Sibling Personality Traits, Dyadic Gender Composition, and Their Association with Sibling Relationship Quality

by

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A thesis submitted in conformity with the requirements for the degree of Master of Arts in School and Clinical Child Psychology

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Abstract
The current study contrasted two different hypotheses about the relationship between sibling personality and sibling relationship quality: absolute value and dyadic similarity. The absolute value hypothesis suggests that the level of one sibling’s personality will predict sibling relationship quality. The dyadic similarity hypothesis argues that it is the similarity between siblings on personality that will be associated with sibling relationship quality. Observational data on child personality and maternal-report data on sibling relationship quality were collected on 321 sibling dyads (N=642). Children were videotaped while completing five tasks and personality traits were rated by independent raters based on thin-slice methodology. Support was found for the absolute value hypothesis but not the sibling similarity hypothesis: the personality traits of younger siblings predicted sibling relationship agonism, particularly when the older sibling was female. Findings suggest that older sisters are more sensitive to negativity in their younger siblings than older brothers.
Acknowledgements

I would like to thank my thesis supervisor, Dr. Jennifer Jenkins for her support and guidance. She has been an invaluable source of knowledge and inspiration throughout this process, and has encouraged me to become a better researcher and writer. I would also like to thank my fellow graduate students at the Developmental Psychopathology lab for their friendship, encouragement, collaboration, and help with different statistical models. A special thanks to Michelle Rodrigues (Noachelle) for many moments of laughter and hard work. I could not have done this without you!

Many, many thanks to my dear family. My parents, Nava and Ofer, who, from a very young age, have instilled in me the thirst for knowledge, motivated me to be the absolute best I can be, and encouraged me to follow my dreams. My husband, Jonathan, for his continuous love and support, patience and encouragement every step of the way, that have helped make sense of the journey of grad school. Lastly, I am grateful for my wonderful sisters, Stav and Gaya, who have inspired me to work toward understanding the complexities of sibling relationships.
Table of Contents

1. Introduction .............................................................................................................. 1
  1.1 Sibling Relationship Quality .............................................................................. 1
  1.2. Child Personality .............................................................................................. 1
  1.3 Personality Influences on Relationship Quality .................................................. 2
    1.3.1 Absolute value hypothesis ......................................................................... 2
    1.3.2 Similarity hypothesis .................................................................................. 3
  1.4 Current Study ...................................................................................................... 4
2. Methods ................................................................................................................... 5
  2.1 Sample ................................................................................................................. 5
  2.2 Participants ......................................................................................................... 5
  2.3 Measures .............................................................................................................. 6
    2.3.1 Thin-slice measurement of child personality .............................................. 6
    2.3.2 Parental Expectations and Perceptions of Children’s Sibling Relationships Questionnaire (PEPC-SRQ) ............................................................. 7
    2.3.3 Covariates .................................................................................................... 7
    2.3.4 Gender and sibling position ....................................................................... 8
  2.4 Data Analysis ....................................................................................................... 8
    2.4.1 Procedure .................................................................................................... 8
    2.4.2 Missing Data ................................................................................................ 9
3. Results ..................................................................................................................... 9
4. Discussion ............................................................................................................... 13
  4.1 Limitations and Future Research ....................................................................... 15
References .................................................................................................................. 17
List of Tables

Table 1. Bivariate correlations of Absolute values and Similarity in personality of siblings for younger and older children with sibling relationship quality……………………………………10

Table 2. Factor loadings and communalities based on a principle components analysis………..11

Table 3. Summary of regression analysis examining the role of younger siblings’ personality positivity in predicting sibling agonism in dyads with and without an older sister…………………12
List of Figures

Figure 1. Sibling relationship agonism as a function of younger siblings’ personality positivity and gender composition, comparing dyads of an older sister with dyads of an older brother......13
1. Introduction

1.1 Sibling Relationship Quality
Sibling relationships play an important role in family life (Howe & Recchia, 2014; Kramer & Conger, 2009) with implications for well-being across the life course (e.g. Kramer & Conger, 2010). Strong sibling relationships foster a positive context for children to develop an understanding of the feelings and perspectives of others, as well as the development of social skills (Dunn, 2002; Brody, 2004). Kramer & Baron (1995) identified the dimensions most often reflected in sibling relationships as agonism, rivalry/competition, and warmth. Relationship agonism, or conflict, is defined as mutual opposition between siblings (e.g. fighting over object/idea/attention/territory) (Kramer & Baron, 1995; Kramer & Gottman, 1992). Relationship rivalry/competition is defined as a particular type of sibling conflict that stems from competition and/or jealousy (Kramer & Baron, 1995). Relationship warmth is defined as the positive aspects of sibling relationship, which may include mutual intimacy, companionship, perceived similarity, prosocial behaviour, and affection (Furman & Buhrmester, 1985; Kramer & Baron, 1995).

