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Abstract

Previous studies have shown that the existence of a third generation tends to influence family relations between adult children and their parents. However, there is a lack of studies investigating whether being a parent is associated with relationship quality between adult siblings. Using the Generational Transmissions in Finland survey (n = 1,530 younger adults), we investigate whether parenthood status is associated with sibling relationship quality measured by contact frequency, emotional closeness and conflicts. We found that females who are mothers themselves reported more contact with sisters compared to childless women. We also found signs of decreased likelihood of conflict among sisters with children. Fathers reported more contact than childless men with their childless sisters. In contrast, compared to childless men, fathers reported less contact and a lower level of emotional closeness to their brothers. The results are discussed with reference to shared reproductive interests between siblings with and without children.

Keywords: childlessness, Finland, parenthood, siblings

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Introduction

Sibling relationships are the most long lasting social ties across the human life course (Cicirelli, 1995). When individuals experience important life events, siblings are the ones who are often present. Life course events are often experienced approximately at the same time, and some life events may significantly affect sibling relations. For instance, studies have shown that in the case of severe illness or death of a family member, siblings provide safety nets to each other, meaning that during these unfortunate events, the relationship quality between siblings may improve (Cicirelli, 1995; Pollet & Hoben, 2011). However, to our knowledge, no studies have investigated how family addition, which obviously is one of the most important life events, shapes sibling relationships. In the present study, we compare the relationship quality of siblings who are parents and siblings who are childless using data of younger adults in Finland. We analyze whether individuals who have children and/or whose siblings have children have a better relationship quality compared to childless individuals with childless siblings.

We measure sibling relationship quality by three factors, namely, contact frequencies, emotional closeness and conflicts. By studying these different relationship quality measures, we are able to take into account the ambivalent nature of sibling relations. The ambivalence indicates that sibling relations include not only altruistic helping and emotional support but also competition and conflict (Bedford, 1989; Connidis, 2007). Conflicts between siblings tend to be more common in childhood and adolescence, when siblings live together and may compete over parental resources (e.g., Dunn, 2004; Tanskanen at al., 2016), while in adulthood siblings often provide important support to each other (e.g., Connidis, 1992; White, 2001). This notwithstanding, sibling conflicts do not entirely end when children grow up but also exist in adulthood (Tanskanen et al., 2016).

According to inclusive fitness theory (Hamilton, 1964), individuals can enhance their own inclusive fitness by investing time and resources in genetically related kin. Individuals who share common genes with each other have shared reproductive interests, which in turn may encourage them to invest resources in each other. In addition, when shared reproductive interests between individuals increases, conflicts are predicted to decrease (Salmon & Hehman, 2014). Evolutionary researchers argue that

many of the emotions embedded in family relations are strongly related to the existence of a common offspring, as individuals are able to increase their own fitness through descendants (Hughes, 1988). Therefore, it is suggested that the birth of a child brings kin members emotionally closer to each other. Support for this prediction has been found in previous studies investigating relationship quality between younger adults and their parents showing that when a child arrives there is an increase in the daughter–mother relationship quality (Danielsbacka et al., 2015; Fischer, 1983). Following evolutionary predictions, the advent of a child should improve relationship quality between siblings as well, as the existence of an offspring increases the shared reproductive interests between them. Thus, we predict that the relationship quality between siblings is of better quality when respondents and/or siblings have children. We test two hypotheses:

> *Hypothesis 1*: Respondents who have children and/or whose siblings have children have more contacts and are emotionally closer compared to childless respondents with childless siblings
>
> *Hypothesis 2*: Respondents who have children and/or whose siblings have children have less conflicts than childless respondents with childless siblings

In addition to shared reproductive interests, the gender of individual as well as that of the sibling may influence sibling relationship quality. Studies have shown that same-sex siblings tend to have closer relations with each other compared to mixed gender sibling pairs and female-female pairs are closest of all sibling pairs (Michalski & Euler, 2008). These gender based differences mean that it is important to study relationship quality between different sister-brother categories in a separate manner.

In the analyses, we control for several potential confounding factors that are shown to be associated with sibling relationship quality in previous studies. The age of an individual and sibling have been shown to correlate with sibling contacts (Tanskanen & Danielsbacka, 2014). Perhaps even more important factor is the age difference between

siblings. When the age difference increases, the closeness between siblings tends to decrease (Pollet, 2007). The birth order could be a relevant factor, as firstborns are shown to have more contacts with siblings than laterborns (Pollet & Nettle, 2007; Salmon, 1999, 2003). Moreover, when the total number of siblings increases, the time one can spend with one specific sibling may decrease (Michalski & Euler, 2008). One of the most robust findings in previous literature is that when the geographical distance between siblings increases the amount of contact decreases (e.g., Pollet, 2007; Tanskanen & Danielsbacka, 2014). Finally, marital status and socioeconomic position may influence sibling relationship quality (e.g., Tanskanen et al., 2016; White, 2001).

