (Slomkowski, Rende, Conger, Simons, & Conger, 2001) and coercion (Bank, Patterson, & Reid, 1996) are predictive of future psychopathology, participation in serious delinquent activity, and adult arrests. Two studies that investigated minority families demonstrated that sibling negativity and control were risk factors for depressive symptoms and participation in risky behavior (East & Khoo, 2005; McHale, Whiteman, Kim, & Crouter, 2007, using an earlier phase of data from the same dataset used here). Contrary to other work, East and Khoo also found that low levels of sibling conflict were associated with more risky sexual behavior; these investigators reasoned that low conflict might indicate a lack of close sibling ties. Taken together, these findings suggest that sibling negativity may function as a risk factor for poor adjustment.

Past research on sibling negativity has focused almost exclusively on overt behaviors such as conflict and hostility. Others have shown that relational aggression, which involves exclusion and social alienation designed to damage others' social relationships and psychological well-being, is an important dimension of close relationships and is a risk factor for peer rejection and internalizing problems (Crick et al., 2001). Updegraff, Thayer, Whiteman, Denning, and McHale (2005) found that,

among adolescent siblings, relational aggression was distinct from overt hostility (e.g., conflict, anger) and was associated with low levels of sibling intimacy and high levels of negativity. Additional research on European Americans suggests that children use relational aggression at a higher rate with siblings than with friends (Stauffacher & DeHart, 2005) and that sibling pairs engage in relational aggression more often than in verbal or physical aggression (Crick et al., 2001). Relational aggression may be particularly salient during adolescence, when forming intimate relationships with others is a key developmental task. Importantly, hostility and relational aggression between siblings may have different implications; hostile behaviors tend to be explicit and generally influence only those directly involved in the interaction. In contrast, relational aggression entails indirect and underhanded processes and its influence extends to other people in the victim's social network. The current study extends previous work by examining both sibling relational aggression and hostility as potential risk factors for negative psychosocial outcomes among adolescents.

A small body of work has demonstrated that a positive sibling relationship may be a protective factor for youth. Two studies of European families (Branje et al., 2004; Pike, Coldwell, & Dunn, 2005) found that, after taking into account parent-child relationships, high levels of sibling positivity were linked with fewer externalizing and internalizing problems (Pike et al. reported this finding only among older siblings). Other longitudinal work suggests that improvements in sibling relationship quality are linked to decreases in depression across middle childhood and adolescence (Kim et al., 2007; Richmond, Stocker, & Rienks, 2005). Similarly, sibling positivity in the preschool period negatively predicted internalizing and externalizing problems seven years later (Dunn et al., 1994). These findings suggest that being part of a warm, supportive sibling relationship may promote healthy adjustment.

Academic adjustment. All of the research discussed thus far has focused on sibling influences on internalizing and externalizing problems. To date, few studies have considered the potential impact

of sibling relationships on *positive* well-being. An exception is the long (and hotly debated) tradition of studying sibling influences, in the form of birth order and family size, on intelligence. Some studies suggest that later-born children exhibit lower academic grades and standardized test scores, even after controlling for family background factors (Downey, 1995). Others have found no evidence for birth order effects (e.g., Rodgers, Cleveland, van den Oord, & Rowe, 2000). Most of these studies have focused on between-family comparisons of older and younger siblings from different families, have examined structural characteristics of the dyad, and do not address the processes underlying family dynamics. This study considers how youths' experiences in the sibling relationship might affect achievement.

The few empirical studies on the links between sibling relationship qualities and academic outcomes have produced mixed results. Widmer and Weiss (2000) found that supportive sibling relationships were associated with stronger school engagement, but only among children who viewed their older siblings as successful. Among ethnically diverse adolescents, Milevsky and Levitt (2005) found that support from a brother was positively associated with school attitudes and academic achievement (for boys only) and negatively associated with teacher-reported behavior problems for Hispanic students. Similarly, Crosnoe and Elder (2004) showed that more sibling support was linked to fewer academic problems (e.g., being expelled), but these findings emerged only among African American students. Although the results from these studies are spotty, they suggest that positive sibling relationships may promote better academic adjustment, particularly among minority youth.

Moderators of the Links Between Sibling Relationship Qualities and Adjustment

Very few studies have considered how different conditions might affect sibling relationship – adjustment linkages. Those that have tested moderator effects find that protective functions of sibling relationships may operate differently under certain circumstances. In particular, two studies suggest that

sibling support is not directly linked to fewer internalizing problems; rather, the protective effect emerged only among children who had experienced many stressful life events (Gass, Jenkins, & Dunn, 2007), or only when youth perceived their older siblings as successful (Widmer & Weiss, 2000).

One potential moderator of sibling influences is birth order. Many agree that birth order effects should be considered (e.g., Whiteman, McHale, & Crouter, 2003) but findings have been mixed. Observational learning theory suggests that, because of their age and higher status, older siblings may serve as models for their younger siblings (Mischel, 1966). Additionally, the "principle of least interest" (Waller & Hill, 1951) holds that in close relationships, the partner who is less emotionally involved has the power to exploit the partner who is more involved. As the more invested partner in the sibling relationship, younger siblings may have greater potential to be impacted by it. Based on these principles, much of the literature on sibling influences has focused on younger siblings' outcomes (e.g., East & Khoo, 2005; Gass et al., 2007; Slomkowski et al., 2001). Contrary to these theoretical assumptions, however, some studies that examined two siblings from the same family found stronger links between sibling relations and outcomes for *older* siblings (Branje et al., 2004; Dunn et al., 1994; Pike et al., 2005), and others have found no birth order differences (Kim et al., 2007; Richmond et al., 2005). The current study addresses this issue and advances the literature by using multilevel modeling to directly compare sibling influence processes for older and younger siblings from the same family.

An important step in studying sibling influences is to consider family characteristics that have the potential to impact both sibling relationship qualities and adjustment. For example, a hostile parent-child relationship may serve as a third variable that leads to both negative sibling interactions and poor adjustment. In this situation, any association between sibling relationship qualities and well-being may be due to the parent-child relationship. Thus, a key step is to test the *unique* influences of the sibling relationship on youth's adjustment by controlling for such

family characteristics. With a few exceptions (e.g., Branje et al., 2004; Kim et al., 2007; Stocker et al., 2002), sibling research does not take into account these family factors.

In light of the previous research, our first goal was to explore the unique contribution of three sibling relationship qualities (warmth, relational aggression, and hostility) to four domains of adjustment: depressive symptoms, risky behavior, school bonding, and academic achievement in a sample of African American adolescents, controlling for family structure, parental education, gender, and parental warmth. We sought to replicate and extend previous research on European American youth, predicting that sibling warmth would be protective and that relational aggression and hostility would be risk factors for depressive symptoms and risky behavior. Our analyses of academic outcomes were more exploratory, but we hypothesized that sibling warmth would be associated with stronger school bonds and better achievement and that relational aggression and hostility would be risk factors for these outcomes. Our second goal was to investigate birth order as a moderator of the links between sibling relationship qualities and adjustment. Based on the principles of observational learning theory and the principle of least interest, we expected that the associations would be stronger for younger than for older siblings, keeping in mind the mixed nature of prior findings on birth order.

