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Children's Bonding with Parents and Grandparents and Its Associated Factors

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Abstract

Previous literature has focused on the importance of both parental and grandparental bonding. However, few studies have been conducted to measure children's bonding with parents and grandparents simultaneously, especially tested by the same instrument that offers more comparable results. Therefore, we studied the relationships between parental and grandparental bonding using the Parental Bonding Instrument (PBI), and possible associations between these bonds and sociodemographic variables in 905 Chinese children aged 10–14 years. Children's bonding with mother, father, and grandparents were positively correlated, and the final mixed-effect model showed that several sociodemographic factors (e.g., gender, only children, parents' marital status, and mother's occupation) were associated with parental and grandparental bonding.

Keywords

Children; Parental bonding; Grandparental bonding; Parenting; Grandparenting; Family bonding

1 Introduction

1.1 The importance of parental bonding on children's well-being

Parental bonding is a set of attitudes towards the child and these attitudes altogether form a sensational atmosphere based on which the parents exhibit their behaviors in establishing a relationship with the child (Darling and Steinberg 1993). A large number of studies have shown that poor or unstable parent-child bonding is associated significantly with a host of

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negative psychosocial outcomes, including development of psychopathology during childhood, adolescence, and/or adulthood, e.g., children's major depression (MD) (Gao et al. 2012), anxiety disorders (Fujimoto et al. 2004; McLeod et al. 2007), substance use (Hoffmann and Bahr 2014), poor educational performance (Murray et al. 2012), criminal behavior (Johnson et al. 2011), low self-esteem (Alami et al. 2014), and physical problems, e.g., childhood obesity or diabetes (Graue et al. 2005; Montano et al. 2015). By contrast, healthy parental bonding is associated with positive outcomes for children and adolescents (Liu 2011), including emotional well-being, self-esteem (Chan and Koo 2011), life satisfaction (Cacioppo et al. 2013), as well as future outcomes, i.e., physical health (Swanson et al. 2011), school grades (Kiernan and Mensah 2011), life satisfaction (Chen 2014), and a lower risk of PTSD in adulthood (Lima et al. 2014).

1.2 The importance of grandparental bonding on children's well-being

In addition to the parents, grandparents also play an important role in children's well-being. Previous research has found that grandparents exert significant direct or indirect influences on their grandchildren's outcomes (Erola and Moisio 2006; Zeng and Xie 2014; Pettit et al. 2008), including increased survival, and positive influences on children's nutrition (Sear et al. 2000) and mental health (Pettit et al. 2008). Moreover, studies have indicated that parent-child relationship quality is related to the grandparent-grandchild relationship (Monserud 2008; Brown 2003; Mueller and Elder 2003). For example, Ruiz and Silverstein (2007) examined the emotional and social strength of the grandchild-grandparent relationship moderated the negative effects of having an emotionally distant relationship with parents. In China, multigenerational coresidence is common and approximately 58% of grandparents are involved closely in raising their grandchildren (Ko and Hank 2014). This indicates that studies should not only focus on children's bonds with parents and grandparents separately, but also on children's bonds with parents and grandparents in the same family.

1.3 Factors related to parental and grandparental bonding

Existing studies have found that parental or grandparental bonding is related to socioeconomic status (SES), sociodemographics, family structure or marital status of parents, and parental education and employment status (Kiernan and Huerta 2008; Alami et al. 2014; Algarvio et al. 2013). Early studies found gender differences in parent-child relationships and parenting behaviors. Thomson et al. (2014) found that mothers with female infants had fewer negative interactions with them. Further, Elstad and Stefansen (2014) showed that more girls experienced their parents as being demanding than did boys, while boys experienced their parents being more intrusive. Presumably, people are still affected by the traditional gender roles despite decades of gender equality policies (Leira and Ellingsæter 2006). This is consistent with the finding of Kirby and Sanders (2014) that the majority of grandparents were raising male grandchildren (60 %). Similarly, further research needs to be conducted to explore whether there are gender differences in parental or grandparental bonding in China, a traditional country that is nonetheless undergoing rapid urbanization. More recently, due to the one-child policy in China, there may be differences in parental or grandparental bonding between children who are the only child in the family and those who have siblings. Generally speaking, having more children or grandchildren was associated with reduced levels of grandparental investment (Coall et al. 2009).