Studies have shown that sibling rivalry and conflict, in addition to being stable from middle childhood to adolescence (Brody, Stoneman, & McCoy, 1994), also tend to impact sibling relationship closeness in adulthood (Ross & Milgram, 1982). Therefore, it is important to study the individual factors that influence sibling relationship quality at an early age. Among other things, siblings’ personality traits may have an effect on sibling relationship quality (Dunn, 2002).

1.2. Child Personality
The Five Factor Model (FFM) of child personality has been widely supported (e.g. Halverson et al., 2003; Caspi, Roberts, & Shiner, 2005; Caspi & Shiner, 2006; Deal et al., 2007; Tackett et al., 2012), and has been found to be valid among children as young as 3-5 years of age (Tackett et al., 2012). According to the FFM model, child personality can be captured by the following dimensions of personality: neuroticism, extraversion, conscientiousness, agreeableness, and openness to experience. Neuroticism is identified in terms of negative emotions and processes that are often the result of a perceived threat, such as anger, depression, anxiety, and shame (Costa, Terracciano, & McCrae, 2001). Extraversion encompasses characteristics such as positive emotionality, assertiveness, ambition, and sociability (Depue & Collins, 1999).
Conscientiousness reflects behaviours linked with organization, impulse control, rule following, and self-discipline. Openness to experience comprises features such as intellectual curiosity, creativity, and imagination. Lastly, Agreeableness reflects characteristics associated with empathy and kindness (Weisberg, DeYoung, & Hirsh, 2011).

Personality traits in childhood have been found to be relatively stable and predictive over time. Several longitudinal studies have revealed that childhood personality traits are predictive of adolescent (Tackett et al., 2008) and adulthood personality (Shiner, Masten, & Tellegen, 2002). For instance, Hampson & Goldberg (2006) found that FFM personality traits assessed in elementary school were predictive of traits assessed 40 years later, therefore suggesting a lifetime stability of personality traits. Furthermore, a meta-analysis revealed that test-retest correlations from childhood to early adulthood are moderate over time (Fraley & Roberts, 2004). These findings suggest that childhood personality may be viewed as a valid and relevant measure, despite the young age of respondents.

It is now possible to assess child personality using observational measurement and thin-slice methodology. Thin-slice judgements are intuitive judgements based on brief observations of an individual’s behaviour. Validity of thin-slice measurement has been shown to be good when the construct is well articulated, as is the case with personality (Ambady, 2010; Tackett, Herzhoff, Kushner, and Rule, 2016).

1.3 Personality Influences on Relationship Quality

In order to examine the ways in which personality characteristics of individuals have an impact on dyadic relationship quality, two general contrasting hypotheses have been considered. Do absolute traits of individuals predict the relationship quality of the dyad or is the similarity between members of the dyad more important in explaining relationship quality?

1.3.1 Absolute value hypothesis.

The hypothesis has been put forward that relationship quality may not depend on the goodness of fit between partners, but rather on the absolute levels of individual traits of dyadic partners (e.g. Caughlin, Huston, & Houts, 2000). For instance, Robins, Caspi, & Moffitt (2000) found that men and women’s absolute levels of personality traits, such as negative emotionality (i.e. neuroticism), independently predicted couples’ relationship satisfaction. Moreover, individual
personality traits reliably predict relationship quality in different dyads regardless of the partners’ personality traits. These predictions have been found to be stable across time (Robins, Caspi, & Moffitt; 2002).