Familism Values and Adolescent Well-Being

Because most prior sibling research is limited to European or European American families, we know little about how the processes linking sibling relationship qualities and youths' adjustment operate in other racial/ethnic groups. Importantly, much of what we know about minority families comes from disadvantaged (e.g., low-income populations, single-parent families) African American samples, and research on normative family processes in this group is sorely needed (e.g., Hill, Murry, & Anderson, 2005) . Due to the experiences of discrimination, racism, and social disadvantage faced

by minority groups living in the United States, investigating potential risk and protective factors among African Americans is particularly compelling and has important intervention implications.

It is possible that the patterns linking sibling relationship qualities and adjustment in African American families mirror those found in European American families. In fact, the few studies that have examined African American samples have reported results generally consistent with findings for European Americans (East & Khoo, 2005; McHale et al., 2007). On the other hand, cultural values may also play a significant and unique role in minority families. Some have suggested that an important cultural value among African Americans is orientation toward the family (Hill, 2007; Sudarkasa, 1980). A cultural-ecological perspective (Spencer, 1995) purports that cultural forces shape beliefs, values, and behaviors, and also may influence how individuals experience family dynamics and processes. From this perspective, sibling relationships may not have universal implications for adolescents' well-being; rather, the effects may vary as a function of youths' cultural orientation, as measured here by familism values.

The term "familism" originated in the study of Mexican Americans and describes the strong sense of familial support, obligation, and solidarity that is a key element in Latino family life. Previous work has shown that familism functions as a protective factor against poor psychosocial adjustment and substance use for Latino youth (Gil, Wagner, & Vega, 2000; Ramirez et al., 2004). Some have suggested that familism values are not limited to Latinos, but apply to other ethnic groups as well (Schwartz, 2007). Sudarkasa (1980) argued that the principles of respect, responsibility, and reciprocity are rooted in indigenous African ideologies and continue to govern African American families today. A study by Gaines and colleagues (1997) suggests that African American adults view familism values as significantly more important than their European American counterparts. Herman, Ostrander, and

Tucker (2007) found that family cohesion was a protective factor against depression for African American (but not European American) adolescents.

These findings highlight the potential importance of familism values in African American culture; however, they do not offer much insight into the implications of *within-culture* variation in familism values. How are family dynamics, such as sibling relationships, affected by the degree of importance adolescents place on family? Such questions can be addressed through ethnic-homogenous research designs (like the one employed in the current study) which allow researchers to examine the diversity of experiences *within* a particular racial/ethnic group rather than simply making between-group comparisons (Hill et al., 2005).

Specifically, our third research goal was to test whether the links between adolescents' sibling relationship qualities and adjustment varied as a function of their familism values. Because past work has conceptualized both positive sibling relationships and familism values as protective factors, we expected that the combination of high familism values and a warm sibling relationship would act together to produce a "multiplicative protective" effect against poor well-being (e.g., Pollard, Hawkins, & Arthur, 1999). We also predicted a potential "buffering effect," where a strong sense of familism might lessen the negative effects of sibling relational aggression and hostility (Rutter, 1987). For example, youth who feel that families should stick together and support one another under all circumstances may be able to ignore negativity in the sibling relationship more so than youth who do not have strong familism values.

Birth order is also relevant here, in that familism values and sibling relationship qualities may interact differently for older and younger siblings. As adolescents grow older and strive for autonomy and independence, forces outside the family become increasingly influential (e.g., Collins & Steinberg, 2006). This idea, coupled with an observational learning perspective on birth order processes, suggests

that the interacting effects of sibling relationship qualities and familism values may be stronger for younger than older siblings, a hypothesis that formed our fourth research question.

Study Goals

In sum, the goals of the present study were (a) to explore the unique contributions of sibling warmth, relational aggression, and hostility to depressive symptoms, participation in risky behavior, school bonding, and academic achievement among African American adolescents, after controlling for family structure, parental education, gender, and parental warmth, (b) to test for birth order differences in the association between sibling relationship qualities and well-being, (c) to examine whether youths' endorsement of familism values strengthened or weakened the association between sibling relationship qualities and youth adjustment (d) to test for birth order differences in the moderation effect.

Chapter 2

Method

Participants

The data were obtained from mothers, fathers, and two offspring in 179 African American families participating in a short-term longitudinal study of gender socialization and development. Given the goals of the larger investigation, we targeted parents who were living together and raising at least two middle-childhood – adolescent age offspring. Participants came from two contiguous urban centers on the Eastern Seaboard with substantial African American populations. Roughly half of the families were enrolled by African Americans recruiters who lived in the target communities and distributed information about the project at youth activities in local churches and community groups. In addition, we obtained names and addresses of African American students in Grades 4 through 7 from a marketing firm. These families were sent letters describing the project and were asked to return a postcard or call a toll free number if they were interested in participating.

In Year 1 of the study, the sample included 202 families. Over the course of 3 years, 11 families declined to participate (an attrition rate of 5%). Data from 7 families in which the parental figures were not romantically involved (e.g., a biological mother and her brother who functioned as a father figure) and 5 families with older siblings who declined participation were excluded from the analysis. The final sample for the current study was 179 families.

In Year 3 of the study, 80% of mothers and fathers were married to one another. Of the remaining couples, 12% were divorced or separated and 8% were cohabiting. In 94% of the families, both parents self-identified as African American (in 11 families, only one parent identified as African American); all target adolescents self-identified as African American. In

80% of the families, siblings were fully biologically related. Of the participating parents, 96% of mothers and 80% of fathers were the biological parents of the target adolescents.

The annual family income in this sample ranged from $22,800 to $685,000 with a median value of $83,240 (*M* = $95,554, *SD* = $75,372; 4 families did not report income). On average, fathers had completed 14.32 years of education (*SD* = 2.32), and mothers, 14.77 years (*SD* = 1.83). Of the parents, 83% of mothers and 91% of fathers were employed. The number of offspring ranged from 2 to 8; 92% of families included 4 or fewer children (*M* = 2.62, *SD* = 1.32). Target older siblings averaged 16.22 years (*SD* = 1.96) and younger siblings, 12.58 years (*SD* = 1.12), with a mean age spacing of 3.64 years (*SD* = 1.91). Youths' gender was evenly distributed; 54% of younger and 49% of older siblings were female. Gender dyad composition was even, with 46 sister-sister, 41 sister-brother, 50 brother-sister, and 42 brother-brother pairs.

Procedures

Mothers, fathers, and the two target adolescents were interviewed in their homes by two interviewers, nearly all of whom were African American women who resided in the community. Each family member was interviewed individually about his or her family relationships and personal well-being. Some measures were presented orally and others were completed through a paper and pencil format. All questions were presented orally to children under the age of 13 and to participants with reading difficulties. Interviews lasted between 1 and 3 hours, and families were sent a $200 honorarium upon completion of their interviews.