Although many studies have focused on the grandparent-grandchild relationship and the effects of grandparents raising grandchildren, little is known about the relationship between grandparental bonding and the number of years the grandparents raise their grandchildren or the age at which the children first have contact with their grandparents (Kirby and Sanders 2014). In that case, early involvement of grandparents in caring for their grandchildren can benefit parental health and influence the three-generation relationship. Similarly, we expected these same variables to be correlated to parental bonding and grandparental bonding in China, which, in turn, may further benefit children's outcomes. In addition, researchers have found that low levels of parental education were associated with children's perceptions that parents are neglectful and intrusive (Elstad and Stefansen 2014), whereas higher levels of maternal education were associated with an increased rate of positive interactions (Thomson et al. 2014). However, the relationship between sociodemographic factors and bonding with parents and grandparents as a whole is still unclear, especially in Chinese people who are facing the special one-child policy and modern socioeconomic changes. In this study, we tested the relationships between sociodemographic variables and mother's, father's and grandparents' four parenting styles (*Care*, *Indifference*, *Overprotection*, and *Autonomy*).

1.4 Parental and grandparental bonding measured by the same instrument

Although previous literature has focused on the importance of parental or grandparental bonding, few studies have been conducted to measure children's bonding with parents and grandparents simultaneously. Furthermore, the results of the studies related to the parental and grandparental bonding are not completely consistent, which could be due to the different classifications of parenting styles. To date, little is known about relationships tested with the same instrument, the Parental Bonding Instrument (PBI, Parker et al. (1979)), which would produce results that are more comparable. The PBI, originally designed to produce a two-factor model that assesses parenting styles in terms of parental caring (e.g., warmth, sensitivity) and overprotection (e.g., control, intrusion), is one of the most widely used instruments to measure parent-child bonding. The instrument has been translated and adapted to the Chinese social and cultural context with four factors (*Care*, *Indifference*, *Overprotection* and *Autonomy*) (Liu et al. 2011). Recently, scholars have suggested that grandparenting styles in China are characterized by *Care*, *Punishment*, *Overprotection* and *Autonomy*. Thus, our study is the first to use the PBI to examine grandparental bonding of children in China. This study may help in the development of interventions to improve parental and grandparental bonding within the same family. Further, it will help find a new way to explore family bonding or family relationships with the same instrument.

2 Research purpose

At the beginning of puberty, children experience both psychological and physical challenges that make them vulnerable to develop emotional, behavioral, and learning problems. At this age, conflict between children and their parents is also more likely to occur. Therefore, adolescents require greater care from family members. Because of the importance of parent-child and grandparent-grandchild relationships in adolescence, we selected Chinese children aged from 10–14 years as the participants in the present study. The purpose of the study was

to analyze the relationship between parental bonding and grandparental bonding tested with the same instrument, and to explore demographic factors associated with parental and grandparental bonding, respectively.

3 Methods

3.1 Participants

Between 2011 and 2013, we collected data from children in the China Jintan Child Cohort Study. Detailed information of the cohort profile has been published elsewhere (Liu et al. 2010). This study used data from 905 children (426 girls, 479 boys) with a mean age of 12.05 (SD=0.36) who completed the PBI and sociodemographic information questionnaires. Characteristics of the children and their families are summarized in Table 1. Participants were selected for the study only after the full consent was obtained from the schools, guardians, and children. Institutional review board approval was obtained from the University of Pennsylvania and the ethical committee for research at Jintan Hospital, China.

3.2 Measures

3.2.1 Parental Bonding Instrument (PBI)—Parker et al. (1979) developed the original PBI by using a two-factor model (parental caring and overprotection) that contains 25 items. It is one of the most widely used self-report instruments to measure parent-child bonding. PBI is a self-report, Likert-type (from 0=very unlikely to 3=very likely) instrument, with questions aimed specifically at the father and the mother. The instrument has been translated and adapted to the Chinese social and cultural context as a self-report and Likert-type (from 0=very unlikely to 3=very likely) instrument that contains 24 items (item 13 of the original PBI was dropped out) and four factors (Liu et al. 2011). The psychometric properties of the PBI are strong and well established (Parker 1983; Wilhelm and Parker 1990; Wilhelm et al. 2005; Safford et al. 2007). In this study, we used the Chinese version of PBI to test paternal bonding, maternal bonding and the grandparental bonding overall and all had good internal reliabilities, respectively (Table 2). The total score of the four models was used in the analyses and the higher score of Care and Autonomy indicated more positive parent-child relationship, whereas the higher score of *Indifference* and *Overprotection* indicated more negative parent-child relationship. Children all filled out the PBI in their classroom. While this instrument was self-administered, research assistants were on-site to assist any children who need help filling out the forms.