Studies that have taken the absolute value approach for examining personality and its association with sibling relationship quality have found that in school-aged children, conscientiousness was positively correlated with sibling relationship warmth and negatively correlated with sibling relationship conflict (i.e. agonism), and rivalry/competition. Low agreeableness was also associated with sibling relationship agonism and rivalry/competition (Furman & Lanthier, 1996). Similarly, the absolute values of temperament traits have also demonstrated the same patterns (Munn & Dunn, 1989; Brody, Stoneman, & Gauger, 1996). For instance, relative to those with less active temperaments, children with highly active temperaments have been reported to encounter four times as much sibling agonism (Mash & Johnson, 1983).

**1.3.2 Similarity hypothesis**
The similarity hypothesis posits that the relationship quality of dyads that are similar in personality will differ from the relationship quality of dyads that are dissimilar in personality (Gaunt, 2006). This approach suggests that “goodness of fit” plays a significant role in relationship quality. The similarity score (the dyadic standard deviation or the subtraction of one individual’s score from the score of another) is used to test this hypothesis. Munn & Dunn (1989) used similarity scores to calculate the similarity/dissimilarity between siblings on temperament dimensions. They found that less dyadic similarity between sibling temperaments at 36 months (e.g. non-adaptability, intensity, negative mood) predicted more relationship conflict, hence suggesting that a “lack of temperamental fit” between siblings puts them at risk for conflict, while a greater similarity in active temperament (either high or low) leads to greater positivity in sibling relationships (Munn & Dunn, 1989). This therefore suggests that higher personality similarity is predictive of greater sibling warmth and lower sibling agonism.

Are results for the absolute value hypothesis influenced by the demographics of the dyad? Some studies have found stronger support for the absolute value hypothesis, comparing younger versus older children in the dyad. For instance, Brody, Stoneman, and Burke (1987) found that the activity level of younger children (particularly males) and their temperaments were more strongly related to sibling agonism than the same characteristics in older children. Furthermore,
results for the absolute value hypothesis have been found to differ by the gender of the older child. Older sisters, when compared to older brothers, show more willingness to accommodate play behaviour to the competencies of their younger sibling (Brody et al., 1985; Stoneman et al., 1984). These findings led us to examine the importance of the absolute value of personality traits separately in younger and older children and to examine whether such relationships varied as a function of the gender of older siblings.

Despite the significance of personality traits in dyadic interactions and the importance of sibling relationships (Gamble & Yu, 2014; Furman & Lanthier, 1996), few studies have contrasted these hypotheses.

1.4 Current Study

The current study was embedded within a larger longitudinal study, the goals of which were to examine genetic and environmental influences on children’s socio-emotional development in preschoolers through an investigation of within-family differences. In the current study, we examined the association between personality traits and sibling relationship quality (agonism, rivalry/competition, and warmth). Previous studies have been limited by small sample sizes and the use of parent-based questionnaires to examine personality in children. The current study addresses these limitations by using a large sample size and implementing a psychometrically reliable and valid observational measurement. Furthermore, we examine the association between child personality and sibling relationship quality as a function of birth order and sibling gender.

The following hypotheses were investigated:

1. Absolute value older and younger siblings’ personality will differ in the extent to which they relate to dyadic agonism, rivalry/competition, and warmth. Younger siblings’ negative traits are expected to predict relationship agonism and rivalry/competition, while their more positive traits are expected to predict relationship warmth, more strongly than older siblings’ traits.

2. Less similarity between siblings’ personality traits will be associated with higher sibling relationship agonism and rivalry/competition, while greater similarity between siblings’ personality traits will be associated with sibling relationship warmth.
3. The relationship between absolute personality and sibling relationship quality will vary as a function of older sibling gender, after controlling for covariates known to predict sibling relationship quality.

Several covariates were considered in this study as they have each been shown to be associated with sibling relationship quality: socioeconomic status (Dunn, Slomkowski, & Beardsall, 1994), age gap (Milevsky, Leh, & Ruppe, 2005), maternal marital status (Hetherington, 1989), and maternal negativity and responsiveness (Jenkins, Rasbash, Leckie, Gass, & Dunn, 2012).