Methods

We use the Generational Transmissions in Finland (Gentrans) survey data. The aim of Gentrans is to gather longitudinal information on two generations: the Finnish baby boomer generation born between 1945 and 1950 and their adult children born between 1964 and 1993. Only one person per household participated in the study. This study only uses the younger generation data collected in 2012 by Statistics Finland via regular mail. During the data collection in 2012, respondents were approximately 36 years old (between 19 and 50) (see Danielsbacka et al., 2013; Tanskanen & Danielsbacka, 2016 for more detailed data description). For our analytical sample, we have selected those respondents who have at least one sister or brother. Only genetically related sibling pairs are included. These selections left us with a study sample consisting of 1,530 respondents.

Dependent variables indicate the relationship quality of siblings measured by contact frequency, emotional closeness and conflicts. In the questionnaire, respondents were asked via a five-point scale (from 0 = never to 4 = several times a week) to report how often they have had contact with their siblings either personally, by phone or by internet during the last 12 months. Emotional closeness was measured by asking respondents how close they feel to their siblings using a five-point scale (from 0 = very distant, to 4 = very close). In the case of conflicts the respondents were asked how often they have had conflicts with sibling. Respondents reported conflicts with each of their siblings on a scale of 0 = never to 3 = often. For the analysis, we dichotomized the sibling conflict variable as 0 = never and 1 = at least sometimes, as this variable was not normally

distributed, thus the analyses with continuous variables would not have been performed properly. Sensitivity analyses conducted with continuous variables produced similar results (not shown) as the analyses with the dichotomized variables, thus, the loss of information appears to have been small. The ratings of contact frequency, emotional closeness and conflicts were asked separately for the respondents' four oldest siblings. For the purposes of the analyses, the data were reshaped into a long format, allowing the observations to represent the siblings of the original respondents. This resulted in a total of 2,402 observations from the data.

The main independent variable measures parenthood status of respondents and siblings. This variable includes four categories: both are childless (14.0%), respondents are childless but siblings have children (19.3%), respondents have children but siblings are childless (20.8%), and both have children (45.9%). The main analyses group "both are childless" is used as a reference category and other categories are compared to it, as the shared reproductive interest hypothesis tested here predicts difference between childless sibling pairs and those pairs were at least one party has children.

A multilevel linear regression is used to study sibling contacts and emotional closeness. In the case of sibling conflicts, we use Stata's statistical software cluster option to calculate standard errors. These methods are used because they take into account the non-independence of sibling relationship quality measures reported by the respondents (i.e., the sample may include several observations from one respondent). We have illustrated the results by calculating the adjusted means and predicted probabilities with 95% confidence intervals from the regression models.

For all analyses, we control for several potential confounding factors. These are respondents' year of birth, marital status, education, financial situation, number of siblings and birth order. Sibling's year of birth and financial situation as well as age difference and geographical distance between siblings are also controlled. With the exception of the respondent's birth year, number of siblings, sibling's birth year, age difference between siblings and geographical distance between siblings, all independent variables were categorical and were transformed into dummy variables. Descriptive statistics are presented in Table 1.

[TABLE 1 ABOUT HERE]

Results

First, we provided pairwise correlations between sibling relationship quality indicators. There was a somewhat high positive correlation between contact and emotional closeness ($r = 0.58$, $p < 0.001$) and a very low positive correlation between contact and conflict ($r = 0.09$, $p < 0.001$). Moreover, there was a very low negative correlation between emotional closeness and conflict (-0.09, $p < 0.001$).

