Sibling Relationship Patterns and Their Associations With Child Competence and Problem Behavior

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The present study is the first to examine patterns in sibling relationship quality and the associations of these patterns with internalizing and externalizing problem behavior, as well as self-perceived competence, in middle childhood. Self-report questionnaires (e.g., Sibling Relationship Questionnaire, Self-Perception Profile for Children, Youth Self Report) were administered among 1,670 Dutch children ($M_{age} = 11.40$ years, $SD = .83$) attending 51 different Dutch schools. Three sibling relationship clusters were found: a conflictual cluster (low on warmth, high on conflict), an affect-intense cluster (above average on warmth and conflict), and a harmonious cluster (high on warmth, low on conflict). Sister pairs were underrepresented in the conflictual cluster and overrepresented in the harmonious cluster. Children with conflictual sibling relationships reported significantly more internalizing and externalizing problems, and lower academic and social competence and global self-worth, than children with harmonious sibling relationships. Children with affect-intense sibling relationships reported less aggression and better social competence than children with conflictual sibling relationships. Our findings indicate that it is fruitful to combine indices of sibling warmth and conflict to examine sibling relationship types. Relationship types differed significantly concerning internalizing and externalizing problems, but also concerning self-perceived competence. These findings extend our knowledge about sibling relationship types and their impact on different aspects of child adjustment. Whereas harmonious sibling relationships are the most beneficial for adjustment, sibling conflict mainly has a negative effect on adjustment in combination with lack of sibling warmth. Implications and future directions are discussed.

Keywords: sibling relationship, cluster analysis, competence, internalizing problems, externalizing problems

In the last couple of decades, research interest in sibling relationships has increased considerably. There is an increasing body of research that demonstrates the importance of the sibling relationship for psychosocial functioning (Noller, 2005), above and beyond the influence of other family relationships, such as the parent–child (Defoe et al., 2013; Stocker, Burwell, & Briggs, 2002) and marital (Buist, Deković, & Gerris, 2011; Stocker et al., 2002) relationships. Two important indicators of sibling relationship quality are warmth and conflict (Brody, 1998; Buhrmester & Furman, 1990). Sibling warmth is commonly defined as the degree of closeness, intimacy, and companionship between siblings, whereas sibling conflict constitutes the level of antagonism, arguing, and fighting between siblings (Sanders, 2004). A recent meta-analysis has demonstrated that sibling warmth, as well as sibling conflict, is consistently associated with internalizing as well as externalizing problem behavior (Buist, Deković, & Prinzie, 2013). However, other work has implied that although sibling warmth and conflict are independently associated with child and adolescent outcome, it may also be important to look at these sibling relationship characteristics in conjunction (McGuire, McHale, & Updegraff, 1996).

The sibling relationship is commonly seen as an emotionally intense relationship, in which high levels of warmth and high levels of conflict may coexist (Deater-Deckard, Dunn, & Lussier, 1996). However, the experience of frequent conflicts with a sibling may be different in the context of a warm sibling relationship compared with the context of an emotionally distant sibling relationship (McGuire et al., 1996). Much previous research has used a variable-centered approach, focusing on linear relationships among variables. One of the main drawbacks of that approach is that it may fail to capture factors that jointly explain behavior or adjustment (Bauer & Shanahan, 2007). In the current study, we used a person-centered approach to examine whether sibling warmth and conflict may be combined into different typologies that are distinct in their meaning for child psychosocial functioning.

Sibling Relationship Typologies

Several researchers have combined sibling warmth and conflict to create distinct sibling typologies (Derkman, 2011; McGuire et al., 1996; McHale, Whiteman, Kim, & Crouter, 2007; Sheehan, Darlington, Noller, & Feeney, 2004; Sherman, Lansford, & Vul-
ling, 2006; Whiteman & Loken, 2006). In these studies, three or four typologies have been found. In all studies, a harmonious sibling relationship type was found, with above-average levels of warmth and below-average levels of conflict. Additionally, all these studies found a conflictual sibling relationship type, characterized by below-average levels of warmth and above-average levels of conflict. Another sibling relationship type that has repeatedly been found is the affect-intense type, which represents sibling pairs with above-average levels of warmth as well as conflict (Derkman, 2011; McGuire et al., 1996; Sheehan et al., 2004; Sherman et al., 2006; Whiteman & Loken, 2006). Finally, several studies with middle and older adolescent samples have also found a distant or uninvolved sibling relationship type, in which below-average levels of warmth as well as conflict were reported (Derkman, 2011; Sheehan et al., 2004; Sherman et al., 2006). Thus, in all age groups, harmonious, conflictual, and affect-intense sibling relationship types were found, but the distant sibling relationship type was mainly found in older (adolescent) samples.