2. Methods
2.1 Sample
The current study is a part of the intensive sample of Kids, Families & Places (IKFP) longitudinal birth-cohort study. Families were recruited through Healthy Babies Healthy Children, a public health program (run by Toronto and Hamilton, Ontario, Public Health Units). Eligibility criteria required (1) English-speaking mother; (2) a newborn singleton weighing at least 1500 grams; (3) one or more children less than 4 years old in the home; and (4) agreement to be videotaped. Reasons for non-enlistment included inability to contact families, ineligibility once contacted, and refusal to participate. 501 families in Ontario participated in four waves of data collection. The IKFP sample was similar to the general population of Toronto and Hamilton in terms of personal income and the number of persons per household, but had a lower proportion of non-intact families, fewer immigrants, and more educated mothers (Meunier, Boyle, O’Connor, & Jenkins, 2013). The University of Toronto Research Ethics Board approved all procedures for this investigation, including informed consent.

2.2 Participants
323 families participated in the fourth wave of data collection (T4), at which point the mean age of younger siblings was $M = 4.78$ ($SD = .28$), and $M = 7.23$ ($SD = .76$) of older siblings. Attrition up to T4 related to lower socioeconomic status, $t(498) = -5.07, p < .001$, lower maternal age at first pregnancy, $t(494) = -5.10, p < .001$, and lower maternal education, $t(498) = -2.99, p < .005$. Of the 323 families participating at T4, complete measures were unavailable for two families. The final sample therefore consisted of 321 sibling dyads ($N=642$; 50.6% male). Observational data were collected on the target child (48.9% male) and next in age older sibling
(52.3% male). Target child and next in age older sibling will henceforth be referred to as younger and older sibling, respectively. Regarding sibship gender composition, 52% were mixed gender, 24.6% were male, and 23.4% female. On average, mothers were 37.58 (SD = 4.46) years old and had 15.66 (SD = 2.56) years of education. 88.8% of mothers were married or cohabitating, 6.8% were widowed, divorced, or separated, and 3.1% were single (never been married). Regarding ethnicity, 58.8% of mothers were of European descent, 13.9% South Asian, 12.4% East/South East Asian, 6.8% Black, and 8.1% classified as other. The median of the annual household income when families joined the study was between $65,000 and $74,999 CDN.

2.3 Measures

2.3.1 Thin-slice measurement of child personality
Children completed five tasks while being observed and videotaped. Five tasks were used to provide a wide range of elicitors for child personality (Tackett, 2011). Aggregated data across multiple tasks have been previously shown to demonstrate high consensus with parental informants (Tackett, Herzhoff, Kushner, & Rule, 2016). The five tasks included Story Time (the child was asked to tell a story to an unfamiliar research assistant, who was described as a “story expert”); Best Memory (the child was asked to recall his/her best memory and describe it to the experimenter); Sad Memory (the child was asked to recall his/her saddest memory and describe it to the experimenter); Transparent Box (the experimenter locked an appealing toy in a transparent box and left the child with a set of nonfunctional keys to open the box); and Uses for Paper (the child was provided with a blank sheet of paper and was instructed to use his/her imagination and come up with as many different uses for the paper as possible).

Independent raters coded the sessions using the psychometrically sound thin-slice methodology (Ambady & Rosenthal, 1992). In addition to convergence with parent reports, thin-slice ratings of child personality have been shown to possess good cross-situational consistency (Tackett et al., 2016). Trained coders watched all tasks and completed the Inventory of Children’s Individual Differences: Short Version (ICID-S; Deal, Halverson, Martin, Victor, & Baker, 2007), a well-established measure of children’s personality. The ICID-S contains 50 items, rated on a 1 (much less than the average child or not at all) to 7 (much more than the average child) scale. It has been shown to factor into the FFM personality traits; Neuroticism, Extraversion, Openness to Experience, Conscientiousness, and Agreeableness (see Deal et al., 2007 for more information).
Thirteen percent of all videos were double coded by an expert coder to ensure inter-rater reliability throughout the coding period. After coders had submitted reliability data, existing discrepancies were discussed with the expert to minimize rater drift. The following are the inter-rater alphas for each of the personality traits: Neuroticism $\alpha=0.75$, Extraversion $\alpha=0.81$, Openness $\alpha=0.61$, Conscientiousness $\alpha=0.76$, Agreeableness $\alpha=0.75$.

The absolute value hypothesis was tested using the child’s raw score on each personality dimension. Sibling similarity was computed by calculating the within family standard deviation (SD) of the siblings’ scores on each personality trait (e.g. Neuroticism_SD).