Women

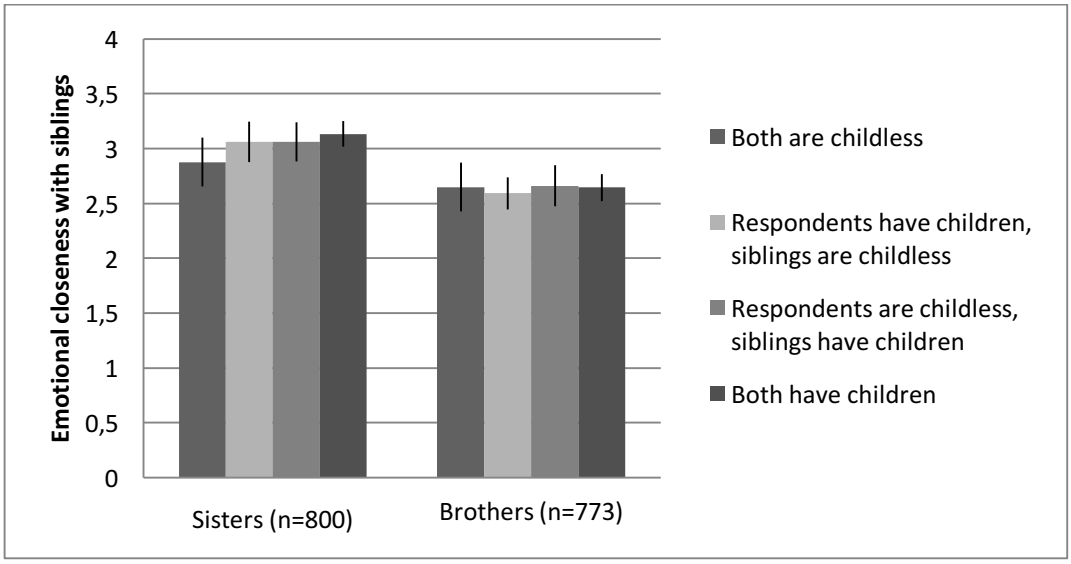
Figure 1 shows the results concerning women's contact frequency with sisters and brothers.. Compared to "childless women with childless sisters", "mothers with sisters with children" have more contacts (both are childless = ref.; respondents have children, siblings are childless: $\beta = 0.16$, SE = 0.15, $p = 0.290$, 95% CI = -0.14–0.46; respondents are childless, siblings have children $\beta = 0.12$, SE = 0.13, $p = 0.328$, 95% CI = -0.13–0.36; both have children: $\beta = 0.45$, SE = 0.14, $p = 0.001$, 95% CI = 0.18–0.74; n = 800; Adj. R2 = 0.18). A somewhat similar effect was found in sister-brother pairs, although the difference between groups "both are childless" and "both have children" was only marginally significant. In addition, we found that mothers with childless brothers reported marginally significantly more contacts than did childless women with childless brothers (both are childless = ref.; respondents have children, siblings are childless: $\beta = 0.24$, SE = 0.13, $p = 0.074$, 95% CI = -0.02–0.50; respondents are childless, siblings have children $\beta = 0.19$, SE = 0.12, $p = 0.105$, 95% CI = -0.04–0.42; both have children: $\beta = 0.26$, SE = 0.14, $p = 0.055$, 95% CI = -0.01–0.53; n = 773; Adj R2 = 0.19).

[FIGURE 1 ABOUT HERE]

Based on results shown in Figure 2, mothers with sisters with children reported marginally significantly more emotionally closer relationships compared to childless women with childless sisters (both are childless = ref.; respondents have children, siblings are childless: $\beta = 0.19$, SE = 0.15, $p = 0.205$, 95% CI = -0.10–0.48; respondents are childless, siblings have children $\beta = 0.19$, SE = 0.13, $p = 0.145$, 95% CI = -0.17–0.44; both have children: $\beta = 0.26$, SE = 0.14, $p = 0.060$, 95% CI = 0.01–0.53; n = 800; Adj. R2 = 0.04). However, we were unable to find even marginally significant

associations in the case of sister-brother dyads (both are childless = ref.; respondents have children, siblings are childless: β = -0.06, SE = 0.14, p = 0.694, 95% CI = -0.33–0.22; respondents are childless, siblings have children β = 0.01, SE = 0.12, p = 0.922, 95% CI = -0.23–0.25; both have children: β = -0.005, SE = 0.14, p = 0.973, 95% CI = -0.29–0.28; n = 773; Adj. R2 = 0.08).

Figure 2. Women's emotional closeness with sisters and brothers (adjusted means and 95% confidence intervals)