Sibling Relationship Typologies and Psychosocial Adjustment

Whereas these different sibling relationship types provide important insights in the sibling experience salient for many children and adolescents, they prove especially important, because these distinct typologies have different psychosocial outcomes. Previous research has shown differences between the sibling relationship types concerning self-esteem and loneliness (Derkman, 2011; Sherman et al., 2006), and depressive mood (Derkman, 2011; McHale et al., 2007). Results indicate that, not surprisingly, harmonious sibling pairs show the best psychosocial adjustment.

College undergraduates with harmonious sibling relationships report higher self-esteem and less loneliness than those with affect-intense sibling relationships (Sherman et al., 2006), indicating the importance of sibling conflict for internalizing problems. Moreover, Derkman (2011) showed that 13- to 15-year-old adolescents with conflictual relationships reported higher levels of internalizing problems than adolescents with affect-intense relationships, and McHale et al. (2007) found that early adolescents with conflictual sibling relationships also reported more depression than early adolescents with uninvolved sibling relationships. These findings suggest, overall, that high conflict levels are a risk factor for internalizing problems, primarily in combination with a lack of sibling warmth.

However, these differences have rarely been examined for externalizing problems (for an exception, see McHale et al., 2007), such as aggression. It is reasonable to assume that, similar to the differences found for internalizing problems and indices of emotional well-being, sibling relationship types also differ in level of aggression. Aggressive and coercive behavior in the sibling relationship may be generalized to other contexts outside the family, for example, resulting in higher levels of aggression toward peers (Stauffacher & DeHart, 2006). Other research has also pointed out that externalizing problems, such as aggression, are more strongly influenced by sibling conflict than sibling warmth (Buist et al., 2013; Ross & Howe, 2009). Following this line of reasoning, children with conflictual and affect-intense sibling relationships could be expected to show elevated levels of aggression compared with children with harmonious and uninvolved sibling relationship types. This was partly supported by McHale et al. (2007) in one of the only studies examining sibling relationship types and externalizing problems. In a sample of 172 African American families, they only found significant differences concerning risky behavior between 10- to 14-year-old children with uninvolved versus conflictual sibling relationships. This seems to imply that for externalizing problems, lack of warmth is a risk factor in the context of high conflict levels. However, McHale et al. (2007) examined this question in a relatively small, exclusively urban African American sample, and it remains unclear to what extent these patterns would also be found in other samples. Thus, more research in large, heterogeneous community samples is essential to illuminate differences between sibling relationship types in externalizing problems.

Besides problem behavior, sibling relationship quality may also be associated with positive psychosocial adjustment. Research has shown that social competence is linked to sibling relationship quality (Kim, McHale, Crouter, & Osgood, 2007; Pike, Coldwell, & Dunn, 2005). Mostly, more positive and less negative sibling relationship qualities have been associated with increased self-reported peer social competence (Kim et al., 2007). Stormshak, Bellanti, Bierman, and the Conduct Problems Prevention Research Group (1996) used typologies to examine differences in social competence of aggressive children (6 to 8 years old). They found that, according to teachers, children from conflictual sibling dyads showed significantly less prosocial behavior toward peers than children from involved (affect-intense) sibling dyads. Therefore, we would expect differences between conflictual and affect-intense sibling pairs concerning social competence, with lower scores for conflictual pairs. The highest scores could be expected for the harmonious pairs. However, it is unclear whether these same patterns could be expected for other areas of competence, such as academic competence and global self-worth, and for other age groups. Therefore, in the present study, we examined differences between sibling relationship types in middle childhood concerning internalizing and externalizing problems, as well as social competence, academic competence, and global self-worth.

Sibling Gender Combinations

Earlier work has indicated differences between sibling gender combinations in sibling relationship quality. Generally, sibling relationships of sister pairs have been found to be the most positive (Aguilar, O’Brien, August, Aoun, & Hektner, 2001; Buist, 2010). However, earlier studies focusing on adolescent sibling relationship typologies have found inconsistent results. Whereas some studies found no gender differences (McGuire et al., 1996; McHale et al., 2007; Sherman et al., 2006), other studies found an overrepresentation of sister pairs in the harmonious relationship type and an underrepresentation of brother pairs in the harmonious relationship type (Derkman, 2011; Whiteman & Loken, 2006). However, these two latter studies concerned mid- to late adolescents. Therefore, we examined whether we could replicate these gender differences in a younger, middle-childhood sample.

The Present Study

The main aim of the present study was to examine whether we could distinguish the sibling relationship types found in earlier
studies: harmonious, conflictual, affect intense, and uninvolved. Potential gender composition differences in the distribution of these sibling relationship types were also examined. Additionally, we tested whether the sibling relationship types differed concerning child internalizing and externalizing problems as well as competence.