2.3.2 Parental Expectations and Perceptions of Children’s Sibling Relationships Questionnaire (PEPC-SRQ)

Mothers completed the PEPC-SRQ (Kramer & Baron, 1995), in which they rated the frequency of sibling interaction behaviours, reflecting the dimensions of warmth (e.g. sharing, playing together, respecting each other, sharing worries/concerns, loyalty, and protectiveness), agonism (e.g. arguing, fighting over territory and space, physical aggression, and angry feelings), and rivalry/competition (e.g. jealousy and competition). The frequency of sibling interaction behaviours was rated on a scale of 1 (never) to 5 (always), in the past two weeks. PEPC-SRQ test-retest alphas reported for warmth, agonism, and rivalry/competition were 0.74, 0.86, and 0.77, respectively (Kramer & Baron, 1995). Internal consistency for the three scales ranged from 0.73 to 0.86 (Kramer, 2001). In this study, internal consistency scores of the PEPC-SRQ subscales were similar to those of the original study: Warmth (13 items, $\alpha=0.88$), Agonism (8 items, $\alpha=0.86$), and Rivalry/Competition (3 items, $\alpha=0.79$).

2.3.3 Covariates

In line with previous sibling literature, the following covariates were controlled in the analysis. Variables included dyad age gap (calculated by subtracting the age of the older sibling from that of younger sibling), mothers’ single status (0= not single, 1=single/ widowed/ divorced/ separated), and social-economic status (SES, based on annual household income (16 categories from ‘no income’ to ‘$105,000 or more’), and assets (house size, house ownership, car ownership). Assets and income items were well correlated ($r=0.67$). They were standardized and a mean was computed, with higher scores representing higher income/assets. Family average maternal sensitive responding and family average maternal negativity: maternal sensitivity and
negativity were assessed through two 5-minute observational mother-child interactions (free-play and a cooperative Lego building task) during the home visit. Using the Coding of Attachment-Related Parenting (CARP; Matias, Scott, & O’Connor, 2006) and the Parent-Child Interaction System (PARCHISY; Deater-Deckard, Pylas, & Petrill, 1997), interactions were coded for maternal positive control, maternal sensitivity, and mother-child mutuality (maternal sensitive responding), as well as maternal negative control and negative affect (maternal negativity). A composite score was created by taking the mean of each scale across both tasks. As our outcome variable represented a dyadic construct, the relationship quality between two siblings, the family average of maternal sensitive responding and family average of maternal negativity were taken (for more information on the construction of these family average variables, see Meunier et al., 2013).

2.3.4 Gender and sibling position.
The dyadic gender composition was coded based on the gender of the older sibling (0=older brother, 1=older sister).

2.4 Data Analysis
2.4.1 Procedure
First, missing data were dealt with and descriptive statistics were run. The first hypothesis was tested by examining the Pearson Product-Moment correlation between the absolute value of personality traits and sibling relationship quality, for younger and older children separately. The second hypothesis was tested by examining the Pearson correlation for similarity on personality and sibling relationship quality. The third hypothesis was tested by multiple regression analyses conducted using Mplus 7.2 (Muthén & Muthén, 2010). We examined the main effects of the personality construct, the presence of an older sibling and their interaction using standard regression analyses, while simultaneously controlling for covariates. A separate regression analysis was carried out for each personality construct shown in bivariate analysis to be associated with sibling relationship quality. Before beginning the analyses, continuous variables in the model were centered to reduce multicollinearity between predictors and the interaction term, and allow for the testing of simple slopes (Holmbeck, 2002).
2.4.2 Missing Data

SES, dyad age gap, family average maternal sensitive responding, family average maternal negativity, personality traits (neuroticism, extraversion, openness, conscientiousness, and agreeableness), and sibling relationship quality composites (agonism, rivalry/competition, and warmth) had minimal missing data (<5%). To handle missing data, Full Information Maximum Likelihood Estimation (FIML) was used. FIML estimates model parameters and standard errors using available information, and is thought to be superior with respect to bias and efficiency compared to other methods, such as listwise deletion and multiple imputations (Enders & Bandalos, 2001).