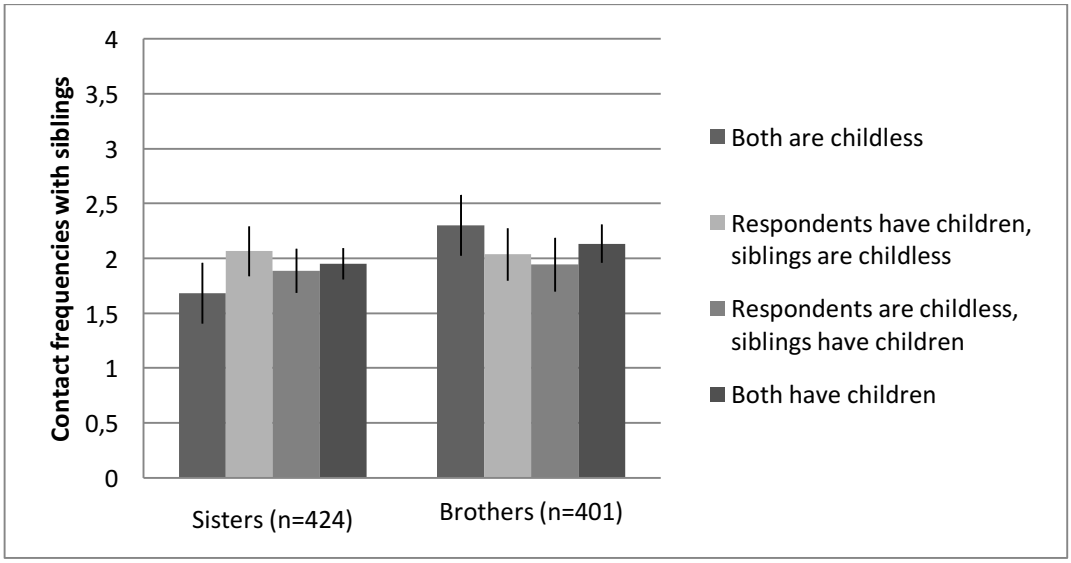
Next, Figure 3 shows that compared to the "both are childless" group, "respondents are childless, sibling have children" and "both have children" groups had a significantly marginally lower likelihood of conflicts (both are childless = ref.; respondents have children, siblings are childless: OR = 0.64, SE = 0.25, p = 0.248, 95% CI = 0.30–1.37; respondents are childless, siblings have children OR = 0.49, SE = 0.18, p = 0.046, 95% CI = 0.24–0.99; both have children: OR = 0.51, SE = 0.19, p = 0.078, 95% CI = 0.24–1.08; n = 800; Nagelkerke R2 = 0.11). However, there were no significant differences between sister–brother pairs (both are childless = ref.; respondents have children, siblings are childless: OR = 0.98, SE = 0.34, p = 0.964, 95% CI = 0.50–1.95; respondents are childless, siblings have children OR = 1.10, SE = 0.34, p = 0.767, 95% CI = 0.60–2.01; both have children: OR = 1.53, SE = 0.55, p = 0.237, 95% CI = 0.76–3.10; n = 773; Nagelkerke R2 = 0.16).

[FIGURE 3 ABOUT HERE]

Men

Figure 4 shows that fathers with childless sisters reported more contacts than the group "both are childless" (both are childless = ref.; respondents have children, siblings are childless: β = 0.38, SE = 0.19, p = 0.043, 95% CI = 0.01–0.75; respondents are childless, siblings have children β = 0.20, SE = 0.15, p = 0.175, 95% CI = -0.09–0.50; both have children: β = 0.27, SE = 0.17, p = 0.123, 95% CI = -0.07–0.61; n = 424; Adj. R2 = 0.16). Moreover, childless men with brothers with children had less contact compared to the group "both are childless" (both are childless = ref.; respondents have children, siblings are childless: β = 0.26, SE = 0.19, p = 0.173, 95% CI = -0.64–0.12; respondents are childless, siblings have children β = -0.36, SE = 0.16, p = 0.027, 95% CI = -0.67– (-0.04); both have children: β = 0.17, SE = 0.18, p = 0.367, 95% CI = -0.52–0.19; n = 401; Adj. R2 = 0.17).

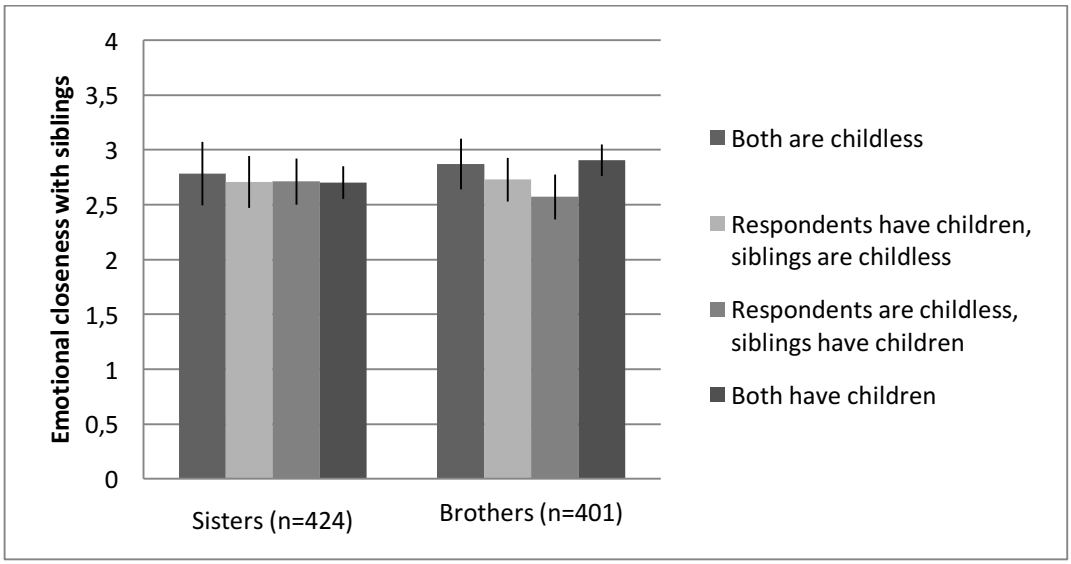
Figure 4. Men's contact frequency with sisters and brothers (adjusted means and 95% confidence intervals)