Examining the combined effects of sibling warmth and conflict on child adjustment extends previous knowledge concerning the separate effects of sibling warmth and conflict, and represents an important next step in identifying the processes by which sibling relationships affect child development. Earlier work concerning sibling relationship types has focused primarily on older age groups and on internalizing problems or social competence. The present study is one of the first studies to examine the effects of sibling relationship types in this particular age group on both externalizing and internalizing problems and various domains of self-perceived competence, thereby adding to existing knowledge about sibling relationship types and their consequences for child problem behavior and competence.

We focused on middle childhood, because most research on this subject has been done with middle to late adolescents (Derkman, 2011; Sheehan et al., 2004; Sherman et al., 2006; Whiteman & Loken, 2006). Because of the extensive changes that take place during adolescence, the results and patterns found in adolescent research may be different for earlier developmental stages. Studies with younger age groups have been based on samples that were relatively small and/or homogeneous (McGuire et al., 1996; McHale et al., 2007). Examining middle childhood is especially important from a health care perspective, because externalizing as well as internalizing problem behaviors tend to increase during adolescence (Moffitt, 1993; Siegel & Scovill, 2000; Wolff & Ollendick, 2006). Because of the extensive changes that take place during adolescence, the results and patterns found in adolescent research may be different for earlier developmental stages. Studies with younger age groups have been based on samples that were relatively small and/or homogeneous (McGuire et al., 1996; McHale et al., 2007). Examining middle childhood is especially important from a health care perspective, because externalizing as well as internalizing problem behaviors tend to increase during adolescence (Moffitt, 1993; Siegel & Scovill, 2000; Wolff & Ollendick, 2006). Providing more insight into factors that might be linked to these types of problem behavior in an earlier developmental period may eventually create possibilities for more effective prevention and interventions. In the present study, we therefore examined these patterns in middle childhood using a large community sample.

Based on earlier research, we expected to find at least two typologies (harmonious and conflictual), but possibly two more (affect intense and uninvolved). We expected sister pairs to be overrepresented and brother pairs to be underrepresented in the harmonious relationship type. Finally, we hypothesized higher levels of adjustment (better competence and lower levels of internalizing and externalizing problems) for children with harmonious and affect-intense sibling relationships than for children with conflictual and uninvolved sibling relationships.

Method

Participants and Procedure

Participants were 823 boys and 847 girls attending primary school (Grades 5 and 6) or secondary school (Grade 7). Mean age of our participants was 11.40 years ($SD = .83$). All participants in the current study had at least one sibling, with a mean age of 11.72 years ($SD = 3.93$). Gender combination was distributed evenly, with 460 brother pairs, 448 sister pairs, 393 older-brother/younger-sister pairs and 369 older-sister/younger-brother pairs. Age differences were similar across gender combinations; the mean age difference between the siblings was 3.17 years ($SD = 2.19$).

Questionnaires were administered among 51 Dutch schools spread across the Netherlands. Trained research assistants selected these schools based on personal ties to the school, convenience, or randomly from a comprehensive list of available schools in their hometown. The participating schools are representative of Dutch primary and secondary schools concerning educational system, class size, and religiosity (Statistics Netherlands, 2012). Data were collected during 5 consecutive years, with different schools participating each year, resulting in a large cross-sectional data set. Schools were sent a letter in advance, followed by a meeting or telephone contact with the principal, which resulted in permission to let the pupils participate in the research. Additionally, parents received a letter informing them of the planned research. They and their children could object to their child’s participation in the study (mean number of nonparticipating students per class = 1.66). All participating children filled out the questionnaires in their own classroom. Research assistants, as well as the children's regular teachers, were available for questions. If both siblings participated in the study, one of the siblings was randomly selected and removed from the sample. Twin pairs were removed from the sample to improve generalizability and interpretation.

Measures

Sibling relationship quality. Warmth and conflict in the sibling relationship were measured by the Sibling Relationship Questionnaire (SRQ; Buhrmester & Furman, 1990). Children were asked to fill out questions about the relationship with the sibling closest to them in age. Of our participants, 49.2% reported about the relationship with a younger sibling, and 50.8% reported about the relationship with an older sibling. All items were rated along a 5-point Likert-scale ranging from 1 = hardly at all to 5 = extremely much. The Warmth scale (15 items) consists of the SRQ scales Affection, Companionhip, Intimacy, Admiration of and Admiration by Sibling, and had a Cronbach’s alpha of .93. A sample item is, “How much do you and this sibling love each other?” The Conflict scale (six items) consists of the SRQ Quarreling and Antagonism scales, and had a Cronbach’s alpha of .92. A sample item is, “How much do you and this sibling argue with each other?” Scales were standardized to facilitate easy interpretation. These standardized warmth and conflict scores were used in the cluster analysis.