3. Results

With respect to hypothesis 1, results can be seen in Table 1. Significant correlations were found for younger siblings’ absolute levels of neuroticism, openness, conscientiousness, and agreeableness with sibling agonism. No significant correlations between the absolute value of the older siblings’ personality and sibling relationship quality were found. This therefore provides partial support for hypothesis 1, as the absolute value of younger siblings’ negative personality traits is more strongly associated with sibling relationship agonism than the absolute value of older siblings’ personality. Hypothesis 1 was only partially supported as no significant correlations were found between absolute personality traits and sibling relationship warmth or rivalry/competition, for either older or younger siblings.

Results for hypothesis 2, which proposed that sibling similarity will predict sibling relationship quality (i.e. lower similarity, higher agonism and/or rivalry/competition), can also be seen in Table 1. No support was found for this hypothesis as none of the personality similarity variables were related to warmth, agonism, or rivalry/competition.
Table 1: Bivariate correlations of Absolute values (top) and Similarity (bottom) in personality of siblings for younger and older children with sibling relationship quality (agonism, warmth, rivalry/competition).

### Younger Sibling

<table>
<thead>
<tr>
<th>Absolute Personality</th>
<th>Agonism</th>
<th>Warmth</th>
<th>Rivalry/Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism</td>
<td>.179**</td>
<td>.017</td>
<td>.104</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-.061</td>
<td>.024</td>
<td>-.060</td>
</tr>
<tr>
<td>Openness</td>
<td>-.117*</td>
<td>-.005</td>
<td>-.093</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.173**</td>
<td>-.017</td>
<td>-.100</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-.178**</td>
<td>-.013</td>
<td>-.092</td>
</tr>
</tbody>
</table>

### Older Sibling

<table>
<thead>
<tr>
<th>Absolute Personality</th>
<th>Agonism</th>
<th>Warmth</th>
<th>Rivalry/Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism</td>
<td>-.001</td>
<td>.087</td>
<td>.025</td>
</tr>
<tr>
<td>Extraversion</td>
<td>.058</td>
<td>.012</td>
<td>-.018</td>
</tr>
<tr>
<td>Openness</td>
<td>-.015</td>
<td>-.003</td>
<td>-.033</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.069</td>
<td>.078</td>
<td>-.055</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-.016</td>
<td>.076</td>
<td>.005</td>
</tr>
</tbody>
</table>

### Sibling Dyad

<table>
<thead>
<tr>
<th>Sibling Similarity</th>
<th>Agonism</th>
<th>Warmth</th>
<th>Rivalry/Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism</td>
<td>.022</td>
<td>.087</td>
<td>.075</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-.049</td>
<td>-.022</td>
<td>.069</td>
</tr>
<tr>
<td>Openness</td>
<td>-.065</td>
<td>-.005</td>
<td>-.003</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.079</td>
<td>.027</td>
<td>.078</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.049</td>
<td>.051</td>
<td>.078</td>
</tr>
</tbody>
</table>

Note: **p<.01, *p < .05.

As bivariate analyses reported above demonstrated that 1) absolute value personality was the only personality score to be associated with sibling relationship quality, and 2) that this pattern was only seen for agonism, hypothesis 3 was only tested for absolute value constructs and only with sibling agonism as the outcome variable. As four of the five personality dimensions in younger siblings were associated with sibling agonism, we ran a series of regression analyses separately for each personality dimension. For the four personality dimensions, the pattern of main effects and interactions were all substantively the same (available from the corresponding author), suggesting that one pattern was evident in the data that was the same for all dimensions of personality. Further, a standard regression with all personality dimensions entered in the equation resulted in one personality dimension predicting the sibling relationship quality and all other dimensions becoming non-significant because they shared so much variance with the other personality dimensions. This set of findings suggested a large amount of overlap in the personality dimensions themselves, such that reporting each personality dimension separately
would be redundant. As a consequence, we subjected the personality dimensions to a principal components analysis, created one composite variable and report results for hypothesis 3 using the composite variable.

The principle component factor analysis (Table 2) revealed one factor, which according to the initial eigenvalue explained 73.07% of the variance. All personality traits correlated at least .69 with one other trait, suggesting good factorability. Further, the Kaiser-Meyer-Olkin measure of sampling adequacy was .68, which is above the recommended value of .6, and the Bartlett’s test of sphericity was significant ($\chi^2(10) = 1344.21, p<.001$). Lastly, communalities were all above 0.3, further suggesting that each trait shared common variance with the others. We refer to this factor score as positive personality.