Measures

Sibling relationship qualities. The sibling relationship was assessed in terms of three dimensions: warmth, relational aggression, and hostility. Siblings used a 5-point Likert-scale (1 = *never or hardly ever,* 5 = *always*) to indicate how often they engaged in the behaviors

described by each item and responses were averaged to create scale scores. We used the Sibling Relationship Inventory (Stocker & McHale, 1992) to asses *warmth* (seven items, e.g., "How often do you share secrets with your brother/sister?") and *hostility* (five items, e.g., "How often does your sister/brother get mad at or angry with you?"). We used five items from the Sibling Qualities Measure (O'Brien & Crick, 1995) to measure *relational aggression* (e.g., "How often does your sister/brother leave you out of things when she/he is mad at you?").

Adjustment problems. Depressive symptoms were measured using the 10-item version of the Children's Depression Inventory (Kovacs, 1981). Youth chose 1 of 3 statements that best described their feelings over the past week with higher average scores indicating more depressive symptoms. *Risky behavior* was assessed only for youth who were in the 6th grade or older. Adolescents responded to an 18-item measure (Eccles & Barber, 1990) using a 4-point Likert-scale (1 = *never,* 4 = *more than 10 times*) to indicate how many times they had participated in each activity in the past year (e.g., How many times did you "stay out all night without your parents' permission?"); responses were averaged. Natural logarithmic transformations were applied to both scales to correct for positive skew.

Positive adjustment. To assess *school bonding,* youth used a 5-point Likert scale (1 = *strongly disagree,* 5 = *strongly agree*) to respond to six questions (e.g., "You feel like you are part of your school") about their feelings of connectedness and belonging at school (Bearman, Jones, & Udry, 1997). The mean of the responses was taken to create the scale score. Mothers provided report cards detailing each offspring's *academic grades* in four subject areas for the current school year. English, math, social studies/history, and science and were scored on a 5-point scale (0 = F, 4 = A), and grade point average (GPA) was computed.

Familism values. Adolescents' familism values were measured by the mean of a 16-item (e.g., "It is always important to be united as a family") 5-point scale (1 = *strongly disagree,* 5 = *strongly agree*) adapted from the Mexican American Acculturation/Enculturation Scale (Knight et al., under review).

Controls. Parental warmth was measured with eight questions from the responsiveness subscale of the Child's Report of Parental Behavior Inventory (Schwarz, Barton-Henry, & Pruzinsky, 1985). Youth completed separate questionnaires (e.g., "My mother/father understands my problems and worries.") about their relationships with their mothers and fathers at different points during the interview using a 4-point Likert-scale (1 = *really unlike,* 4 = *really like*). Responses to the eight items were averaged. Reports about mothers and fathers were correlated (r = .43, p <.0001 for older siblings; r = .53, p <.0001 for younger siblings). To reduce collinearity in the models and to obtain a single measure of parental warmth, each adolescent's report of maternal and paternal warmth was averaged. Parents reported the number of years of schooling they had completed (we used the average of mothers and fathers), their marital status (married/cohabiting vs. divorced/separated), and the age and gender of both offspring.

Chapter 3

Results

Preliminary and Descriptive Results

In order to ensure that the three sibling relationship quality measures (i.e., warmth, relational aggression, and hostility) were distinct relationship dimensions in our African American sample, we conducted a factor analysis. Principal components analysis with a VARIMAX rotation revealed three factors, as indicated by the scree plot and eigenvalues. The first factor represented hostility (eigenvalue = 5.05), warmth items comprised the second factor (eigenvalue = 2.85), and relational aggression items represented the third factor (eigenvalue = 1.26), suggesting that these are indeed three separate relationship dimensions.

Descriptive data are presented in Table 1. Youth reported generally positive family relationships, with parental and sibling warmth falling above the scale midpoint, sibling relational aggression below the midpoint, and sibling hostility at the midpoint. Similarly, familism values were strong, with mean scores in the upper half of the scale. These youth were generally well functioning, with about half of the sample reporting no or only one depressive symptom and engaging in an average of one or two risky activities in the past year. With respect to school bonding, average scores were well above the scale midpoint; grade point averages fell in the B/B$^-$ range and B$^-$/C+ range for younger and older siblings, respectively. Internal reliabilities were acceptable, ranging from .70 to .93.

Links between Adjustment, Sibling Relationship Qualities, and Familism Values

Analysis plan. We used a multi-level modeling (MLM) approach to test a series of 12 two-level random intercept models. This accounted for the correlated nature of the data (i.e., child nested within family; Raudenbush & Bryk, 2002) and allowed us to directly test for birth

order effects by including both older and younger siblings in the same model. Level 1 included measures specific to the individual adolescent (e.g., youth gender, familism values); Level 2 included measures that were shared by both siblings (e.g., parents' education, family structure).

There were four dependent variables: depressive symptoms, risky behavior, school bonding, and GPA. Each of the three sibling relationship qualities (warmth, relational aggression, and hostility) was tested in a separate model as a predictor of each dependent variable. Main effects for sibling relationship quality, familism values, and birth order (dummy coded for older vs. younger) were included in all models. Variables comprising the interaction terms were centered at the mean to reduce collinearity. Interaction terms that were not significant at the $p < .10$ level were removed from the final models unless the 3-way interaction was significant, in which case all lower-order effects were included. Depending on the nature of the interaction, significant interaction effects were followed up by either (a) testing the effects for older and younger siblings separately, or (b) running separate models for high (one standard deviation above the mean) and low (one standard deviation below the mean) familism groups. Models were tested using SAS 9.1.

Interactions with age were also tested; however, since age and birth order are highly confounded in this sample, $r = .75$, $p > .01$, and the results for birth order were more consistent, age was dropped from the analyses. Interactions involving adolescent gender and gender dyad composition were also examined; none of these reached statistical significance.

Family background characteristics. The first step was to control for family background characteristics; these variables showed a consistent pattern across all models. The results show that adolescents whose parents were divorced or separated participated in more risky behaviors and received lower academic grades than those living in two-parent homes. Parents' education

was positively linked to GPA. Girls reported more depressive symptoms, higher grades, and less risky behavior than boys. Parental warmth was a strong negative predictor of depressive symptoms and risky behavior, but not of school bonding or GPA. Finally, older siblings reported more risky behavior and had lower GPAs than younger siblings. Although familism values was not considered a control variable, its pattern was also consistent across all models, showing a negative link with risky behavior and a positive link with school bonding. The results from the MLM analyses can be found in Tables 2 and 3, and interactions are depicted in Figures 1-4. In the case of sibling hostility, no significant interaction effects emerged; as such, these findings were not tabled but will be discussed in the text. Results are organized by dependent variable.