As Figure 5 shows, there were no significant differences in reported emotional closeness between the reference group "both are childless" and other groups based on parenthood status when brother-sister pairs were investigated (both are childless = ref.; respondents have children, siblings are childless: β = 0.07, SE = 0.20, p = 0.704, 95% CI = -0.46–0.31; respondents are childless, siblings have children β = 0.07, SE = 0.15, p = 0.638, 95% CI = -0.36–0.23; both have children: β = 0.08, SE = 0.18, p = 0.651, 95% CI = -0.44–0.27; n = 424; Adj. R2 = 0.03). However, Figure 5 shows that childless men

with brothers with children reported lower levels of emotional closeness than the group "both are childless" (both are childless = ref.; respondents have children, siblings are childless: β = -0.14, SE = 0.16, p = 0.380, 95% CI = -0.45–0.17; respondents are childless, siblings have children β = -0.30, SE = 0.13, p = 0.027, 95% CI = -0.56– (-0.03); both have children: β = 0.04, SE = 0.10, p = 0.812, 95% CI = -0.26–0.33; n = 401; Adj. R2 = 0.09).

Figure 5. Men's emotional closeness with sisters and brothers (adjusted means and 95% confidence intervals)



Next, Figure 6 presents results concerning sibling conflict in men. There were no significant associations in the case of brother–sister pairs (both are childless = ref.; respondents have children, siblings are childless: OR = 1.52, SE = 0.77, p = 0.405, 95% CI = 0.57–4.10; respondents are childless, siblings have children OR = 1.80, SE = 0.69, p = 0.128, 95% CI = 0.84–3.82; both have children: OR = 1.55, SE = 0.72, p = 0.342, 95% CI = 0.63–3.86; n = 424; Nagelkerke R2 = 0.13). In the case of the brother–brother pair group, "respondents have children and siblings are childless" had a marginally significantly lower probability of conflict than the group "both are childless" (both are childless = ref.; respondents have children, siblings are childless: OR = 0.44, SE = 0.21, p = 0.081, 95% CI = 0.17–1.11; respondents are childless, siblings have children OR = 0.57, SE = 0.24, p = 0.191, 95% CI = 0.25–1.32; both have children: OR = 0.47, SE = 0.22, p = 0.102, 95% CI = 0.19–1.16; n = 401; Nagelkerke R2 = 0.14).

[FIGURE 6 ABOUT HERE]

Associations between covariates and sibling relationship quality

Table 2 shows the results concerning the associations between control variables and sibling relationship quality measured by contact frequency and emotional closeness. We found that younger respondents and respondents with younger siblings had more contact. When respondents' number of siblings, age difference and geographical distance increased, the amount of contact decreased. In addition, respondents with younger siblings were emotionally closer with them. When age difference and geographical distance increased, emotional closeness decreased. Respondents with "lower degree of tertiary education" were emotionally closer with siblings compared to the group "primary or secondary level education". Finally, respondents were emotionally closer to wealthier siblings.

[TABLE 2 ABOUT HERE]

Table 3 presents associations between covariates and sibling conflict. Based on marital status, the groups "cohabitation" and "other" had a lower likelihood for conflict compared to the "unmarried" group. When the number of siblings and age difference between siblings decreases, the odds for conflict also decrease. Finally, regarding financial status, those respondents whose siblings were comfortably well-off or wealthy had a lower probability of conflict than those whose siblings had lower incomes.