Table 2: Factor loadings and communalities based on a principle components analysis

<table>
<thead>
<tr>
<th>Personality Dimension</th>
<th>Positivity</th>
<th>Communality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreeableness</td>
<td>.875</td>
<td>.765</td>
</tr>
<tr>
<td>Openness</td>
<td>.851</td>
<td>.724</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.890</td>
<td>.792</td>
</tr>
<tr>
<td>Extraversion</td>
<td>.751</td>
<td>.564</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-.899</td>
<td>.809</td>
</tr>
</tbody>
</table>

Table 3 shows the results for the standard regression analysis used to test hypothesis 3: the unstandardized regression coefficients ($b$), standardized regression coefficients ($\beta$), p-values, and $R^2$ after entry of all covariates and predictors, for positive personality in younger siblings.
Table 3: Summary of regression analysis examining the role of younger siblings’ personality positivity in predicting sibling agonism in dyads with and without an older sister.

<table>
<thead>
<tr>
<th>Covariates</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>P - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fam. Avg. Negativity</td>
<td>4.495</td>
<td>.521</td>
<td>.482</td>
<td>.000</td>
</tr>
<tr>
<td>Fam. Avg. Sensitivity</td>
<td>.767</td>
<td>.517</td>
<td>.075</td>
<td>.133</td>
</tr>
<tr>
<td>SES</td>
<td>-1.097</td>
<td>.379</td>
<td>-.186</td>
<td>.003</td>
</tr>
<tr>
<td>Age gap</td>
<td>-.402</td>
<td>.322</td>
<td>-.063</td>
<td>.208</td>
</tr>
<tr>
<td>Single parent</td>
<td>.882</td>
<td>.857</td>
<td>.057</td>
<td>.305</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictors</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivity Factor</td>
<td>.186</td>
<td>.600</td>
<td>.017</td>
<td>.756</td>
</tr>
<tr>
<td>Older sister</td>
<td>.772</td>
<td>.437</td>
<td>.084</td>
<td>.075</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interaction</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivity * OS</td>
<td>-2.986</td>
<td>1.000</td>
<td>-.191</td>
<td>.003</td>
</tr>
</tbody>
</table>

R^2 = .295

It is possible to see from Table 3 that the hypothesized interaction was a significant predictor of sibling agonism. To probe the nature of the significant interaction, the association between younger siblings’ positive personality and sibling relationship agonism as a function of older sibling gender was plotted one standard deviation above and below the mean (Holmbeck, 2002). Testing of simple slopes demonstrated that the link between dyads with older sisters (OS) and sibling agonism was significant at low levels of positivity in younger siblings, β = .224, p = .001. Yet, at high levels of positivity, having an older sister was not associated with sibling agonism, β = -.056, ns (Figure 1). Hence, it is possible to see that younger siblings’ personality positivity is associated with sibling agonism when children have older sisters but not when they have older brothers.

Based on the aforementioned analyses of simple slopes, we can see that older sisters are more sensitive to the negative behaviours of their younger siblings. To ensure that the gender composition of the dyad was not a more important predictor of sibling agonism than older
siblings’ gender, all analyses were rerun with all four gender compositions entered as dummy variables (older sister/younger brother; older sister/younger sister, etc.) and the interactions were tested. Differences were found only between dyads with an older sister and those with an older brother. In other words, patterns were similar within these two groups, regardless of the gender of the younger sibling.

Figure 1. Sibling relationship agonism as a function of younger siblings’ personality positivity and gender composition, comparing dyads of an older sister (OS) with dyads of an older brother (OB).

4. Discussion

The goal of this study was to describe the ways in which sibling relationship quality was predicted by siblings’ personality traits. We aimed to examine the extent to which sibling relationship quality is best explained by individual absolute value personality scores or personality similarity across siblings. We found that the absolute value personality hypothesis was more strongly supported than the sibling similarity hypothesis. Further, we found that younger siblings’ personality traits were associated with sibling relationship agonism, while older siblings’ personality traits were not. In other words, compared to older siblings, negative aspects of personality traits (e.g. low agreeableness, high neuroticism) in younger siblings play a more prominent role in the negativity of the sibling relationship. Relationship quality was not found to be related to the degree of personality similarity/dissimilarity between siblings. Moreover, neither individual absolute values of sibling personality (of either older/younger siblings), nor personality similarity between siblings were found to be predictive of other aspects
of relationship quality (i.e. warmth and rivalry/competition). Therefore, we found only partial support for hypothesis 1 and no support for hypothesis 2.

