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Cumulative Family Risk Predicts Sibling Adjustment to Childhood Cancer

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Abstract

Background—Prolonged, intensive treatment regimens often disrupt families of children with cancer. Siblings are at increased risk for distress, but factors underlying this risk have received limited empirical attention. This study examined associations between the family context and sibling distress.

Methods—Siblings of children with cancer (ages 8–18, N=209) and parents (186 mothers, 70 fathers) completed measures of sibling distress, family functioning, parenting, and parent posttraumatic stress. Associations between sibling distress and each family risk factor were evaluated. Then, family risks were considered simultaneously by calculating cumulative family risk index scores.

Results—After controlling for socio-demographic covariates, greater sibling distress was associated with more sibling-reported problems with family functioning and parental psychological control, lower sibling-reported maternal acceptance, and lower paternal self-reported acceptance. When risk factors were considered together, results supported a quadratic model in which associations between family risk and sibling distress were stronger at higher levels of risk.

Conclusions—Findings support a contextual model of sibling adjustment to childhood cancer in which elevated distress is predicted by family risk factors, alone and in combination.

Keywords

Siblings; Cancer; Psychosocial Factors; Family Relations; Parenting

Introduction

Prolonged, intensive pediatric cancer treatment regimens challenge and disrupt families.¹ Although many siblings of children with chronic illnesses function well, a recent meta-analysis confirmed that they endorse more internalizing and externalizing symptoms and fewer positive self-attributes than siblings of healthy children.² Siblings of children with cancer report increased negative emotion, decreased positive emotion, poor quality of life, and moderate levels of cancer-related posttraumatic stress symptoms (PTSS).³

Attempts to identify factors differentiating siblings who endorse ongoing difficulties from those who show resilience in the face of cancer-related stressors are scarce. The

developmental psychopathology framework suggests that the psychosocial consequences for siblings of children with cancer depend on interactions among numerous risk and protective factors.⁴ Given the central influence of the family on child adjustment,⁵ the present study examined family factors likely to influence sibling distress.

Healthier families are better equipped to function effectively as a whole and reorganize roles, responsibilities, and day-to-day-patterns of functioning to accommodate stressors such as childhood cancer.^{6,7} Research among children and adolescents with cancer has shown cross-sectional and prospective associations between better family relationship quality, satisfaction, problem-solving skills, affective responsiveness and involvement and lower levels of patient internalizing, externalizing, and PTSS.^{8–11}

Parent mental health and parenting are also likely to influence sibling adjustment to childhood cancer. Most parents report heightened distress throughout the first year after diagnosis, with a subgroup experiencing more persistent distress.¹² Although not examined among siblings of children with cancer, associations between parent mental health and child adjustment has been established in pediatric cancer populations.^{13,14} Similarly, lower levels of parental warmth (higher rejection) and higher levels of psychological control (less autonomy-granting) have been associated with increased risk for internalizing symptoms in non-cancer samples.^{15,16}

Although evidence supports proposed links between sibling functioning and each *individual* family predictor, a growing body of work suggests that the *cumulative* number of nonspecific risks may be a better predictor of child adjustment than the strength or severity of any one in particular.^{17–19} The person-centered approach of calculating multiple-risk scores by summing dichotomized risk variables has been applied widely across studies of developmental psychopathology. For example, higher cumulative risk has been associated with the development of internalizing and externalizing problems²⁰ and with a stronger response to intervention.²¹ In pediatric psychology, higher cumulative risk predicted burden among families of children with traumatic brain injuries²² and increased asthma morbidity among urban children.²³ The role of cumulative risk has not been examined in siblings.

The present research examined the degree to which family risk factors, alone and in combination, influence sibling adjustment to childhood cancer. We hypothesized that poorer family functioning, lower parenting acceptance, greater parenting psychological control, and higher parental PTSS would be associated with greater sibling distress. We also hypothesized that higher cumulative family risk would predict greater sibling distress and that this association would be stronger at higher levels of risk.

Method

Sample & Procedure

Data were provided by families of children with cancer (N=210) enrolled across two studies of sibling adjustment conducted at a large children's hospital. Eligible families had a child with cancer receiving active treatment and/or within 2 years of diagnosis and currently living; a sibling aged 8–18 (Study 1) or 8–15 (Study 2); and fluency in English. One parent (Study 1) or up to two parents per family (Study 2) participated.