A recent study on the factorial validity, construct validity, and internal consistency of the Dutch version of the SRQ using an adolescent sample showed the Dutch SRQ to be a valid and reliable measure of sibling warmth and conflict (Derkman, Scholte, Van der Veld, & Engels, 2010).

Problem behavior. Two different measures were used to assess problem behavior, one in 2006 and another from 2007 through 2010. In 2006, children’s externalizing and internalizing problem behavior was measured using the Nijmegen Problem Behavior List (NPBL; Research version; De Bruyn, Scholte, & Vermulst, 2005). The NPBL is based on the Youth Self Report (YSR; Achenbach, 1991; Verhulst, van der Ende, & Koot, 1997), but items were specifically chosen and formulated on the basis of appropriateness for use in a subclinical population, and represent relevant problems in adolescence that may cause some concern, but are usually not
serious scale enough for clinical intervention. The items were rated on a 5-point scale (1 = does not apply to me at all to 5 = applies to me very well). To assess externalizing problems, the Aggression scale (five items, e.g., “I argue a lot”) was used. To assess internalizing problems, the Anxiety/Depression scale (five items, e.g., “I worry a lot”) was used. Scales were created by computing the mean of the relevant items. Cronbach’s alpha of the NPBL scales was .77 for externalizing and .73 for internalizing problems.

In 2007 through 2010, externalizing and internalizing problems were measured with the Aggression and Anxiety/Depression scales of the YSR (Achenbach, 1991; Verhulst et al., 1997). Children indicated their externalizing and internalizing problems over the past 6 months on a 3-point Likert scale (1 = not true, 2 = somewhat or sometimes true, and 3 = very true or often true). Sample items are, “I argue a lot” for externalizing problems, and “I worry a lot” for internalizing problems. Sum scores were calculated, with higher scores indicating greater problems. Mean Cronbach’s alphas of the YSR were .81 for externalizing problems and .84 for internalizing problems.

Compared with the NPBL, the YSR contains additional items that represent more overt acts of aggression (e.g., vandalism, physical attack), or slightly more extreme emotional problems (e.g., feelings of worthlessness or inferiority). However, almost all of the items of the NPBL are also incorporated in the YSR (e.g., fighting, quick temper, arguing, being mean, teasing for Aggression; feeling that nobody loves him/her, worrying, feelings of sadness and unhappiness for Anxiety/Depression), creating enough overlap to make comparison possible.

To provide each child with a comparable problem behavior score, scales were standardized before merging the different data sets. Analyses are based on these standardized problem behavior scales. To ensure that the difference between NPBL and YSR measures did not influence our results, we tested whether standardized problem behavior scales differed between NPBL and YSR. We found no significant differences between years in these standardized scales, which indicates that problem behavior scales based on the NPBL were not statistically different from problem behavior scores based on the YSR (respectively, \(F[4, 1606] = 0.137, p = .97\) for Anxiety/Depression, and \(F[4, 1606] = 0.062, p = .99\) for Aggression).

**Competence.** Self-perceived academic competence, social competence and self-worth were measured with 18 items of the Dutch version of the Self-Perception Profile for Children (Harter, 1985; Veerman, Ten Brink, Straathof, & Treffers, 1996). Children were asked to indicate their agreement to statements concerning their academic and social competence (six items each), and well as their general self-worth (six items). For each statement, children first had to choose one of two statements, for example, “A. Some children find it difficult to make friends” or “B. Other children find it easy to make friends.” After choosing A or B, children had to indicate whether this statement was a little bit true or very true for them. Some items were recoded, so that high scores indicated higher self-perceived academic competence, social competence, and self-worth. Cronbach’s alphas were .78, .78, and .80 for, respectively, the academic competence, social competence, and perceived self-worth scale. Again, scales were standardized to aid comparison and interpretation.

**Results**

**Correlations Between Sibling Relationship Quality and Child Adjustment**

Correlations between the key study variables are presented in Table 1. The results show significant correlations between sibling warmth and conflict, on the one hand, and indicators of psychosocial adjustment, on the other hand. Consistent with earlier studies, correlations of sibling conflict with problem behavior, as well as competence, were generally stronger and more often significant than those of sibling warmth.