Depressive symptoms. In the model predicting depressive symptoms with *sibling warmth*, there were two significant 2-way interactions (see Table 2). Inconsistent with the hypothesis that sibling warmth would function as a protective factor, follow-up tests on the sibling warmth X birth order interaction revealed that sibling warmth was positively associated with depressive symptoms for younger siblings ($\gamma = 0.04$, $SD = 0.02$, $t = 2.12$, $p < .05$) but not older siblings ($\gamma = -0.002$, $SD = 0.02$, $t = -0.14$, *ns*). A follow-up of the sibling warmth X familism interaction was not significant. In the model predicting depressive symptoms with *sibling relational aggression*, the 3-way interaction was significant (see Table 3). The follow-up analyses revealed that adolescents with high familism values and low sibling relational aggression showed the lowest levels of depressive symptoms ($\gamma = 0.07$, $SD = 0.02$, $t = 3.39$, $p < .001$), but for youth with low familism values, depressive symptoms were not linked to sibling relational aggression ($\gamma = 0.01$, $SD = 0.02$, $t = 0.76$, *ns*; see Figure 1). Contrary to expectations, further analyses revealed that this interaction effect was significant for older ($\gamma = 0.05$, $SD = 0.02$, $t = 2.26$, $p < .05$), but not younger siblings ($\gamma = -0.02$, $SD = 0.02$, $t = -1.02$, *ns*). This pattern shows a *multiplicative*

protective effect because it suggests that having two, as opposed to only one protective factor (i.e., low sibling relational aggression and strong familism values) is linked with fewer depressive symptoms for older siblings. The model for *sibling hostility* revealed only the predicted positive main effect for hostility ($\gamma = 0.03$, $SD = 0.01$, $t = 3.09$, $p < .01$).

Risky behavior. The 3-way interaction between sibling relationship quality, familism, and birth order was significant in two models predicting risky behavior. In the model including *sibling warmth* (see Table 2), follow-up tests showed that adolescents who reported both low familism values and high sibling warmth reported the most participation in risky behavior ($\gamma = 0.11$, $SD = 0.03$, $t = 3.21$, $p < .05$). Among youth with high familism values, risky behavior did not vary as a function of sibling warmth ($\gamma = 0.02$, $SD = 0.04$, $t = 0.79$, *ns*; see Figure 2). Further analyses revealed that the effect was found only among older siblings ($\gamma = -0.08$, $SD = 0.04$, $t = -1.83$, $p < .10$; for younger siblings, $\gamma = 0.02$, $SD = 0.04$, $t = 0.52$, *ns*). This pattern is contrary to what was expected – sibling warmth functioned as a risk factor for participation in risky behavior when familism values were low, and this effect was evident for older, but not younger, siblings.

Follow-up tests of the 3-way interaction in the model with *sibling relational aggression* as the independent variable (see Table 3) revealed that youth who reported both low familism values and high relational aggression showed the most participation in risky behavior ($\gamma = 0.08$, $SD = 0.02$, $t = 3.99$, $p < .0001$). For youth with high familism values, risky behavior was not linked to sibling relational aggression ($\gamma = 0.03$, $SD = 0.02$, $t = 1.49$, *ns*). This interaction effect held only for younger siblings, however ($\gamma = -0.05$, $SD = 0.03$, $t = -2.04$, $p < .05$; for older siblings, $\gamma = 0.04$, $SD = 0.04$, $t = 1.18$, *ns*; see Figure 3). Although this pattern was not predicted, it is similar to the multiplicative protective pattern and might be considered a "multiplicative risk" effect. That is, the effect can be interpreted as the combination of two risk factors (i.e., high

sibling relational aggression and low familism) predicting more participation in risky behavior than just one risk factor alone. This finding is consistent with expectations for birth order, as the effect was evident only for younger siblings. In the *sibling hostility* model, a (predicted) trend-level positive main effect for hostility emerged ($\gamma = 0.04$, $SD = 0.02$, $t = 1.87$, $p < .10$).

School bonding. The 3-way interaction between *sibling warmth*, familism, and birth order was significant in predicting school bonding (see Table 2). The follow-up analyses showed that the interaction effect was significant for older siblings only ($\gamma = 0.30$, $SD = 0.13$, $t = 2.32$, $p < .05$; for younger siblings, $\gamma = -0.06$, $SD = 0.11$, $t = -0.52$, *ns*). For older siblings, the combination of high familism values and high sibling warmth was associated with stronger school bonding ($\gamma = 0.23$, $SD = 0.10$, $t = 2.21$, $p < .05$). For those who reported low familism values, in contrast, school bonding was not associated with sibling warmth ($\gamma = -0.08$, $SD = 0.10$, $t = -0.81$, *ns*; see Figure 4). This pattern is consistent with the *multiplicative protective* hypothesis, in that the combination of two protective factors (i.e., sibling warmth and strong familism values) was linked with the strongest school bonding. In terms of birth order, however, this finding did not conform to the expectation that younger siblings would show stronger effects than older siblings. There were no significant *sibling relational aggression* or *hostility* effects in the school bonding models.

Grade point average. The only significant effects in the three models predicting GPA were familism X birth order interactions; however, follow-up analyses were not significant.

Chapter 4

Discussion

Our findings show that, in a normative sample of African American adolescents, sibling relationship qualities were associated with adolescent well-being even after controlling for other family characteristics, and these linkages were moderated by birth order and youths' familism values. We expected that sibling warmth and strong familism would function as protective factors against poor adjustment, and that relational aggression and hostility would be risk factors. In addition, we investigated whether familism values changed the implications of sibling relationships, predicting that strong familism values and warm sibling relationships would have a multiplicative protective effect, that the negative effects of relational aggression and hostility would be lessened for adolescents who were strongly oriented toward family, and that these effects would be stronger for younger than for older siblings. We found little evidence for direct linkages between adjustment and sibling relationship qualities, suggesting that sibling relationships do not have universal implications; rather, these implications depend upon siblings' ordinal position and their familism values. In many cases, stronger familism values enhanced the positive effects of a harmonious sibling relationship, and more effects were evident for older than younger siblings. Three specific patterns emerged which we describe as a multiplicative protective effect, a multiplicative risk effect, and a paradoxical effect.

A strength of this study was the exploration of youths' familism values, a key feature of African American culture, and its role in sibling influence processes. This study furthers past research by examining *within-culture* variations in familism values among African American adolescents and highlights the role of cultural context in family dynamics. We did not find support for the *buffering effect;* however, the two *multiplicative protective* effects revealed that

the combination of a harmonious sibling relationship and strong familism values predicted the lowest levels of depressive symptoms and the highest levels of school bonding among older siblings. These adolescents exhibit both a match between their values and their relationship experiences, and a "double positive" which may instill a sense of competence and self-worth that can protect them against depression and promote a strong sense of belonging in a school setting. In contrast, the complementary *multiplicative risk* effect suggests that, in the case of younger siblings' participation in risky behavior, adolescents who experienced a "double hit" (i.e., low familism and high sibling relational aggression) showed the poorest outcomes. In an African American cultural context that strongly values family, these youth experience highly aggressive sibling relationships and place little importance on family. This combination may cause them to turn toward deviant peers, leading to involvement in risky behaviors. In this way, the cultural context, measured here by familism values, has the potential to change the implications of sibling relationships, as suggested by a cultural-ecological perspective (Spencer, 1995). Notably, these effects were evident even after controlling for characteristics that reflect important aspects of youths' familial contexts.