In both studies, families were identified by tumor registry lists, screened for eligibility, and invited to participate by letter and follow-up phone call. Enrollment rates were 75% (n=126) for Study 1 and 81% (n=84) for Study 2. During home visits, siblings and parents provided informed assent/consent and completed measures of distress, family functioning, and

parenting. For each family, the sibling closest in age to the child with cancer was included in analyses. Procedures were approved by the Institutional Review Board.

Measures

Posttraumatic Stress Diagnostic Scale (PDS).²⁴—Parents completed this 49-item measure of PTSS in regard to their child's cancer. PTSD diagnostic status was determined using *Diagnostic and Statistical Manual of Mental Disorders-IV* (DSM-IV) criteria:²⁵ perceived life-threat; intense fear, horror, or helplessness; re-experiencing (1 symptom); avoidance (3 symptoms); arousal (2 symptoms); symptom duration 1-month; and functional impairment. The scale has high test-retest reliability and adequate concurrent and convergent validity with other PTSD scales.²⁶ Internal consistency in this study was .92 for both mothers and fathers.

Family Assessment Device (FAD).²⁷—Parents and siblings completed this 60-item measure of family functioning, which is well established for chronic illness populations.²⁸ The general functioning scale was used, on which a score 2 identifies "unhealthy" families.²⁹ Internal consistency was .84 for siblings and mothers and .83 for fathers.

Child Report of Parent Behaviors Inventory, Short Form (CRPBI-30).³⁰—Siblings and parents completed 30-item scales measuring perceptions of parenting behaviors. The Acceptance-Rejection and Psychological Control–Autonomy scales were used. For the Acceptance scale, internal consistency values were .90–.91 (sibling), .81 (mother), and .86 (father). For the Psychological Control scale, internal consistency was .79–.80, .73, and .57, respectively.

Child Depression Inventory, Short Form (CDI-S).³¹—Siblings completed this 10-item measure of depressive symptoms. Raw scores were converted to T-scores, and the percentage of siblings scoring in the borderline (T-score=60–69) or clinical range (T-score 70) was calculated. The CDI has good test-retest reliability and construct validity.³² Internal consistency in this study was .78.

Revised Children's Manifest Anxiety Scale (RCMAS).³³—Siblings completed this 37-item measure of anxiety. Raw scores were converted to T-scores, and the percentage of siblings scoring in the borderline and clinical range was calculated. The RCMAS has adequate test-retest reliability.³⁴ Internal consistency in this study was .88.

Child PTSD Symptom Scale (CPSS).³⁵—Siblings completed this 26-item measure of PTSS in response to their brother's/sister's cancer. PTSD diagnostic status was determined according to DSM-IV criteria. A cut score of 11 was used to identify siblings endorsing moderate/severe PTSS.³⁵ Adequate test-retest reliability and convergent validity have been established.³⁵ Internal consistency in this study was .89.

Data Analysis

Preliminary Analyses—Preliminary analyses examined and addressed skew and kurtosis, assessed overlapping variance among outcome variables, and identified covariates. Given conceptual and statistical overlap among measures of depression, anxiety, and PTSS (r 's=.58-.72), z-scores were averaged to form a composite distress score. Pearson correlations and two-tailed independent samples t-tests examined associations between sibling distress and possible covariates: time since diagnosis; sibling age, gender, race, and birth order relative to the child with cancer; additional children in the family; income; and marital status. Variables significantly associated with sibling distress were entered as covariates into

subsequent analyses. Mean scores, standard deviations, and percentages of siblings, parents, and families scoring in the clinical range on standardized measures were calculated.

Main Effects—Pearson correlations were calculated to examine the hypothesis that greater sibling distress would be associated with more family functioning problems, lower parenting acceptance, higher psychological control, and higher parental PTSS. Then, effects of each predictor were evaluated independently and simultaneously using multiple regression. Covariates were entered into Step 1 and each predictor variable (family functioning, parenting, parental PTSS) was entered into Step 2 of separate regressions predicting sibling distress, then entered simultaneously into Step 2 of a final regression model.