**Cluster Analysis**

We used cluster analysis to categorize children on the basis of their standardized sibling warmth and conflict scores. A two-stage cluster analysis was applied (Gore, 2000), which has proven to be effective in sciences such as biology and in developmental science as well (Beyers & Goossens, 2003; Luyckx, Goossens, Soenens, Beyers, & Vansteenkiste, 2005). In the first stage, we performed a hierarchical cluster analysis using Ward’s method. In the second stage, \(K\) clusters were extracted from the hierarchical cluster analyses. The centroids of those clusters were used as starting values in a \(K\) means cluster analysis. Combining these two cluster analyses counters the disadvantages of hierarchical cluster analysis.

<p>| Table 1 |</p>
<table>
<thead>
<tr>
<th>Correlations Between Sibling Relationship Quality, Internalizing and Externalizing Problems, and Perceived Competence</th>
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<tr>
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<tr>
<td><strong>Sibling relationship</strong></td>
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<tr>
<td>1. Warmth</td>
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<tr>
<td>2. Conflict</td>
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<td><strong>Problem behavior</strong></td>
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<tr>
<td>3. Anxiety/depression</td>
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<tr>
<td>4. Aggression</td>
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<tr>
<td><strong>Perceived competence</strong></td>
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<tr>
<td>5. Academic competence</td>
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<td>6. Social competence</td>
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<tr>
<td>7. Global self-worth</td>
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</table>

*Note. Sample sizes range between 1,585 and 1,669 because of missing values.*

*p < .05.  **p < .01.*
To examine whether the harmonious, conflictual, affect-intense, and uninvolved sibling types existed within our data, we compared solutions with two, three, and four clusters using the Calinski and Harabasz index (Max C index; recommended by Milligan & Cooper, 1985). Higher scores indicate a better solution. The two-cluster solution showed a harmonious and conflictual sibling type (64.7% and 35.3%, respectively). In the three-cluster solution, there was also an affect-intense sibling type, and in the four-cluster solution, an uninvolved sibling type (25.8%) was found in addition to the harmonious (26.5%), conflictual (18.6%), and affect-intense (29.1%) sibling types. The results indicated that the solution with three clusters fit the data best: Max C index was 1419.87 for the two-cluster solution, 2605.83 for the three-cluster solution, and 1349.09 for the four-cluster solution.

Examination of the final three-cluster solution (see Figure 1) demonstrates evidence for a conflictual cluster (n = 345; 20.7% of the sample), with above-average levels of conflict and below-average levels of warmth. The second cluster combines above-average levels of warmth as well as conflict, suggesting an affect-intense cluster (n = 681; 40.8% of the sample). The third cluster is a harmonious cluster (n = 610; 36.5% of the sample), with above-average levels of warmth and below-average levels of conflict.

**Gender Distribution of Sibling Relationship Types**

To examine whether there were differences between sibling gender combinations in the distribution of sibling relationship types, we performed a chi-square test. The results can be found in Table 2. Significant gender differences were found, $\chi^2(6) = 48.38, p < .001$. Adjusted standardized residuals indicated that, consistent with our hypothesis, sister pairs were significantly overrepresented in the harmonious relationship type ($z = 4.2$) and underrepresented in the conflictual relationship type ($z = -5.9$). Brother pairs and sibling pairs consisting of an older brother and a younger sister were underrepresented in the harmonious relationship type ($z = -1.8$ and $z = -3.3$, respectively) and overrepresented in the conflictual relationship type ($z = 2.9$ and $z = 3.8$, respectively). No marked gender differences were found for the affect-intense sibling relationship type.

To explore these gender differences in relation to birth order, we performed an additional chi-square test examining differences between older-sibling gender in the distribution of sibling relationship types. Again, significant gender differences were found, $\chi^2(2) = 31.16, p < .001$. Adjusted standardized residuals indicated that sibling pairs in which the older sibling was a girl were overrepresented in the harmonious relationship type ($z = 3.7$) and underrepresented in the conflictual relationship type ($z = -5.3$). Sibling pairs in which the older sibling was a boy were underrepresented in the harmonious relationship type ($z = -3.7$) and overrepresented in the conflictual relationship type ($z = 5.3$). No significant older-sibling gender differences were found for the affect-intense sibling relationship type. A similar chi-square test focusing on younger sibling gender in the distribution of sibling relationship types revealed no significant gender differences, $\chi^2(2) = 2.69, p = .26$. Thus, older-sibling gender seems to be more predictive of sibling relationship type than younger-sibling gender.

**Sibling Relationship Types and Child Adjustment**

Significant differences between sibling relationship types concerning child internalizing and externalizing problems and competence were tested by performing a MANCOVA. We included sibling gender combination as a covariate in the analysis because our results indicated that gender distribution was unequal for sibling relationship types. Results can be found in Table 3. We found significant multivariate, Wilk’s $\lambda = 0.185, F(14, 3114) = 210.75, p < .001$, and univariate group differences (see Table 3) for all indices of psychosocial adjustment. Pairwise comparisons using the Bonferroni post hoc procedure showed that, consistent with our hypotheses, children with conflictual sibling relationships reported significantly more anxiety/depression and aggression than children with harmonious sibling relationships. They also reported significantly more aggression than children with affect-intense sibling relationships. Additionally, children with harmonious sibling relationships reported significantly less anxiety/depression than children with affect-intense sibling relationships.

