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**Research Article** 

# Gender Differences in Grandparent Attachment Among Chinese Students

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#### Abstract

Background: Attachment to grandparents has been deemed important for the healthy development of adolescents. Objectives: This study tests three competing arguments in regard to how gender may modify adolescent attachment to grandparents in Chinese context

Materials and Methods: Data used for testing hypotheses are drawn from survey responses of over 500 middle school students from Fuzhou city, China. Regression models assess the alternative hypotheses.

Results: The results are in support of son preference claim showing greater attachment to both paternal grandfather and grandmother among boys than girls, while no gender differences are found in attachment to maternal grandparents. Further, gender differences sustain in sample containing all respondents as well as among singleton students only after controlling for grade level, parent education, family's financial status, parent divorce, co-residence with grandparents, and respondents' psychological and behavioral adjustments. Conclusions: Findings are discussed in light of gender inequality embedded in the cultural tradition and family dynamics of mainland China.

Keywords: Attachment, Grandparent, Gender, Middle-School Students, China

#### 1. Background

Grandparents in China are said to play an indispensable part in their adult children's family. Not only do they live in close proximity to their adult children and grandchildren (1), they tend to devote an immense amount of time caring for grandchildren (2, 3). This extensive caregiving for grandchildren in China departs from the occasional helper or entertainer role typically described of western grandparents (2, 4), and applies even in intact families where both parents are present. Furthermore, the traditional emphasis on filial piety and relatively strong intergenerational ties (5-7) have

contributed to a unique family setting in China, making Chinese grandparents a group worthy of study particularly in relation to adolescent healthy development (8). It is thus in this spirit we devote our attention to grandparent attachment in mainland China with a special focus on how gender may modify this relationship a topic worthy of discussion and yet no empirical study has assessed it.

Drawing on the literature, we test three competing hypotheses regarding how gender may modify grandparent attachment in China. Box 1 presents these hypotheses.

Box 1. Competing Hypotheses

#### Theories

**Gender Similarity Theory** 

Boys are more attached to grandfathers; girls are more attached to grandmothers.

Same-sex patterns are expected of attachment to both paternal and maternal grandparents.

Theory of Sex Chromosome Relatedness

Boys are more attached to paternal grandfather; girls are more attached to paternal grandmother.

No gender differences are expected of attachment to maternal grandparents.

Son Preference Theory

Boys are more attached to both paternal grandfather and paternal grandmother than girls.

No gender differences are expected of attachment to maternal grandparents.

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The first hypothesis may be derived from the premise of gender similarity theory (Box 1), which postulates that due to role similarities, same-sex grandparents may be more willing to invest their personal resources including time, money, and affection on same-sex grandchildren (9). The investment of personal resources in turn may result in closer relationship with the respective grandchildren. Traditionally, gender similarity theory arises from studying parent-child interaction and relationship (10. 11). Early studies focus almost exclusively on maternal involvement with children since mothers traditionally are primary care-givers of the family. However, with a steady increase in women's joining the labor force, there has been a growing interest in men's involvement in childcare. Researchers note that fathers tend to display a different style of parenting or interaction with children than mothers and that this difference may reflect traditional gender role with men focusing on socializing children in conformity with masculinity (i.e., engaging in outdoor activities and physical play) whereas women focusing on children's femininity (9, 12). Due to role similarities, fathers may find it easier or feel more obliged to interact with sons more in developing their masculinity (13) whereas girls may feel more comfortable spending time and engaging in activities with mothers (14). Similarly, scholars note that the interactional styles and relationships of parents with children may last into old age with similar same-sex patterns of interaction and relationship of grandparents with grandchildren (9). However, findings on grandparent-grandchild relationship in western settings are somewhat mixed. Whereas some find granddaughters to be closer to grandparents (15-18), others indicate that grandsons express greater affection for grandparents (19). There are also reports of closer grandfather-grandson and grandmother-granddaughter relationships (20), but there is limited research regarding grandchildren's relationships with paternal vs. maternal grandparents (19).