[TABLE 3 ABOUT HERE]

Conclusions

In the present study, we have analyzed whether parenthood status is associated with sibling relationship quality measured by contact frequency, emotional closeness and conflicts. Based on the shared reproductive interest hypothesis, we predicted that parenthood is associated with increased contact and emotional closeness as well as decreased conflicts among siblings. Our results were partly in accordance with these predictions but partly not. We found that female respondents who both have children and nieces/nephews via sisters reported an increased amount of contact with sisters. Moreover, we found some evidence that motherhood was associated with a lower likelihood of conflict among sisters. In the case of male respondents, fathers reported

more contact with their childless sisters than childless men. However, fathers reported less contact with their brothers than childless men. Finally, in several cases, we did not find significant differences between childless sibling pairs and pairs with children.

Previous studies have shown that sister-sister pairs are typically the closest of all sibling pairs, and women usually invest more resources in their sibling's children compared to men (Michalski & Euler, 2008). Family scholars have explained women's strong involvement in kin by gender-specific reproductive interests. In other words, due to biological, psychological and socio-cultural reasons, women are typically kin keepers, that is, the ones who interact with kin (Bracke et al., 2008; Trivers, 1972). Women's role as kin keepers may also explain our finding that the existence of an offspring tends to improve the relationship quality between sisters but not between brothers. Because women typically are the ones who take main responsibility of small children, women may also show higher interest in interacting with kin compared to men. Thus, it is likely that women need more child related support and advice from kin than men do, which in turn may make women even closer to their kin after a child arrives.

In fact, we found that having a child may even deteriorate the relationship quality between brothers, as mentioned above. One reason for this finding could be that having a child makes both spouses closer to maternal than paternal kin. In line with this argument, a previous study by Danielsbacka and colleagues (2015) showed that fathers reported a better relationship quality with their parents-in-law than childless men. Because of the mothers' higher responsibility towards children, the maternal kin advantage is found to exist in kin relations (e.g., Chan & Elder, 2000). However, in the present study we also found that there was no significant difference in emotional closeness between childless brothers and in those brothers who both have children. This indicates that life situation similarity may be the most important factor explaining the relationship quality between brothers. While the relationship quality between sisters could be related to parenthood status, this may not be the case among brothers. Thus, relationship quality between sisters and between brothers may be influenced by somewhat different factors.

The present study has several strengths. First, we have used nationally representative data of younger adults. Second, with these data we were able to study ambivalent aspects of sibling relationship quality, taking into account contacts and emotional

closeness as well as conflicts. Finally, these data allowed us to control for several potential confounding factors. Perhaps the most important limitation of the current study is the cross-sectional nature of the data used, which prevents us from claiming causality. Thus, in the future, it is important to study whether the advent of a child improves sibling relationship quality using longitudinal data.

To our knowledge, the present study is the first one that investigates the association between parenthood status and adult sibling relationship quality. However, two previous studies have shown that relationship quality between daughters and mothers tends to improve when there is a third generation (Danielsbacka et al., 2015; Fischer, 1983). In the present study, we found that when offspring exists, the relationship quality between sisters tends to improve. However, in the case of brothers, having a child may even worsen the relationship quality. Thus, comparing the results of the present study and the previous ones concerning daughter-mother relationships, we can conclude that the existence of a child tends to improve matrilineal advantage in kin relations.

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Tables and figures in the text

Table 1. Descriptive statistics (n and %/mean)

	n	%/mean	SD
Respondent's birth year	1,530	1976	5.58
Respondent's marital status			
Unmarried	295	19.3	
Cohabitation	363	23.7	
Married	806	52.7	
Other	66	4.3	
Respondent's education			
Primary or lower secondary level (ref)	53	3.5	
Upper secondary level	647	42.3	
Lower degree level tertiary education	419	27.4	
Higher degree level tertiary education or Doctoral degree	411	26.9	
Respondent's perceived financial condition			
Low-income (ref)	451	29.5	
Middle-income	755	49.4	
Comfortably well-off or wealthy	324	21.2	
Respondent's number of siblings	1,530	2.0	1.53
Respondent's birth order			
Firstborns (ref)	617	40.3	
Laterborns	913	59.7	
Sibling's birth year	2,402	1976	6.43
Sibling's perceived financial condition			
Low-income (ref)	570	23.7	
Middle-income	1,044	43.5	
Comfortably well-off or wealthy	788	32.8	
Age difference between respondent and sibling	2,402	6.2	4.50
Geographical distance between respondent and sibling			
Less than 1 km (ref)	45	1.9	
1 to 5 km	162	6.7	
5 to 25 km	639	26.6	
25 to 100 km	464	19.3	
100 to 500 km	821	34.2	
More than 500 km	271	11.3	

Notes. Basic data: Respondent's birth year, marital status, education, financial condition, number of sibling and birth order; Long format data: sibling's birth year, age difference and geographical distance.