Concerning self-perceived competence, as expected, we found significant differences between the conflictual and harmonious clusters concerning academic and social competence, and global self-worth, with significantly higher competence for children with harmonious sibling relationships. Children in the affect-intense cluster also scored significantly lower on academic competence and general self-worth than those in the harmonious cluster, and significantly higher on social competence than children in the conflictual cluster.

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1 We also performed an ANOVA to check whether the three clusters differed in mean age difference. This turned out to be significant, $F(2, 1577) = 23.830, p = .00$. Post hoc tests revealed that mean age difference between siblings in the harmonious cluster was significantly larger ($M = 3.66$) than in the conflictive ($M = 2.94$) and the affect-intense cluster ($M = 2.86$).
underrepresentation.

Note

Sister pairs (Older sister–younger sister) and brother pairs (Older brother–younger brother) showed that the three-cluster solution fit our data better.

Our four-cluster solution, an uninvolved sibling relationship type, was sometimes found in earlier studies (Derkman, 2011; McGuire et al., 1996; Sheehan et al., 2004; Sherman et al., 2006). In earlier work, we have found that sibling relationship processes in general. More longitudinal studies, for example with cohort-sequential designs, are needed to elaborate upon possible differences in developmental processes between different age groups. These studies could also focus on the potential role of age gap between siblings.

Concerning gender differences in sibling relationship-type distribution, we found that in our middle-childhood sample, consistent with earlier studies with mid- to late adolescents, sister pairs were overrepresented in the harmonious cluster and underrepresented in the conflictual cluster. Numerous earlier studies have found that sibling relationships between sisters are the closest and most positive of all sibling pairs (Aguilar et al., 2001; Buist, 2010; Derkman, 2011; McGuire et al., 1996; Sheehan et al., 2004; Sherman et al., 2006; Whiteman & Loken, 2006). In earlier studies, sometimes an uninvolved cluster has also been found. In our four-cluster solution, an uninvolved sibling relationship type emerged, characterized by below-average levels of warmth and conflict. However, the statistical comparison between the cluster solutions showed that the three-cluster solution fit our data better. Thus, despite the fact that all four sibling relationship types were found in the present study, it appears that the harmonious, conflictual, and affect-intense sibling relationship types are the most salient ones during middle childhood. The fourth sibling relationship type, uninvolved, may become more important at later developmental phases. Indeed, the uninvolved sibling relationship type is mainly found in similar studies with older samples (e.g., Derkman, 2011; Sheehan et al., 2004; Sherman et al., 2006).

The separation processes and increased focus on peers that begin during adolescence stimulate the development of an uninvolved sibling relationship.

In our middle-childhood sample, the largest cluster was the affect-intense sibling cluster, the second largest was the harmonious cluster, and the smallest cluster was the conflictual cluster. Regarding the dispersion of these cluster frequencies, results of earlier work have been contradictory. Our findings are consistent with those of Sheehan et al. (2004) using a sample of 13-year-old adolescents, in which the affect-intense cluster was more prominent than the other clusters. However, other studies with older samples have found that the harmonious cluster was the largest (e.g., Sherman et al., 2006). Age may affect distribution of the sibling relationship types, and appears to be an important factor in sibling relationship processes in general. More longitudinal studies, for example with cohort-sequential designs, are needed to elaborate upon possible differences in developmental processes between different age groups. These studies could also focus on the potential role of age gap between siblings.

Table 2

Gender Distribution (Including Adjusted Standardized Residuals) of Sibling Relationship Types

<table>
<thead>
<tr>
<th>Cluster 1: Conflictual (n = 376; 20.7%)</th>
<th>Cluster 2: Affect-intense (n = 681; 40.8%)</th>
<th>Cluster 3: Harmonious (n = 610; 36.5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brother pairs (n = 460)</td>
<td>126 (2.9)</td>
<td>182 (−0.6)</td>
</tr>
<tr>
<td>Older brother–younger brother pairs</td>
<td>116 (3.8)</td>
<td>160 (0.0)</td>
</tr>
<tr>
<td>Older sister–younger sister pairs</td>
<td>79 (−0.6)</td>
<td>148 (−0.3)</td>
</tr>
<tr>
<td>Sister pairs (n = 448)</td>
<td>57 (−5.9)</td>
<td>191 (0.9)</td>
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</table>

Note. Bold adjusted standardized residuals reflect significant over- or underrepresentation.