In contrast to gender similarity theory, the second hypothesis may be derived from a biological theory known as sex chromosome relatedness (Box 1), which claims that grandparents may selectively invest their limited resources on grandchildren who are most likely to carry on their gene (21). Since girls are said to derive one X chromosome from father and through him from her paternal grandmother while boys inherit their Y chromosome from father and through him from his paternal grandfather, it is thus expected that granddaughters may develop closer relationship with paternal grandmother who tends to invest in them, while grandsons may become closer to paternal grandfather who is their likely investor. Since boys and girls inherit their X chromosome equally from mother, which contains genes from both maternal grandparents who may invest equally on grandsons and granddaughters, accordingly, there will be no expected gender variations in attachment to maternal grandparents.

While the above two hypotheses may be more or less relevant to any social settings, the third or last hypothesis may be more pertinent to Chinese socio-cultural context (Box 1). This hypothesis is built on theory of son preference mostly associated with kinship family system particularly in some Asian countries. According to the claim (22), Chinese families prefer boys to girls (23) and this preference for boys may be attributed to various factors including influence of Confucius ideology, traditional values that place men above women, and kinship system limiting inheritance rights strictly to men (including family line and property) as well as relying on sons for economic support in old age. Furthermore, since boys will extend the line of paternal family, it follows that paternal family members including paternal grandfather and paternal grandmother may be more willing to invest personal resources on grandsons than granddaughters. Meanwhile, preference for boys is not expected of maternal grandparents since maternal family does not depend on daughters for extending family line. Hence, they are not expected to play favorites with children of their daughters. Empirical research on Chinese family's investment on children have yielded support that boys tend to be the main recipients of family resources, especially those allocated to advance their education and career, particularly in rural settings and/or more impoverished regions of China (24-26). Gender inequality has been observed concerning family's assignment of resources for the health and nutritional needs of boys more than girls (27). Furthermore, Chinese boys tend to perceive greater support from paternal grandparents and parents, although studies (8, 28) do not separate maternal vs. paternal grandparents nor distinguish gender of grandparents (i.e., paternal grandfather vs. paternal grandmother and maternal grandfather vs. maternal grandmother).

# 2. Objectives

This study thus tests the three competing arguments. If gender similarity hypothesis is supported, we will observe adolescent boys to be more attached to grandfathers while girls to be more attached to grandmothers. The same-sex patterns are expected regardless of the side of grandparents (both paternal and maternal grandparents). However, if the second hypothesis pertaining to sex chromosome relatedness is valid, we will find boys to be more attached to paternal grandfather while girls more attached to paternal grandmother, but no gender differences are expected in attachment to maternal grandparents (since their chromosome is equally represented in grandchildren). Finally, if claim of son preference is correct, we will observe boys to be more attached to both paternal grandparents than girls and no gender differences are expected in attachment to maternal grandparents. In assessing these competing arguments, we will explore whether the moderating effects of gender may sustain in singleton sample as well as sample containing all respondents since resource allocation and interactional styles of grandparents as well as relationships with grandchildren may depart from hypothesized circumstances if there is only one grandchild in the family.

## 3. Materials and Methods

We rely on survey data provided by students attending 7th or 8th grade in a middle school in Fuzhou city, China. Fuzhou city is the capital of Fujian province and its population is estimated to be approximately 3 million in 2010, which puts Fuzhou in the ranking of the top 50 (No. 34) largest cities in China.

The middle school we studied represents a typical regular school in Fuzhou City. Regular schools serve the general population of the area. We obtained permission to conduct the study from the school authority. The school in turn notified the students and parents. Students with informed consent participated in the study and they responded to an anonymous self-administered questionnaire administered in a classroom setting in June 2011. A total number of 589 students returned usable questionnaires, representing approximately 95% of the school population.

We constructed 4 variables to distinguish attachment to grandparents (attachment to paternal grandfather, paternal grandmother, maternal grandfather, and maternal grandmother). Attachment to each grandparent is measured by an additive index of 4 items with statements such as "whether adolescent has close relationship with grandparents" and "whether grandparent understands him/her" etc. Each statement is responded with 3 possible categories ranging from "1" for "disagree," "2" for "neutral," and "3" indicating "agree". Each additive index therefore ranges from "4" the minimum value to "12" the maximum value with higher scores reflecting greater attachment to each grandparent. The alpha reliability coefficients for the indices are as follows: attachment to paternal grandfather = 0.91, attachment to paternal grandmother = 0.90, attachment to maternal grandfather = 0.92 and attachment to maternal grandmother = 0.92.