Cumulative Risk—A family cumulative risk index score was calculated for each sibling.^{19,36} Because not all siblings reported parenting for both mothers and fathers (e.g., single parent families), sibling-reported acceptance and psychological control were averaged across mothers and fathers. Family variables were dichotomized according to cumulative risk methodology, as follows: parent PTSD was scored 1 if mother and/or father met criteria for a PTSD diagnosis and 0 if neither met criteria. Continuous variables were scored 1 if the raw score fell in the more problematic 20% of the distribution (worse family functioning, lower parental acceptance, higher psychological control) and 0 if the raw score fell in the more positive 80% of the distribution. Dichotomized variables were summed to compute the cumulative family risk score (range: 0–4). Quadratic risk scores were computed by squaring linear risk scores. Covariates were entered into Step 1, the linear family risk index score was entered into Step 2, and the quadratic family risk index score was entered into Step 3 of a regression model predicting sibling distress. Confirmatory analyses also were run predicting sibling depression, anxiety, and PTSS separately.

Power Considerations

Power estimates were carried out using G*Power.³⁷ With 5 predictors, our sample of mothers (n=186) had power of .99 and our sample of fathers (n=70) had power of .67 to detect medium effects ($f^2=0.15$) at alpha of .05.

Results

Sample Characteristics

Data were collected from 210 families. One grandparent-headed family was excluded from analyses to maintain uniformity across caregivers, yielding a final sample of 209 families (209 siblings, 186 mothers, 70 fathers). See Table 1 for demographic and illness information.

Preliminary Analyses

Selecting Covariates—Time since diagnosis, birth order relative to the child with cancer, additional siblings in the family, and gender were not significantly associated with sibling distress ($p's > .05$) and were not included in subsequent analyses. Although sibling age was not significantly associated with distress, it was retained as a covariate due to its conceptual importance in a developmentally-sensitive model of sibling adjustment. Lower family income ($r = -.18, p = .01$), non-white race ($t(207) = -2.89, p = .004$), and parental unmarried status ($t(207) = -2.12, p = .04$) were associated with higher sibling distress and were entered as covariates in subsequent analyses. When income, race, and marital status were entered into the same step of a regression model predicting sibling distress, R^2 was significant ($R^2 = .05, p = .04$), but the individual coefficients were not (Beta's .11, $p's > .11$), suggesting that the effect on sibling distress is due to overlapping variance among these socio-demographic factors.

Clinical Picture—Twenty-five percent of siblings met DSM-IV criteria for PTSD, and 62% endorsed moderate/severe levels of PTSS (CPSS score = 11). With regard to anxiety, the percentage of siblings falling into the borderline range (14%) was similar to that in the normative population, but the percentage in the clinical range (5%) was 2.5 times higher. The percentage of siblings endorsing depressive symptoms in the borderline range was lower than normative rates (5%); the percentage in the clinical range (3%) was comparable. Thirty-five percent of mothers and 28% of fathers met PTSD criteria. Forty-seven percent of siblings, 26% of mothers, and 38% of fathers endorsed unhealthy family functioning (FAD score = 2).

Specific Aim 1: Main Effects

Greater sibling distress was significantly correlated with lower parental acceptance (sibling and father report) and higher parental psychological control (sibling report) and family functioning problems (sibling report), with a similar trend for parental PTSS (Table 2).

Regression analyses examined the independent effects of family predictors after accounting for covariates (age, race, income, marital status). With regard to family functioning, greater sibling distress was predicted by more problems as reported by siblings ($\beta=0.40$, $\Delta R^2=0.15$, $p<0.001$) but not by mothers ($\beta=0.004$, $\Delta R^2=0.00$, $p=0.96$) or fathers ($\beta=0.12$, $\Delta R^2=0.014$, $p=0.36$).

With regard to parenting, greater sibling distress was predicted by lower sibling-reported maternal acceptance ($\beta= -0.17$, $\Delta R^2=0.026$, $p=0.02$) but not by mothers' self-reported acceptance ($\beta=0.035$, $\Delta R^2=0.001$, $p=0.64$). Similarly, greater sibling distress was predicted by higher sibling-reported maternal psychological control ($\beta=0.25$, $\Delta R^2=0.059$, $p<0.001$) but not by mothers' self-reported psychological control ($\beta=0.047$, $\Delta R^2=0.002$, $p=0.55$). Regarding fathers, greater sibling distress was predicted by higher sibling-reported paternal psychological control ($\beta=0.21$, $\Delta R^2=0.039$, $p=0.005$) but not by father-reported psychological control ($\beta=0.022$, $\Delta R^2=0.00$, $p=0.87$). Sibling distress was not predicted by sibling-reported paternal acceptance ($\beta= -0.12$, $\Delta R^2=0.012$, $p=0.12$) but was predicted by lower father-reported acceptance ($\beta= -0.25$, $\Delta R^2=0.061$, $p=0.05$).