Discussion

The aim of the present study was to examine whether the sibling relationship types found in earlier studies could be replicated in a Dutch sample of children in middle childhood, and whether gender-composition differences existed in the distribution of these sibling relationship types. Finally, we examined whether the sibling relationship types differed concerning child internalizing and externalizing problems as well as competence.

We found a harmonious sibling type, characterized by above-average levels of warmth and below-average levels of conflict, as well as a conflictual sibling relationship type, with below-average levels of warmth and above-average levels of conflict. In addition, we found an affect-intense sibling relationship type, characterized by above-average levels of warmth as well as conflict. These three sibling relationship types have been consistently found in earlier studies (Derkman, 2011; McGuire et al., 1996; Sheehan et al., 2004; Sherman et al., 2006; Whiteman & Loken, 2006). In earlier studies, sometimes an uninvolved cluster has also been found. In our four-cluster solution, an uninvolved sibling relationship type emerged, characterized by below-average levels of warmth and conflict. However, the statistical comparison between the cluster solutions showed that the three-cluster solution fit our data better. Thus, despite the fact that all four sibling relationship types were found in the present study, it appears that the harmonious, conflictual, and affect-intense sibling relationship types are the most salient ones during middle childhood. The fourth sibling relationship type, uninvolved, may become more important at later developmental phases. Indeed, the uninvolved sibling relationship type is mainly found in similar studies with older samples (e.g., Derkman, 2011; Sheehan et al., 2004; Sherman et al., 2006). Perhaps the separation processes and increased focus on peers that begin during adolescence stimulate the development of an uninvolved sibling relationship.

In our middle-childhood sample, the largest cluster was the affect-intense sibling cluster, the second largest was the harmonious cluster, and the smallest cluster was the conflictual cluster. Regarding the dispersion of these cluster frequencies, results of earlier work have been contradictory. Our findings are consistent with those of Sheehan et al. (2004) using a sample of 13-year-old adolescents, in which the affect-intense cluster was more prominent than the other clusters. However, other studies with older samples have found that the harmonious cluster was the largest (e.g., Sherman et al., 2006). Age may affect distribution of the sibling relationship types, and appears to be an important factor in sibling relationship processes in general. More longitudinal studies, for example with cohort-sequential designs, are needed to elaborate upon possible differences in developmental processes between different age groups. These studies could also focus on the potential role of age gap between siblings.

Concerning gender differences in sibling relationship-type distribution, we found that in our middle-childhood sample, consistent with earlier studies with mid- to late adolescents, sister pairs were overrepresented in the harmonious cluster and underrepresented in the conflictual cluster. Numerous earlier studies have found that sibling relationships between sisters are the closest and most positive of all sibling pairs (Aguilar et al., 2001; Buist, 2010; Derkman, 2011; McGuire et al., 1996; Sheehan et al., 2004; Sherman et al., 2006; Whiteman & Loken, 2006). Conversely, also consistent with earlier studies with older samples, sibling pairs with an older brother were overrepresented in the conflictual sibling relationship type. These gender differences may be explained by the fact that females are more focused on social relationships in general, and have stronger needs for interpersonal closeness and intimacy than males (Zarbatany, Conley, & Pepper,

Table 3

Cluster Group Means of Measures of Sibling Relationship Quality, Externalizing and Internalizing Problems, and MANCOVA Differences (Controlling for Sibling Gender Combination)

<table>
<thead>
<tr>
<th>Cluster 1: Conflictual (n = 354)</th>
<th>Cluster 2: Affect-intense (n = 634)</th>
<th>Cluster 3: Harmonious (n = 578)</th>
<th>F(2, 1566)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sibling relationship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warmth</td>
<td>−1.31a</td>
<td>0.26b</td>
<td>0.52c</td>
</tr>
<tr>
<td>Conflict</td>
<td>1.01a</td>
<td>0.36a</td>
<td>−1.03c</td>
</tr>
<tr>
<td>Problem behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety/depression</td>
<td>0.18a</td>
<td>0.06a</td>
<td>−0.16b</td>
</tr>
<tr>
<td>Aggression</td>
<td>0.39a</td>
<td>0.08a</td>
<td>−0.31b</td>
</tr>
<tr>
<td>Perceived competence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic competence</td>
<td>−0.08a</td>
<td>−0.05a</td>
<td>0.11b</td>
</tr>
<tr>
<td>Social competence</td>
<td>−0.23a</td>
<td>0.04a</td>
<td>0.10b</td>
</tr>
<tr>
<td>Global self-worth</td>
<td>−0.07a</td>
<td>−0.09a</td>
<td>0.14b</td>
</tr>
</tbody>
</table>

Note. Different superscripts in a row indicate significant differences on Bonferroni post hoc tests.