We constructed "gender" dichotomously with boys equaling "1" and girls as "0." The moderating effect of gender is assessed by examining the respective attachment of boys and girls in relation to each grandparent.

Common correlates constructed include respondents' grade level (7th grade = "1" versus 8th grade = "0"), father and mother education (ranging from "1" = elementary school to "7" = postgraduate level), perceived family financial status (ranging from "1" = well-off to "6" = poor), whether respondent is an only child ("1" = singleton and "0" = otherwise), whether respondent's parents were ever divorced ("1" = divorced versus "0" = intact), and whether grandparents live at home with respondent ("1" = co-residence vs. "0" = otherwise). We anticipate that boys and girls may be unequally distributed in socio-demographic variables and thus they are taken into account when examining gender differ-

ences. Lastly, psychological and behavioral adjustments are taken into consideration since maladjusted students may be less attached to family members. Further, boys and girls may be unequally distributed in the manifestations of psychological and behavioral maladjustments. Psychological maladjustment ( $\alpha = 0.87$ ) is measured by a single index of 7 items that reflect feelings of anxiety and distress while behavioral maladjustment is measured by 8 questions ( $\alpha = 0.85$ ) that measure respondents' frequency of engaging in illegal or inappropriate behaviors (smoking, fighting, stealing etc.) in the past year.

We obtained demographic characteristics and compare boys and girls in regard to reports of attachment to each grandparent using the total sample and singleton students only. Subsequently, we estimated regression models in SPSS statistical program with attachment to each grandparent regress on gender and common correlates. If gender similarity theory is supported, there will be predominance of same-sex grandparent-grandchild patterns regardless of the side of grandparents. However, if sex chromosome relatedness is supported, same-sex grandparent-grandchild pattern will be observed of paternal grandparents only while no gender differences are expected in maternal grandparent attachment. Finally, if son preference theory is valid, we will observe boys to indicate greater attachment to both paternal grandfather and paternal grandmother, while no gender differences shall be observed of attachment to maternal grandparents (Box 1).

## 4. Results

Table 1 shows basic demographic characteristics of all respondents in the sample.

<b>Table 1.</b> Basic Demographic Characteristics						
Variables	Number	Percentage				
Gender						
Male	286	48.6				
Female	297	50.4				
Grade level						
7 <sup>th</sup> grade	318	54.0				
8 <sup>th</sup> grade	271	46.0				
Only child						
Yes	458	77.8				
No	131	22.2				
Parent divorce						
Yes	58	9.8				
No	531	90.2				
Co-residence (with)						
Paternal grandfather	205	34.8				
Paternal grandmother	269	45.7				
Maternal grandfather	112	19.0				
Maternal grandmother	134	22.8				

The sample contains slightly more girls than boys, more 7th graders than 8th graders, and the majority of respondents are an only child. Furthermore, only a small percentage of students reported that their parents have ever been divorced. Finally, more students reported that they co-reside with paternal grandparents than maternal grandparents.

Table 2 shows a comparison between boys and girls in attachment to each grandparent. We examine total sample and sample restricted to singleton students only.

As shown (Table 2), boys on average indicate higher attachment to all grandparents than girls, but gender differences reach statistically significant levels (P < 0.05) only concerning attachment to paternal grandfather and grandmother. These gender patterns remain nearly identical when the sample is limited to singleton students only. Thus, boys on average indicate greater attachment to paternal grandparents than girls but no gender differences are observed in regard to maternal grandparents. Will these gender patterns sustain at multivariate levels controlling for common correlates? We thus estimate regression models with common correlates included in the equations. The results are shown in Table 3.

As shown, boys in general report greater attachment to paternal grandfather and paternal grandmother even after considering common correlates (Table 3). Gender differences for both reports have reached statistically significant level (P < 0.05). As for maternal grandparents, although boys are shown higher attachment (positive coefficients) compared to girls, the differences between boys and girls do not reach statistically significant levels. Furthermore, gender patterns remain the same in both the total sample and the sample restricting to singleton students only.