Table 2. Associations between covariates and sibling relationship quality

	Model 1 Contact frequences					Model 2 Emotional closeness				
				95% CI					95% CI	
	β	SE	p	lower	upper	β	SE	p	lower	upper
Respondent's birth year	0.02	0.01	< 0.001	0.01	0.03	0.01	0.01	0.098	0.00	0.02
Respondent's marital status										
Unmarried (ref)	1.00					1.00				
Cohabitation	0.12	0.08	0.124	-0.03	0.27	0.11	0.07	0.136	-0.03	0.25
Married	0.09	0.07	0.171	-0.04	0.23	0.04	0.06	0.579	-0.09	0.16
Other	0.23	0.13	0.082	-0.03	0.49	0.08	0.12	0.538	-0.17	0.32
Respondent's education										
Primary or lower secondary level (ref)	1.00					1.00				
Upper secondary level	0.14	0.14	0.292	-0.12	0.41	0.23	0.13	0.080	-0.03	0.48
Lower degree level tertiary education	0.20	0.14	0.151	-0.07	0.48	0.28	0.13	0.033	0.02	0.55
Higher degree level tertiary education or doctoral degree	0.16	0.14	0.267	-0.12	0.44	0.24	0.14	0.083	-0.03	0.50
Respondent's perceived financial condition										
Low-income (ref)	1.00					1.00				
Middle-income	0.07	0.06	0.246	-0.05	0.18	0.06	0.06	0.313	-0.05	0.16
Comfortably off or wealthy	0.02	0.07	0.814	-0.13	0.16	0.03	0.07	0.698	-0.11	0.17
Respondent's number of siblings	-0.08	0.01	< 0.001	-0.10	-0.05	-0.03	0.01	0.070	-0.05	0.00
Respondent's birth order										
Firstborns (ref)	1.00									
Laterborns	-0.05	0.06	0.460	-0.17	0.08	1.00	0.06	0.554	-0.08	0.15
Sibling's birth year	0.02	0.00	< 0.001	0.01	0.03	0.02	0.00	< 0.001	0.02	0.03
Sibling's perceived financial condition										
Low-income (ref)	1.00					1.00				
Middle-income	0.07	0.05	0.153	-0.03	0.17	0.16	0.05	0.001	0.06	0.25
Comfortably off or wealthy	0.07	0.06	0.185	-0.04	0.18	0.17	0.05	0.001	0.07	0.28
Age difference between respondent and sibling	-0.03	0.00	< 0.001	-0.04	-0.02	-0.03	0.00	< 0.001	-0.04	-0.02
Geographical distance between respondent and sibling	-0.26	0.02	< 0.001	-0.29	-0.23	-0.06	0.02	< 0.001	-0.09	-0.03
n (number of observations)	2,402					2,402				
n (number of respondents)	1,325					1,325				
Adjusted R2	0.16					0.06				

Table 3. Associations between covariates and sibling conflicts

	Conflicts				
				95% CI	
	OR	SE	p	lower	upper
Respondent's birth year	1.02	0.01	0.076	0.998	1.05
Respondent's marital status					
Unmarried (ref)	1.00				
Cohabitation	0.51	0.10	< 0.001	0.36	0.74
Married	0.74	0.13	0.082	0.53	1.04
Other	0.52	0.15	0.025	0.30	0.92
Respondent's education					
Primary or lower secondary level (ref)	1.00				
Upper secondary level	0.83	0.25	0.550	0.46	1.51
Lower degree level tertiary education	0.97	0.31	0.923	0.52	1.80
Higher degree level tertiary education or Doctoral degree	0.64	0.21	0.163	0.34	1.20
Respondent's perceived financial condition					
Low-income (ref)	1.00				
Middle-income	1.26	0.17	0.095	0.96	1.64
Comfortably off or wealthy	1.24	0.22	0.220	0.88	1.75
Respondent's number of siblings	0.90	0.03	0.002	0.84	0.96
Respondent's birth order					
Firstborns (ref)	1.00				
Laterborns	0.82	0.12	0.198	0.61	1.11
Sibling's birth year	0.99	0.01	0.228	0.97	1.01
Sibling's perceived financial condition					
Low-income (ref)	1.00				
Middle-income	0.81	0.10	0.109	0.63	1.05
Comfortably off or wealthy	0.75	0.10	0.028	0.57	0.97
Age difference between respondent and sibling	0.91	0.01	< 0.001	0.89	0.93
Geographical distance between respondent and sibling	0.95	0.04	0.208	0.87	1.03
n (number of observations)	2,402				
n (number of respondents)	1,325				
Nagelkerke R2	0.09				