The results also provide evidence of an unanticipated *paradoxical* effect, showing that for younger siblings, warm sibling relationships were linked with more depressive symptoms and that the combination of low familism values and high sibling warmth was associated with more risky behavior for older siblings. This pattern does not correspond to the other findings in this study and may be capturing a compensatory mechanism that has been documented by others (e.g., Bullock & Dishion, 2002). Youth who do not feel strongly oriented toward family may turn to their siblings to compensate. More research is needed to replicate this effect and to test possible explanations for this pattern of associations. Future work should also examine additional

cultural values and practices relevant to African American populations, such as religiosity, racial socialization, and involvement of extended family members, and how these cultural factors shape family dynamics and affect adjustment.

A strength of this study is that it extended previous work on sibling effects by highlighting the implications of relational aggression, a construct that has received little attention in the context of the sibling relationship, as well as the more commonly used hostility construct. There were direct links between hostility and adjustment, suggesting a fairly straightforward negative association between sibling hostility and well-being. The effects of relational aggression were more complex because they depended upon adolescents' orientation toward family. In part, this may be because sibling hostility was fairly common in this sample, whereas relational aggression was reported less often. Adolescents are highly sensitive to rejection and social alienation, making them particularly susceptible to the damaging effects of sibling relational aggression, and, our findings suggest, especially when they also do not feel strongly about the importance of family relationships. In contrast, being part of a sibling pair that does not engage in relationally aggressive strategies may prove to be protective especially among adolescents who highly value family relationships.

A central study goal was to examine birth order as a moderator of the links between sibling relationship qualities, familism values, and adjustment. We included older and younger siblings in the same models which allowed for direct tests of birth order effects, a number of which emerged. Based on tenets of observational learning theory and the principle of least interest, we expected the effects to be stronger for younger than for older siblings. However, of the five significant birth order interactions, two effects were evident only for younger siblings and three were evident only for older siblings. Taken together, this pattern suggests that ordinal

position should be considered in studying sibling effects, underscores the complexity of birth order processes, and reflects the mixed findings of past empirical studies.

The results do not provide an unambiguous answer to the birth order debate; however, because three of the four interactions between familism values and relationship quality were significant only for older siblings, our results suggest that well-being may be more closely linked to sibling relationship qualities and familism values for older than for younger siblings. This is in line with research suggesting that sibling effects may be stronger for older siblings because they are more dominant and tend to set the tone of the sibling relationship (Branje et al., 2004; Dunn et al., 1994; Pike et al., 2005). In this way, they may be the more reflective of the pair, whereas younger siblings may be resigned to accept a relationship that is not ideal in their view. Younger siblings may not have the power to change the quality of the relationship and may attempt to disengage, giving their older sibling less potential to impact their well-being. Future research should investigate why these effects depend upon birth order and whether the patterns change over time. These issues can be addressed with MLM and other techniques that allow for direct comparisons of siblings from the same family. Importantly, birth order and age are highly correlated in this sample, making it impossible to determine which factor is driving these effects. Samples that include two or more siblings at a range of ages are needed to disentangle age and birth order effects.

This study expanded past research by examining sibling influences on positive adjustment, measured here by academic outcomes; however, few effects emerged. There are a number of possible reasons for this. For one, the sibling relationship qualities measured in this study may be too general to have an effect on academic outcomes; perhaps other types of sibling relationship qualities or behaviors, such as helping with homework or interacting with the sibling

at school, are more relevant in this domain. It is also possible that peer relationships are more relevant in predicting school outcomes since adolescents are more likely to interact with peers than with their siblings in a school context. More work is needed to explore other elements of sibling relationships that may play a more important role in academic outcomes.

This study has a number of limitations. First, the data are correlational and cross-sectional, so no conclusions about causality or direction of effect can be drawn. Although we have interpreted the findings such that sibling relationship qualities and familism values shape adolescent well-being, it is likely that the process is dynamic and bi-directional. Another flaw is mono-reporter bias – all study measures were self-reports, so unmeasured third variables may have affected well-being, sibling relationship, and familism assessments. Third, our focus on normative family processes produced a sample of families that have been under-researched; however, the sample was not representative of the African American population as a whole. More research on nationally representative samples is needed to replicate and further investigate the effects that emerged in this study. Finally, given the dearth of literature on how cultural variables affect African American family dynamics and youth well-being, this study was a preliminary step toward understanding these complex processes. Future work should explore additional cultural factors that are important among African American adolescents and their implications in terms of family relationships and psychosocial adjustment.

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Table 1

Means (and Standard Deviations) and Correlations among Study Variables (N = 358 Adolescents From 179 Families)

	1	2	3	4	5	6	7	8	9[a]	10[a]	11	12
1. Family structure	1.00	-.02	.08	.01	.13†	-.03	.06	-.00	-.13†	.22**	-.07	-.24**
2. Parent education	-.02	1.00	.11	.01	-.07	-.04	.01	-.06	.06	.04	-.06	.17*
3. Gender	.01	-.04	-0.01	.07	-.06	-.06	-.04	.02	-.12†	.09	-.07	-.16*
4. Parental warmth	-.06	-.03	-.07	.30**	.30**	-.27**	-.28**	.37**	-.28**	-.29**	.18*	.09
5. Sibling warmth	.00	-.10	-.10	.23**	.46**	-.23**	-.16*	.25**	-.10	.08	.13†	.07
6. Sibling rel. aggress.	.16*	-.04	.08	-.13†	-.04	.23**	.59**	-.15*	.25**	.11	-.08	.05
7. Sibling hostility	.17*	-.02	-.01	-.27**	-.15*	.65**	.38**	-.12	.27**	.20**	-.12	-.02
8. Familism values	-.12†	-.16*	-.14†	.36**	.25**	-.03	-.11	.10	-.16*	-.22**	.12	.09
9. Depressive symp.[a]	.07	-.00	-.10	-.25**	.08	.14†	.18*	-.09	.04	.22**	-.18*	.01
10. Risky behavior[a]	.08	-.10	.18*	-.20**	-.08	.31**	.23**	-.11	.09	.30**	-.27**	-.18*
11. School bonding	-.06	.17*	-.12	.08	.15*	.01	-.00	.25**	-.17*	-.08	.11	.14†
12. GPA	-.05	.20**	-.15*	-.12	-.13	-.08	-.03	-.12	.03	-.12	-.01	.08

Table 1

Continued

	1	2	3	4	5	6	7	8	9	10	11	12
Older sibling												
M (SD)	0.12 (.32)	14.54 (1.76)	0.51 (.50)	3.06 (.65)	2.93 (.74)	1.79 (.81)	2.61 (.85)	4.10 (.51)	1.15 (.17)	1.42 (.27)	3.70 (.71)	2.48 (.81)
Cronbach's α	---	---	---	.93	.82	.80	.80	.89	.77	.88	.74	---
Younger sibling												
M (SD)	0.12 (.32)	14.54 (1.76)	0.46 (.50)	3.27 (.59)	2.90 (.70)	2.00 (.96)	2.61 (1.03)	4.19 (.54)	1.16 (.17)	1.26 (.20)	3.82 (.67)	2.88 (.73)
Cronbach's α	---	---	---	.93	.73	.83	.85	.90	.73	.79	.70	---

Note. Older siblings above the diagonal, younger siblings below the diagonal, correlations between siblings underlined and on the diagonal.