<b>Table 2.</b> Means and Standard Deviations of Attachment to Grandparents by Gender (Total Sample vs. Singletons Only) <sup>a</sup>									
Variables	Total Boys	Total Girls	P Value	Singleton Boys	Singleton Girls	P Value			
Number	286	297		212	205				
Attachment to paternal grandfather	10.09 (2.41)	9.45 (2.71)	0.00	10.07 (2.41)	9.43 (2.78)	0.01			
Attachment to paternal grandmother	10.22 (2.32)	9.64 (2.63)	0.00	10.23 (2.33)	9.65 (2.63)	0.02			
Attachment to maternal grandfather	10.42 (2.38)	10.06 (2.45)	0.08	10.41(2.36)	10.18 (2.41)	0.32			
Attachment to, maternal grandmother	10.33 (2.39)	10.18 (2.39)	0.45	10.32 (2.41)	10.34 (2.32)	0.94			

<sup>a</sup>Values are expressed as mean (SD) unless otherwise indicated.

**Table 3.** Multivariate Models with Standardized Effects for Gender Differences in Grandparent Attachment (Total Sample vs. Singletons Only)

Variables	Paternal Grandfather					Maternal Grandfather			
	Total	Singleton	Total	Singleton	Total	Singleton	Total	Singleton	
Gender (boy = 1; girl = 0)	0.11 <sup>a</sup>	0.12 <sup>b</sup>	0.10 <sup>b</sup>	0.10 <sup>a</sup>	0.07	0.05	0.04	0.01	
Grade level	0.01	0.01	-0.02	0.01	0.05	0.06	0.01	0.03	
Only child	-0.02	-	-0.02	-	0.03	-	0.05	-	
Father education	0.04	0.02	0.01	0.02	-0.10	-0.11	-0.06	-0.06	
Mother education	0.05	0.03	0.04	0.00	0.10	0.10	0.07	0.06	
Poor family Condition	-0.11 <sup>a</sup>	-0.13 <sup>b</sup>	-0.10 <sup>b</sup>	-0.11 <sup>b</sup>	-0.02	-0.03	-0.05	-0.06	
Psychological maladjustment	-0.13 <sup>a</sup>	-0.16 <sup>a</sup>	-0.14 <sup>a</sup>	-0.13 <sup>a</sup>	-0.12 <sup>b</sup>	-0.18 <sup>C</sup>	-0.13 <sup>a</sup>	-0.18 <sup>C</sup>	
Behavioral maladjustment	-0.11 <sup>b</sup>	-0.12 <sup>a</sup>	-0.12 <sup>b</sup>	-0.16 <sup>a</sup>	-0.15 <sup>a</sup>	-0.17 <sup>a</sup>	-0.14 <sup>a</sup>	-0.15 <sup>a</sup>	
Parent Divorce	-0.07	-0.09 <sup>d</sup>	0.02	0.01	-0.05	-0.06	-0.06	-0.05	
Co-residence (with grandparent)	0.15 <sup>C</sup>	0.15 <sup>a</sup>	0.16	0.15 <sup>a</sup>	0.14 <sup>C</sup>	0.12 <sup>b</sup>	0.15 <sup>C</sup>	0.10 <sup>b</sup>	
DF	10	9	10	9	10	9	10	9	
Adjusted R <sup>2</sup>	0.10	0.12	0.08	0.09	0.08	0.11	0.08	0.09	
Ν	489	374	497	378	490	377	490	375	

 $^{a}P < 0.1.$ 

 $^{b}P < 0.5.$ 

 $c_{\rm P} < 0.001.$ 

<sup>d</sup>P<.10.

Other than these observations of main interest, students who perceive their family to be poor report lower attachment to paternal grandparents. This is also true for psychologically and behaviorally maladjusted students, who report lower attachment across all models. Furthermore, co-residence is positively related to grandparent attachment, and parental divorce, though in inverse direction as expected, does not generally reach significant level once psychological and behavioral maladiustments are taken into consideration. Finally, as indicated in Table 3, the adjusted R-squares of the models tend to be small. This is mainly because differences between boys and girls are of small magnitudes, and most of the variables in the models are socio-demographic ones, which generally do not correlate strongly with the dependent variables. However, small R-squares for our models may not be problematic because our aim is to assess gender differences in grandparent attachment rather than developing best predictive models to account for variations in grandparent attachment.