Effects of parent PTSS on sibling distress were no longer significant after accounting for covariates (Mother: $\beta=0.13$, $\Delta R^2=0.017$, $p=0.08$; Father: $\beta=0.21$, $\Delta R^2=0.038$, $p=0.11$).

The four family predictors (sibling-reported family functioning and average acceptance, psychological control, and parent PTSS) were entered together in a single step after controlling for covariates ($\Delta R^2=.16$, $p<.001$). Of the individual predictors, only family functioning problems accounted for a significant independent portion of the variance in sibling distress ($\beta=.34$, $p<.001$).

In sum, greater sibling distress was predicted by higher sibling-reported family functioning problems, higher sibling-reported mother and father psychological control, lower sibling-reported maternal acceptance, and lower self-reported paternal acceptance. Effects were strongest for family functioning, which contributed to the prediction of sibling distress independently of the other family risk factors.

Specific Aim 2: Cumulative Risk

The distribution of cumulative family risk scores was as follows: 35.9% of families ($n=75$) had a family risk score of 0, 37.8% ($n=79$) had a family risk score of 1, 16.3% ($n=34$) had a family risk score of 2, 7.7% ($n=16$) had a family risk score of 3, and 2.4% ($n=5$) had a family risk score of 4. Because of the small number of families with a risk score of 4, siblings with scores of 3 or 4 were combined.

After accounting for covariates, the linear family risk score significantly predicted sibling distress ($\beta=.31$, $\Delta R^2=.093$, $p<.001$). When the quadratic term was entered into the regression equation, the linear cumulative risk score was no longer significant ($\beta= -.19$, $p=.33$) and the quadratic family risk score significantly predicted sibling distress ($\beta=.53$, $\Delta R^2=.033$, $p=.006$; Table 3; Figure 1). This suggests that the association between cumulative family risk and sibling distress is stronger at higher levels of risk. The same pattern of results was obtained when separate analyses were run predicting sibling depression, anxiety, and PTSS scores.

Discussion

The current research examined associations between family risk factors and sibling adjustment to a brother's/sister's childhood cancer diagnosis. Poorer family functioning, lower parental acceptance, and higher psychological control were associated with sibling distress. Effects were strongest for family functioning problems. Associations between sibling distress and parent PTSS did not withstand adjustment for socio-demographic covariates. When family risk factors were considered together, findings supported a quadratic cumulative risk model in which the association between risk and distress was stronger at higher levels of cumulative family risk.

Family Risk Factors

The present findings are consistent with past work documenting associations between unhealthy family functioning and poorer adjustment among siblings of children with sickle cell disease,³⁸ disabilities,³⁹ and Down Syndrome.⁴⁰ Similarly, findings are consistent with research linking greater parenting psychological control (lower autonomy-granting) to more internalizing symptoms in children and adolescents,^{15–16} including those with cancer.⁸

Sibling distress was predicted by *self* but not *parent*-reported family functioning and parenting. Self-report measures may assess *perceptions* of family functioning and parenting rather than objective indices thereof. Distressed siblings may perceive more problems with their family environment, raising questions about respondent bias and direction of effect. Alternately, findings may reflect well-documented family disruptions following a cancer diagnosis,⁷ which may reduce family members' accuracy when reporting on the nature and quality of *current* family functioning or parenting. This may be especially true for mothers, whose caretaking role requires them to spend considerable time in the hospital or clinic and who may be less attuned to family dynamics.

Although significant bivariate relationships between parent PTSS and sibling distress were observed, these associations did not withstand adjustment for socio-demographic covariates. Reductions in the observed effect sizes associated with the introduction of covariates were minimal, suggesting that the loss of significance largely reflects reduced statistical power. Further research is indicated to explore reasons underlying the weak association between parental PTSS and sibling distress. For example, it is possible that other forms of parental distress (e.g., anxiety, depression) are more closely related to sibling distress.

Cumulative Risk

When family risk factors were considered together, findings supported a cumulative family risk model of sibling adjustment. On average, siblings with risk scores of 0, 1, or 2 endorsed distress at or below mean levels. Siblings with 3 or 4 risks showed a disproportionate increase in distress, suggesting that multiple family risks act synergistically. Findings that child functioning is better predicted by a higher number of nonspecific risk factors, rather than the strength of any one in particular, is well established in the developmental

psychopathology literature.^{18–21} However, potential limitations of this approach include inattention to multicollinearity or interaction effects and assuming that risks are equally weighted.