Divorced/separated = 1; Not divorced/separated = 0. Male = 1; Female = 0.

[a] Variable was log transformed for analyses.

$^{\dagger}p < .10$. $*p < .05$. $**p < .01$

Table 2

Unstandardized (γ) and Standardized Regression Coefficients (SRC) for Models Predicting Adjustment with Sibling Warmth

	Depressive Symptoms [a]		Risky Behavior [b]		School Bonding [c]		Grade Point Average [d]	
	γ (*SE*)	SRC	*γ* (*SE*)	SRC	*γ* (*SE*)	SRC	*γ* (*SE*)	SRC
Intercept	0.32 (.09)**		0.62 (.13)**		3.03 (.37)**		1.56 (.43)**	
Family structure	-0.02 (.03)	-.04	0.09 (.04)*	.12	-0.13 (.12)	-.06	-0.31 (.13)*	-.13
Parents' education	0.01 (.01)	.04	-0.01 (.01)	-.01	0.03 (.02)	.08	0.08 (.03)**	.18
Gender	-0.04 (.02)*	-.12	0.06 (.02)*	.12	-0.10 (.07)	-.07	-0.27 (.08)**	-.17
Parental warmth	-0.07 (.02)**	-.26	-0.09 (.02)**	-.23	0.08 (.06)	.07	-0.01 (.08)	-.01
Birth order (BO)	0.03 (.02)†	.06	-0.10 (.02)**	-.20	0.11 (.07)	.08	0.40 (.08)**	.25
Warmth	-0.01 (.02)	-.01	0.07 (.02)**	.20	0.10 (.07)	.10	-0.02 (.06)	-.02
Familism (F)	-0.03 (.02)	-.09	-0.14 (.03)**	-.30	0.20 (.11)†	.15	0.21 (.13)	.14
Warmth X BO	0.04 (.02)†	.12	-0.06 (.03)*	-.12	-0.03 (.10)	-.02		
F X BO			0.16 (.05)**	.25	0.03 (.15)	.02	-0.37 (.16)*	-.21
Warmth X F	-0.04 (.02)*	-.11	-0.08 (.04)*	-.15	0.28 (.12)*	.18		
Warmth X F X BO			0.10 (.05)†	.13	-0.32 (.17)†	-.15		

Note. Divorced/separated parents = 1; Not divorced/separated parents = 0. Younger sibling = 1; Older sibling = 0. Male = 1; Female = 0.

[a] $N = 358$. [b] $N = 339$. [c] $N = 350$. [d] $N = 313$.

†$p < .10$. *$p < .05$. **$p < .01$.

Table 3

Unstandardized (γ) and Standardized Regression Coefficients (SRC) for Models Predicting Adjustment with Relational Aggression

	Depressive Symptoms [a]		Risky Behavior [b]		School Bonding [c]		Grade Point Average [d]	
	γ (*SE*)	SRC	*γ* (*SE*)	SRC	*γ* (*SE*)	SRC	*γ* (*SE*)	SRC
Intercept	0.29 (.09)**		0.56 (.13)**		3.08 (.37)**		1.57 (.43)**	
Family structure	-0.02 (.03)	-.04	0.10 (.04)*	.13	-0.12 (.12)	-.06	-0.31 (.13)*	-.13
Parents' education	0.01 (.01)	.01	-0.01 (.01)	-.01	0.03 (.02)	-.08	0.08 (.02)**	.18
Gender	-0.04 (.02)*	-.12	0.05 (.02)*	.10	-0.11 (.07)	-.08	-0.26 (.08)**	-.16
Parental warmth	-0.06 (.02)**	-.22	-0.07 (.02)**	-.18	0.09 (.06)	.08	-0.02 (.07)	-.02
Birth order (BO)	0.02 (.02)	.06	-0.11 (.02)**	-.33	0.08 (.07)	.06	0.40 (.08)**	.25
Rel aggress. (RA)	0.04 (.02)**	.21	0.02 (.02)	.07	0.01 (.04)	.01	0.01 (.05)	.01
Familism (F)	-0.03 (.03)	-.09	-0.11 (.03)**	-.24	0.20 (.07)**	.15	0.20 (.13)	.13
RA X BO	-0.02 (.02)	-.08	0.02 (.03)	.06				
F X BO	0.03 (.03)	.07	0.13 (.05)**	.20			-0.37 (.16)*	-.18
RA X F	0.05 (.02)*	.17	0.03 (.03)	.07				
RA X F X BO	-0.08 (.03)*	-.20	-0.08 (.04)[†]	-.14				

Note. Divorced/separated parents = 1; Not divorced/separated parents = 0. Younger sibling = 1; Older sibling = 0. Male = 1; Female = 0.

[a] $N = 358$. [b] $N = 339$. [c] $N = 350$. [d] $N = 313$.

[†] $p < .10$. * $p < .05$. ** $p < .01$.