### 5. Discussion

Data provided by middle-school students from Fuzhou City, China yield results generally in support of gender as a moderator of grandparent attachment in China. As shown, Chinese boys indicate greater attachment to grandparents than Chinese girls and gender differences are statistically significant for attachment to paternal grandparents, but no significant gender differences are observed concerning attachment to maternal grandparents.

While it is clear that gender serves as a moderator, the patterns observed do not support role similarity theory, which would expect same-sex grandparent-grandchild relationships concerning both sides of grandparents. These results are also incongruent with sex chromosome relatedness hypothesis, which would expect same-sex pattern for paternal grandparent-grandchild relationship but no gender difference in attachment to maternal grandparents.

The observations are most consistent with son preference theory, which expects boys to be closer to both paternal grandfather and grandmother, and no gender differences are expected of attachment to maternal grandparents. Our results precisely confirm these patterns and in addition, the same results are observed using sample containing all respondents and among singleton students only.

That boys' greater attachment to paternal grandparents is in support of son preference claim (22, 23) that kinship family system tends to value men over women and restricts inheritance rights to men only. In such a society, families are likely to cherish boys over girls (22). Furthermore, preference for boys may motivate grandparents to invest their resources (materialistic or non-materialistic) on the healthy development of boys more than girls and such preferential treatment or greater interest in boys may in turn draw boys closer to grandparents and enhance boys' relational ties with them while inadvertently distancing ties with girls, who are the unlikely recipients of grandparents' preferential investment and attention (8, 28). Such claims have found support in prior research that observes the tendency of Chinese family to spend greater resources on boys than girls (24-27).

The observed gender differences in attachment to paternal grandparents support the argument that while boys tend to extend the paternal line, it is in the interest of paternal family to ensure that their male offspring be protected. Thus having boys and ensuring grandsons' well-being is of the direct concern of paternal rather than maternal family, and of interest to paternal grandparents rather than maternal grandparents. The fact that gender differences in attachment are observed with both paternal grandfather and paternal grandmother and not with maternal grandparents is especially intriguing as this observation is in line with the contention concerning the vested interest of the paternal family caregivers in their grandsons.

It is worth noting that gender patterns persist even when girls are not competing in the same family with siblings (i.e., among singletons). This suggests that gender preference may not be conditioned in the presence of boys or siblings. As long as girls are not perceived as equal or able to carry on paternal family line, differential treatment of girls from paternal family is bound to exist. Hence the likely result of weaker ties may persist among girls relative to boys to these respective family members.

These observations are important as they are not only consistent with prior studies that utilize a different sample but address related questions among Chinese adolescent population (8, 28), these results confirm a wellknown familial practice of gender preference, which may have resulted in a differential distribution of resources (manifested by involvement, attention, and support), and hence gender variations in the development of ties with the respective family members.

These results, however, should be taken with caution due to limitations inherent in our study design. First, although we hypothesize gender preferential practice, this study does not measure nor assess the actual treatment of grandparents toward boys and girls. Second, the present study relies on a sample of over 500 students from a typical middle school located in the southeastern part of China. We need to replicate the findings with more representative samples if possible. Finally, relating to limitations above, this is a sample consisting of students attending 7th or 8th grade. We measure only self-report attachment, which could be corroborated by other family members directly involved.

Despite the limitations, this study represents the first attempt to test competing arguments on how gender may modify attachment to Chinese grandparents. In so doing, this study yields insight regarding potential inequality in Chinese family practice and differences in attachment to grandparents in the unique setting of mainland China. If replicated, these findings may point to the need to readjust family practice, especially moving toward more equal assignment of support and resources and hence in promoting close ties to grandparents and in turn healthy development among both boys and girls.

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#### Footnote

**Authors' Contribution:**Ruth X. Liu is the main contributor with the help of Zeng-Yin Chen who contributes partially to the literature review.

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