Cumulative risk models have not been evaluated previously in siblings. However, a contextual threat framework has been applied in which the level of stress surrounding the cancer experience was considered holistically and quantified by objective raters.⁴¹ Siblings experiencing more stress (cancer-related and unrelated), along with fewer coping resources, were assigned higher contextual threat ratings. These siblings reported greater distress than those with lower contextual threat ratings, independent of demographic or treatment variables.⁴¹ Together, findings underscore the importance of accounting for contextual risk and protective factors when studying sibling functioning.

Clinical Implications

Consistent with past research,³ most siblings did not report clinically-significant depression or anxiety. However, 62% endorsed moderate/severe PTSS, and 25% met PTSD criteria. These rates are higher than those reported by pediatric cancer survivors (5–21%)⁴² and far exceed the US lifetime prevalence of PTSD (7–8%).⁴³ Asking directly about PTSS/PTSD in the context of their brother's/sister's cancer may have prompted siblings to endorse symptoms that they might not otherwise have considered, elevating rates of PTSS/PTSD above spontaneous reports.⁴⁴ Nonetheless, future research should explore reasons underlying siblings' PTSS/PTSD. For example, parents' limited physical and emotional proximity may decrease their ability to address siblings' emotional and practical needs, and siblings may have limited access to hospital-based mental health professionals. Siblings may have less knowledge about cancer and fewer opportunities to process cancer-related emotions compared to patients or parents.

Cumulative risk findings support screening and intervening with families endorsing multiple risk factors. This nonspecific approach underlies the Psychosocial Assessment Tool.⁴⁵ Risks related to family resources, social support, knowledge, emotional/behavioral concerns, marital/family problems, and family beliefs are equally weighted, summed to form a composite score, and compared to a cut-score to inform intervention recommendations.⁴⁵ At lower levels of risk, family functioning alone may be a more parsimonious means of assessing sibling risk. Family functioning (e.g., communication, affective involvement), or siblings' perceptions thereof, may be promising treatment targets for at-risk families.

Strengths and Limitations

Grounded in family systems and developmental psychopathology frameworks, the current research considers multiple levels of influence on sibling adjustment. A systematic recruitment strategy and multiple methods of contacting families contributed to high response rates. Multiple informants allowed us to examine associations of sibling distress with mother-, father-, and sibling-reported family variables. In-home data collection permitted assessment of sibling functioning in a context more typical than the hospital.

Despite these strengths, the cross-sectional design limited our ability to determine direction of effects, assess sibling functioning over time, or distinguish adjustment to cancer from typical developmental processes. Participants spanned a considerable age range, over which developmental competencies and siblings' roles within the family may change. Given age differences across the two samples included in analyses, current findings could be biased toward younger siblings. Previous qualitative findings that families realign to meet demands of cancer treatment⁷ suggest that future work should consider the moderating role of treatment status. Theoretical ambiguity regarding the definitions of “family” and “family

functioning” should be addressed in future work, particularly when extending findings to more culturally-diverse samples. Despite these limitations, the current research is an important step toward developing and testing contextually-based models of sibling adjustment to childhood cancer.

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Figure 1. Sibling Distress According to Number of Family Risks

The positive association between sibling distress and family risk is stronger at higher levels of cumulative family risk. A score of “3” reflects 3 or 4 family risks.

Table 1

Demographic & Illness Characteristics

Sibling:	
Age (Years)	<i>M(SD)</i> =12.52(2.67); <i>Range</i> =8.08–18.00
Gender	54.8% Female
Relative Birth Order	35.3% Younger than Child with Cancer
Ethnicity	4.8% Hispanic/Latino
Race	84.5% White 13.5% Black/African-American/mixed race 1.5% Unknown 0.5% Asian
Family:	
Household Size	<i>M(SD)</i> =5.04(1.34); <i>Range</i> =3–13
Mother Age	<i>M(SD)</i> =40.88(5.62); <i>Range</i> =24–56
Father Age	<i>M(SD)</i> =43.77(5.92); <i>Range</i> =26–63
Child with Cancer Age	<i>M(SD)</i> =10.85(5.41); <i>Range</i> =0.83–25.08
Child with Cancer Gender	46.6% Female
Additional Children in Home	39.9% 3 children in home
Parent (Respondent) Education	22.7% Some High School/High School Graduate 24.2% Some College 7.2% Two-Year College Graduate 26.6% Four-Year College Graduate 19.3% Graduate/Professional School
Parent (Respondent) Marital Status	84.2% Married/Partnered 7.7% Never Married 7.7% Separated/Divorced 0.5% Widowed
Family Income	8.0% <\$25,000 13.9% \$25,000–\$49,999 37.3% \$50,000–\$99,999 22.8% \$100,000–\$149,999 17.9% \$150,000
Cancer:	
Time Since Diagnosis (Months)	<i>M(SD)</i> =17.48(7.72); <i>Range</i> =1–38
Diagnosis Category	31.7% leukemia 13.9% lymphoma 39.4% solid tumor 13.0% brain tumor 1.9% other