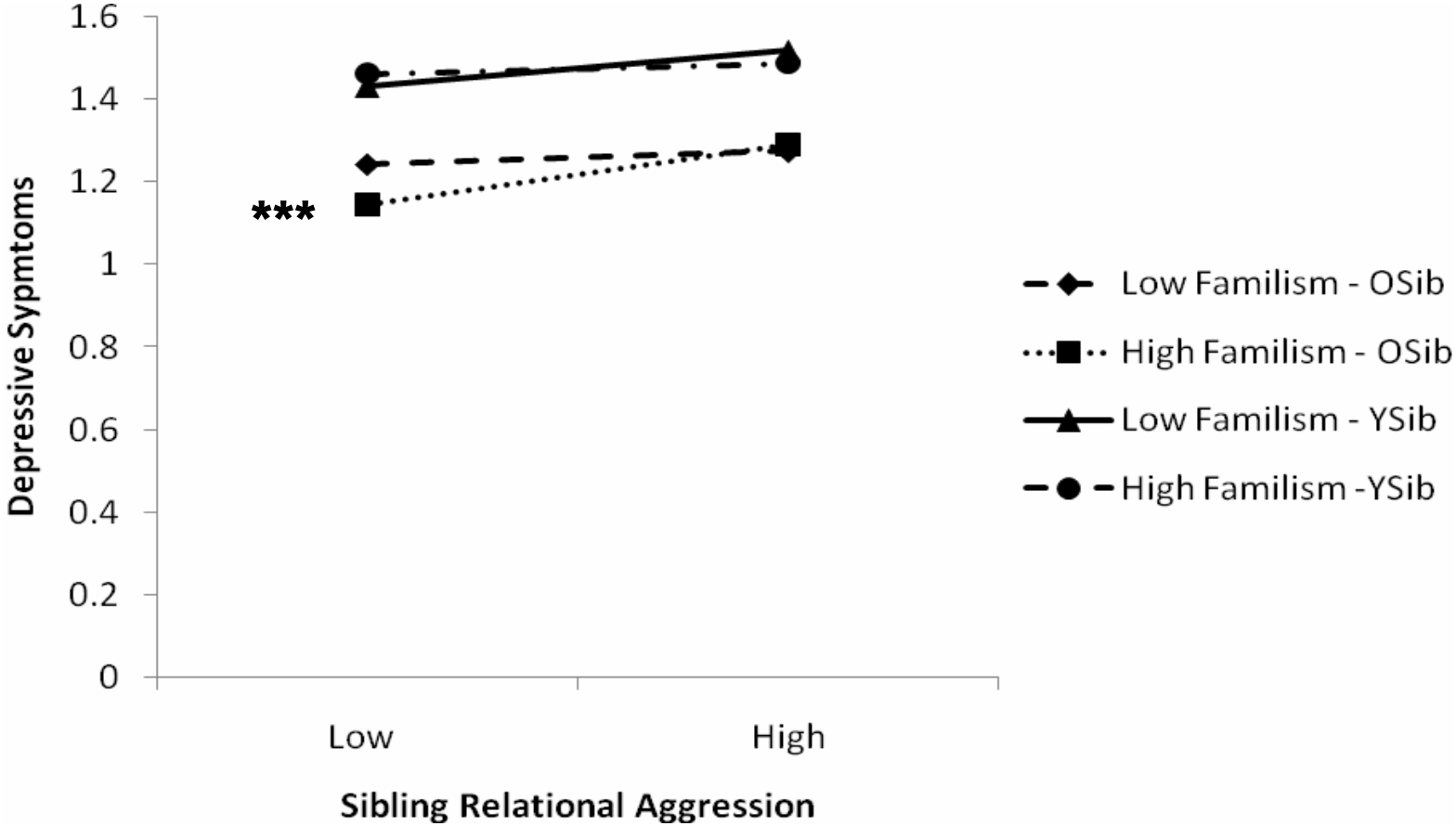

Figure 1. Sibling relational aggression X familism X birth order interaction predicting depressive symptoms, suggesting a multiplicative protective pattern for older siblings (Osib).

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

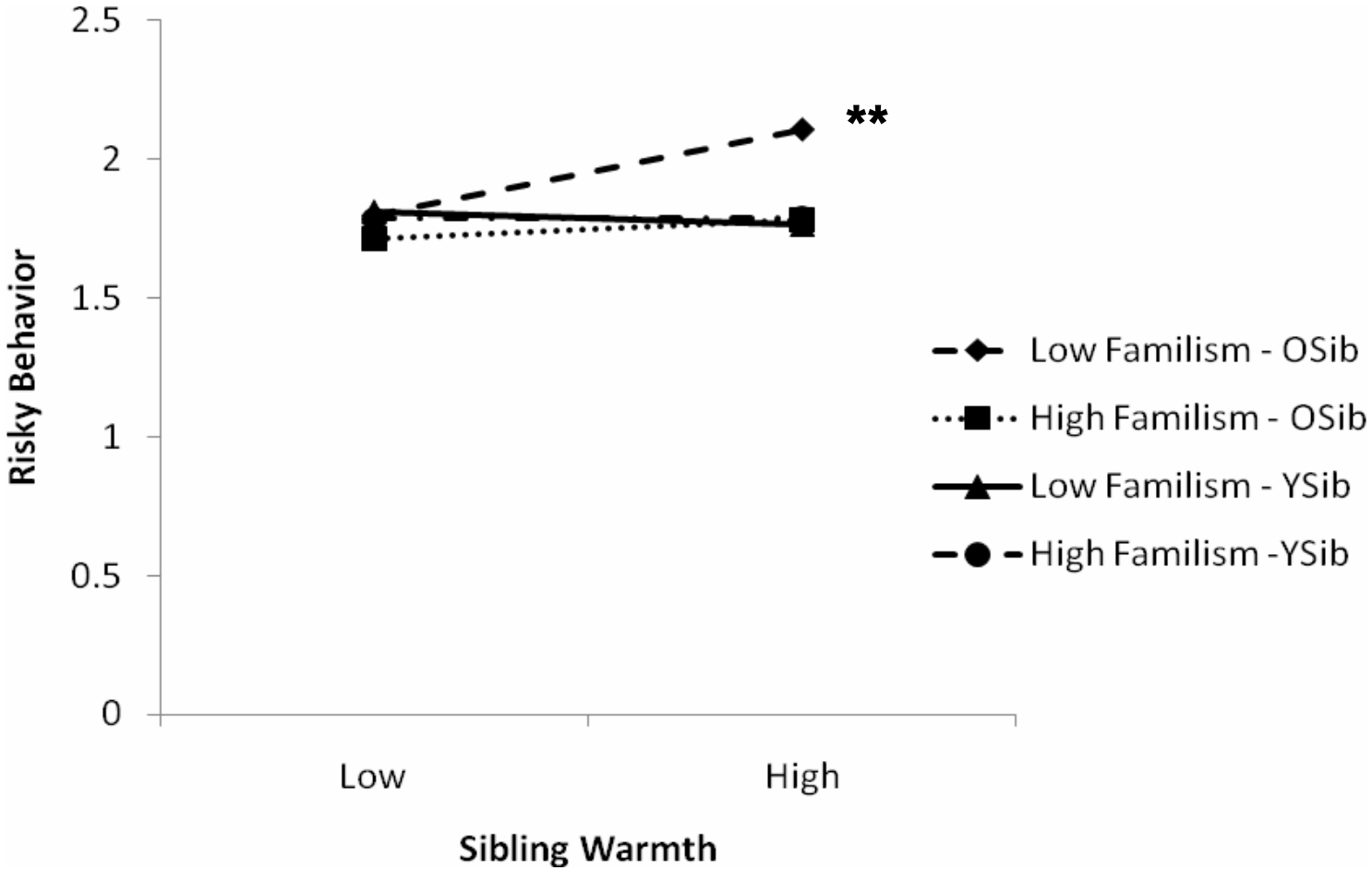

Figure 2. Sibling warmth X familism X birth order interaction predicting risky behavior, suggesting a paradoxical pattern for older siblings (Osib).