*p < .05.  **p < .01.  ***p < .001.
differences in socialization (Buhrmester, 1996; Maccoby, 1990; already present at a young age are exacerbated through gender differences in interaction styles and relationship needs that are learned and practiced that may be used for conflict in this affect-intense cluster suggests that these are moderately warm sibling relationships with mild, but not severely increased, conflict. It is interesting that even these moderately elevated levels of conflict are sufficient to put children at risk for anxiety/depression, low academic competence, and low global self-worth. The conflictual cluster, with its strongly elevated levels of sibling conflict, is only worse off than the affect-intense cluster. Taken together, these results suggest earlier findings that decreased levels of sibling warmth and increased levels of sibling conflict may pose a risk factor for child adjustment (Buist et al., 2013).

Our results concerning the affect-intense relationship type are also partly in line with previous studies, indicating that children with affect-intense sibling relationships fare best, indicated by less self-reported anxiety/depression and aggression, compared with children with conflictual sibling relationships. These results are consistent with earlier work (Derkman, 2011; McHale et al., 2007; Sherman et al., 2006). Adding to the lack of research concerning competence, children from harmonious clusters also reported higher levels self-perceived academic and social competence and global self-worth than children from conflictual clusters. Taken together, these results support earlier findings that decreased levels of sibling warmth and increased levels of sibling conflict may pose a risk factor for child adjustment (Buist et al., 2013).

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Some limitations of the present study should be noted. First, we used cross-sectional data, and therefore no conclusions may be drawn regarding causality or direction of effects. Longitudinal data would provide additional insight concerning changes in sibling relationship types and their concomitants over time. A longitudinal design could also point out cross-lagged effects, for example, whether higher levels of peer social competence may lead to more harmonious sibling relationships over time, and vice versa. Another limitation is that we only used child self-reports for sibling relationship quality, as well as problem behavior and competence, which may inflate the strength of connections. However, research has indicated that parents often underestimate problem behavior of their children, especially internalizing problems (Verhulst & Koot, 1995), and that child perceptions are better predictors of child adjustment than parent perceptions (Glasgow, Dornbusch, Troyer, Steinberg, & Ritter, 1997). Nonetheless, it would have been insightful to include sibling and/or parent perceptions of sibling relationship quality and/or psychosocial adjustment. Especially including both siblings’ perceptions of sibling relationship quality would provide important insights into the dyadic processes in these relationships. However, this was not possible in the current study because of study design and scale.

Additionally, sibling relationships do not function in isolation from other family relationships, but are part of the family system in which individuals and relationships (and even the family as a whole) influence, and are influenced by, each other (Cox & Paley, 1997). In order to pinpoint the contribution of family processes in the development and continuance of child and adolescent adjustment, it seems important to examine sibling relationships as well as parent–child and marital relationships in conjunction with each other. In addition, the notion that children may generalize behavior learned in the sibling context to other contexts outside the family has not been studied extensively (Defoe et al., 2013). It may be a fruitful idea for future research to examine these processes within and outside the family.

Notwithstanding these limitations, our study adds to existing knowledge about sibling relationship types and their consequences for problem behavior and competence in middle childhood. The present study was one of the first studies to examine the effects of sibling relationship types on externalizing problems and various domains of self-perceived competence, thereby increasing our understanding of the nature and importance of these relationships during this developmental stage.

Conclusions and Implications

Our study indicates that the degree to which sibling relationships are characterized by a combination of warmth and conflict is important for adjustment in middle childhood. Children with harmonious sibling relationships report the highest levels of adjustment, and children with conflictual sibling relationships the lowest. Sibling conflict seems to be a risk factor for anxiety/depression, academic competence, and global self-worth, regardless of the degree of warmth in the sibling relationship. However, sibling conflict poses a risk factor for aggression only in the context of low levels of sibling warmth. Conversely, sibling warmth seems to be a protective factor for social competence, regardless of the degree of conflict in the sibling relationship.
The fact that the three sibling relationship types we found differ in meaningful ways in problem behavior and competence strongly suggests that sibling warmth and conflict should also be studied in conjunction, and not only as separate characteristics of the sibling relationship. Knowledge about the combined effects of these characteristics of sibling relationship quality may help health care professionals to acknowledge their importance and to provide more effective interventions, as well as increase our insights into the processes at play in this important relationship. In future studies as well as in clinical practice, special attention should be given to sibling pairs with an older brother, because of their overrepresentation in conflictual sibling pairs and the increased risks attached to this particular sibling relationship type.

References


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