Table 2

Correlations among sibling distress, family functioning, parenting, and parent PTSS

	S-GFF	M-GFF	F-GFF	SM-Acc	SM-PsyC	SF-Acc	SF-PsyC	M-Acc	M-PsyC	F-Acc	F-PsyC	M-PTSS	F-PTSS
S-Distress	.43 ^{**}	.018	.11	-.19 ^{**}	.27 ^{**}	-.17 [*]	.24 ^{**}	-.02	.10	-.23 ⁺	-.03	.15 [*]	.23 ⁺
S-GFF	1.00	.30 ^{**}	.25 [*]	-.55 ^{**}	.48 ^{**}	-.27 ^{**}	.39 ^{**}	-.22 ^{**}	.27 ^{**}	-.25 [*]	.09	.22 ^{**}	.00
M-GFF		1.00	.49 ^{**}	-.21 ^{**}	.07	-.16 [*]	.04	-.46 ^{**}	.21 ^{**}	-.52 ^{**}	.37 ^{**}	.19 [*]	.19
F-GFF			1.00	-.21 ^t	.05	-.29 [*]	.07	-.25 ^t	.21	-.42 ^{**}	.39 ^{**}	.17	.19
SM-Acc				1.00	-.30 ^{**}	.37 ^{**}	-.07	.35 ^{**}	-.20 ^{**}	.10	.01	-.11	-.03
SM-PsyC					1.00	-.03	.67 ^{**}	-.05	.24 ^{**}	-.11	.12	.05	.08
SF-Acc						1.00	-.14 [*]	.18 [*]	-.06	.23 ⁺	-.18	-.07	-.03
SF-PsyCon							1.00	.08	.16 [*]	-.11	.08	.04	.04
M-Acc								1.00	-.16 [*]	.21	.00	-.08	-.04
M-PsyC									1.00	-.23 ⁺	.31 [*]	.19 [*]	.19
F-Acc										1.00	-.33 ^{**}	-.11	.05
F-PsyC											1.00	.01	.12
M-PTSS												1.00	.33 [*]
F-PTSS													1.00

* $p < .05$,** $p < .01$,+ $p < .10$

Distr=Composite Sibling Distress

Reporter: S=Sibling, SM=Sibling Report on Mother, SF=Sibling Report on Father, M=Mother, F=Father

Construct: GFF=General Family Functioning, Acc=Acceptance, PsyC=Psychological Control, PTSS=Posttraumatic Stress Symptoms

Table 3

Regression models examining effects of cumulative risk on sibling distress

Predictor	Distress		
	B (95% Confidence Interval)	p-value	Adj R ²
Step 1			.032 *
Sibling Race	.07(−.07–.22)	.31	
Parent Marital Status	.06(−.03–.16)	.18	
Household Income	−.06(−.13–.02)	.13	
Sibling Age	.00(−.004–.003)	.81	
Step 2			.12 **
Sibling Race	.03(−.10–.17)	.63	
Parent Marital Status	.05(−.04–.14)	.24	
Household Income	−.04(−.11–.03)	.27	
Sibling Age	.00(−.004–.003)	.71	
Cumulative Family Risk (Linear)	.29(.16–.41)	.00	
Step 3			.15 **
Sibling Race	.04(−.10–.17)	.58	
Parent Marital Status	.07(−.02–.15)	.13	
Household Income	−.03(−.10–.03)	.33	
Sibling Age	−.001(−.005–.003)	.55	
Cumulative Family Risk (Linear)	−.17(−.52–.18)	.33	
Cumulative Family Risk (Quadratic)	.18(.05 – .30)	.01	

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