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

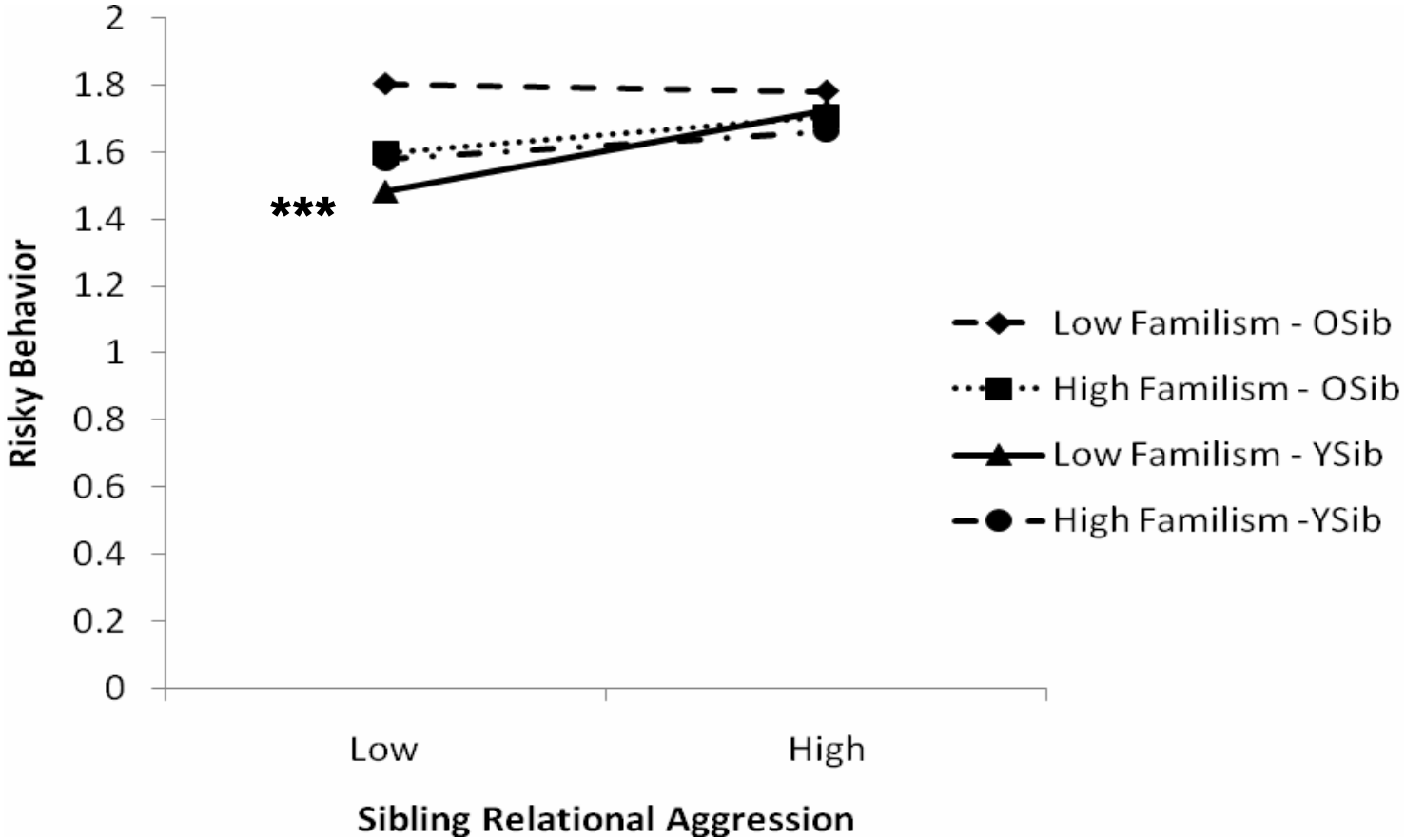

Figure 3. Sibling relational aggression X familism X birth order interaction predicting risky behavior, showing a multiplicative risk pattern for younger siblings (Ysib).

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

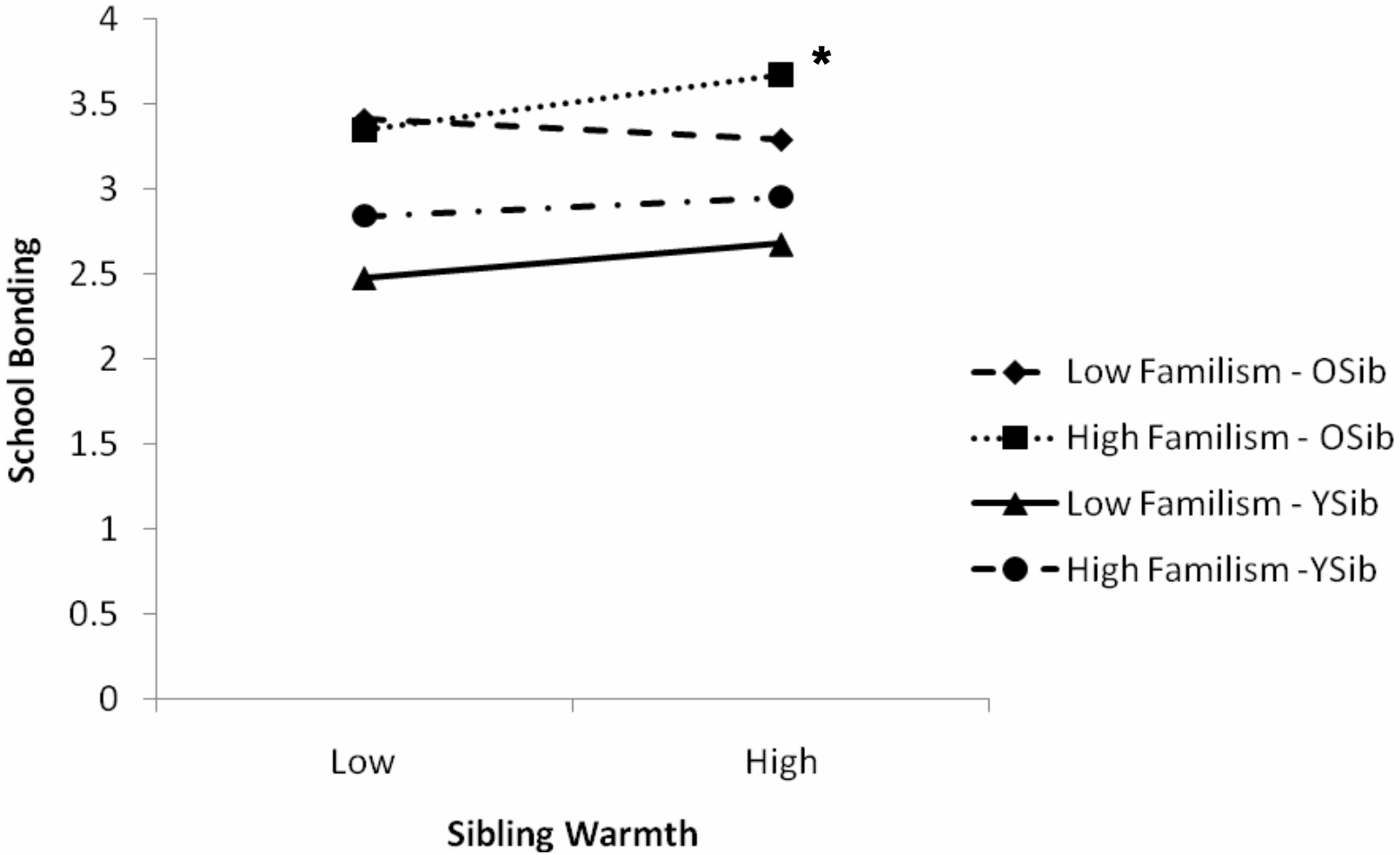

Figure 4. Sibling warmth X familism X birth order interaction predicting school bonding, suggesting a multiplicative protective pattern for older siblings (Osib).

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