The finding of younger siblings’ personality predicting sibling relationship agonism may be due to issues of power imbalance between siblings. Namely, due to birth order, older siblings typically have more authority in the relationship and naturally set the tone while younger siblings follow (Furman & Buhrmester, 1985). However, when the younger sibling exerts more negativity, it goes against the expected relative power structure in the relationship and therefore has a greater effect on relationship quality because the older sibling no longer dictates the relationship. This reversed power imbalance may lead to friction between siblings. An alternative explanation, following Stoneman & Brody (1993), may be that negativity in younger siblings increases older siblings’ reactivity and leads to older siblings attempting to maintain the power status and dominance within the relationship. Subsequently, this may lead to more dyadic negativity and tension.

Lastly, we hypothesized that individual absolute value personality scores would be predictive of sibling relationship quality (i.e. agonism) as a function of older sibling gender. Indeed, agonism was particularly prevalent in dyads consisting of an older sister when younger siblings displayed negative personality attributes. Following a principal factor analysis, due to a high degree of overlap in the personality dimensions, we found one main factor (i.e. positivity factor) onto which the individual personality traits load. This finding is consistent with previous research, which found high trait inter-correlations between children’s personality traits (Tackett et al., 2016). Therefore, it is essentially low positive personality of younger siblings’ personality that is predictive of sibling relationships agonism in dyads consisting of an older sister.

Our findings suggest that older sisters are more sensitive to negativity in their younger siblings, with higher rates of relationship agonism reported. However, based on the existing literature, we expected older sisters to be more tolerant towards their younger siblings. Therefore, the interaction was not in the expected direction. The divergence from the literature may be due to the fact that previous studies examining the role of gender in sibling relationships have consisted of relatively small sample sizes and included same sex dyads only. Furthermore, they did not consider the role of personality, but rather focused on the roles siblings occupy within a dyad, such as that of teacher or learner (Brody et al., 1985; Stoneman et al., 1984).
The reactivity of older sisters to negative personality traits of the younger sibling and its association with sibling relationship agonism may be due to relational stress (Rudolph, 2002). It has been postulated that girls may be more vulnerable than boys to interpersonal stress and are more likely to perceive negative interpersonal events as stressful (Wagner & Compas, 1990). Furthermore, it has been suggested that girls value close relationships more than boys and rely on relationships as a source of emotional support (Maccoby, 1990). Because girls are more attuned to their siblings (Brody et al., 1985; Stoneman et al., 1984), they are able to pick up on the negative behaviours in their younger siblings. In contrast, older brothers may simply not notice those negative cues from their younger siblings. This pattern of reactivity to relational stress is also evident in the literature of marital relationships (Levenson et al., 1993). Women’s marital satisfaction has been found to be more influenced by social support from their partners than vice-versa (Acitelli & Antonucci, 1994). It has been suggested that when marital distress arises, women take on the emotional responsibility to repair the relationship and are consequently more burdened and distressed compared to men (Levenson et al., 1993). In other words, when faced with a relationship problem, women tend to be more reactive to it.

4.1 Limitations and Future Research

The cross-sectional design of this study does not allow us to draw conclusions about the direction of effect between personality and sibling relationship quality, as it is also possible that sibling relationship quality influences child personality. Therefore, in order to confirm the directions of effect, future studies will benefit from a longitudinal design.

In conclusion, this study is novel in several aspects. First, compared to other familial relationships, sibling dyads are under-researched in the literature; yet, sibling relationships have been shown to play a significant role in child development. Therefore, this study is an invaluable addition to the growing pool of sibling research as it provides an avenue for a better understanding of the interaction between child personality and sibling relationship quality. Second, no previous studies have specifically examined the association between individual personality variables, dyad gender composition, and relationship quality. As evident, sibling relationship quality varies according to the personality traits of younger siblings and the gender/birth order composition. Third, while previous research has primarily measured childhood personality using parent-based questionnaires, this study has employed thin-slice
methodology, which has been shown to possess strong psychometric properties and allow researchers to avoid biases associated with parental reports.
References