Figure 1. Women's contact frequency with sisters and brothers (adjusted means and 95% confidence intervals)

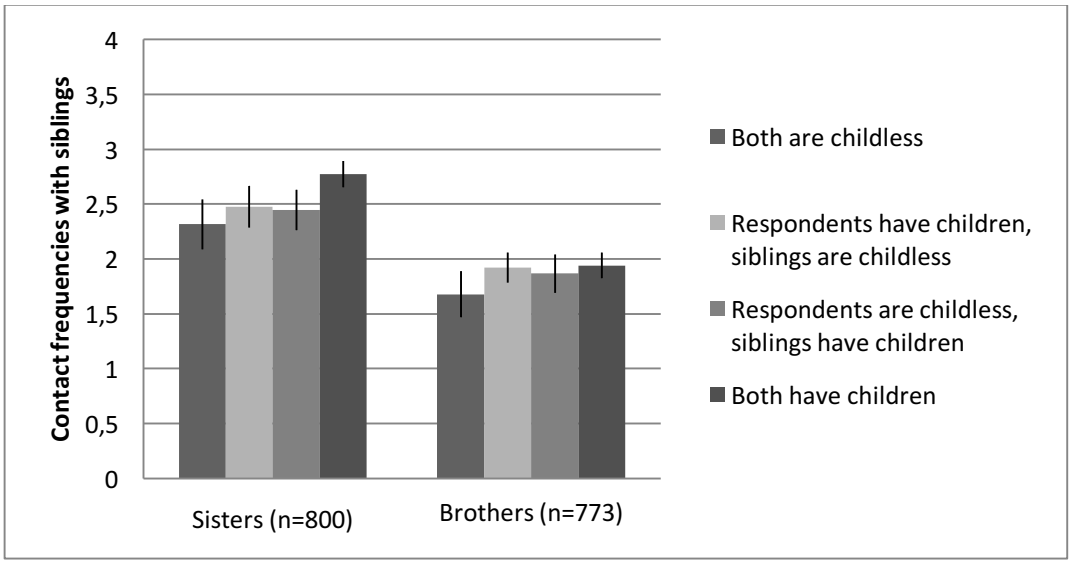

Figure 3. Women's conflicts with sisters and brothers (predicted probabilities and 95% confidence intervals)

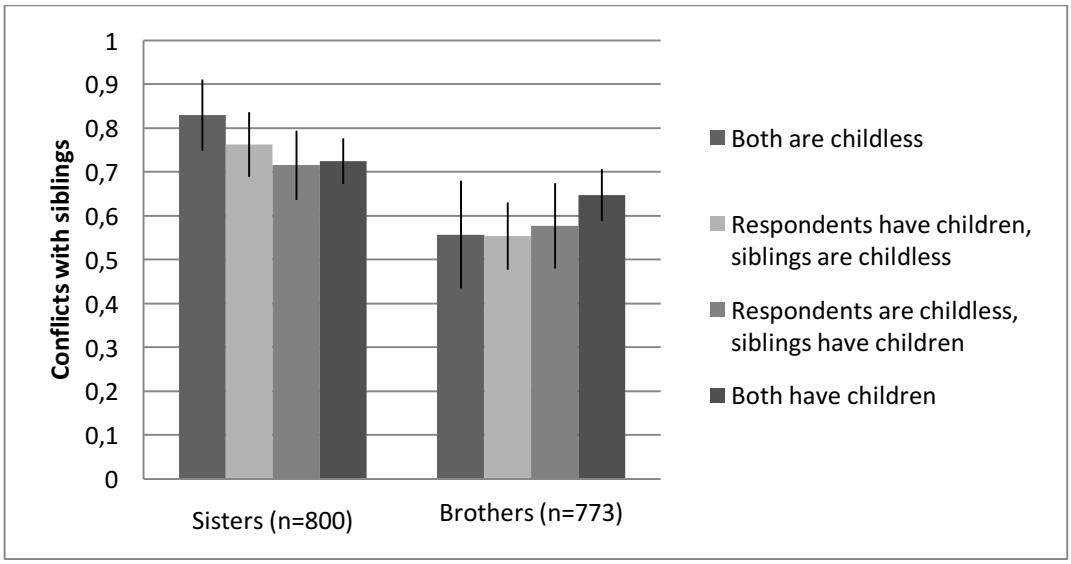

Figure 6. Men's conflicts with sisters and brothers (predicted probabilities and 95% confidence intervals)