3.2.2 Sociodemographic Information—Socio-demographic information obtained from the questionnaire included children's gender, age, only child or not, residence, years of grandparents raising grandchildren and the age of children firstly contacted with grandparents, parents' educational level and occupation (unemployed, physical worker, professional worker), and the marital status of parents. All socio-demographic information was used from the baseline study of The China Jintan Child Cohort Study except children's ages and number of years living with grandparents.

3.3 Data analyses

Means, standard deviations (SD), and percentages were used to describe the participants' demographic characteristics, and Pearson correlation coefficients were calculated to test the relationships in children's bonding with mother, father and grandparents. A series of one-way analyses of variance (ANOVA) and *t* tests were performed to examine the non-adjusted associations between sociodemographic factors and the PBI for parents and grandparents. Mixed-effect models were performed to examine the adjusted fixed effect sociodemographic factors on the four dimensions (i.e. *Care*, *Indifference*, *Overprotection*, and *Autonomy*) of parental and grandparental bondings with a random-effect intercept at the family level to allow variations of parent and grandparent bondings both within and between families.

To build our final model, we started with a base model that included all variables from the bivariate analyses that had a substantial relationship ($P < 0.05$) in PBI for mother, father, and grandparents, respectively; this included child's gender, being the only child or not, parents' educational levels and occupations, the marital status of parents, and a variable to indicate bonding with mother, father, and grandparents respectively (mother-child bonding=1, father-child bonding=2, and grandparents-child bonding=3). Subsequently, we removed predictors with non-significant effects stepwise, until only variables with significant effects remained ($P < 0.05$). We then added the interaction terms for the indicator of bonding with mother, father, and grandparents respectively with the socialdemographic variables to explore the fixed effect of sociodemographic factors on maternal, paternal and grandparent bonding with child respectively. More specifically, this interaction can explain if different sociodemographic variables (for example mother's education or occupation) in conjunction with different values for (maternal, paternal, or grandparental) parenting styles would affect being in addition to the main effect or separated independent variables. We used the four parenting styles (Care, Indifference, Overprotection and Autonomy) as separate dependent variables. All the analyses were conducted with SPSS, version 22.0 (IBM Corp., Armonk, NY). A P -value < 0.05 was considered statistically significant.

4 Results

4.1 Sociodemographic characteristics of sample

Table 1 presents the sociodemographic characteristics of the children and their family characters. Perceived parental and grandparental bonding and its dimensions in children are presented in Table 2.

4.2 Relationships between parental and grandparental bonding

The correlations between dimensions of parental and grandparental bonding are shown in Table 2. The scores for the four factors —*Care*, *Indifference*, *Overprotection*, and *Autonomy*— for mother, father, and grandparents were positively correlated.

4.3 Unadjusted associations between sociodemographic factors, parental bonding, and grandparental bonding

In general, girls scored significantly higher than boys on paternal *Care*, whereas boys scored significantly higher than girls on maternal, paternal, and grandparental *Indifference*, as well

as maternal, paternal, and grandparental *Overprotection* (all P -values < 0.05). The t tests showed significant differences between only children and children with siblings on maternal, paternal, and grandparental *Indifference*, and paternal *Overprotection* (all P -values < 0.05 , see Table 3). Children with mothers who had a professional occupation reported higher maternal *Care* and *Autonomy*, whereas children with fathers who had more highly skilled occupations reported lower paternal *Overprotection*.

Further, children with married mothers reported lower maternal *Overprotection* (4.66 ± 3.50) than those with divorced mothers (6.52 ± 4.80 ; $t = -2.574$, $P = 0.010$). We did not find significant differences in parental and grandparental bonding across children's residence, grandparents' caring years, and age of children firstly contacted with grandparents (all P -values > 0.05).

4.4 Adjusted associations between sociodemographic factors and parental and grandparental bonding

Table 4 shows results from the final mixed-effect model, which showed that the significant predictors of *Indifference* were child's gender ($P < 0.0001$) and being the only child ($P < 0.01$), with maternal *Indifference* lower than grandparental *Indifference*. Furthermore, we conducted the LSD pairwise comparisons, which showed that maternal *Indifference* was lower than paternal *Indifference* ($P < 0.05$), but there were no significant differences between paternal *Indifference* and grandparental *Indifference*. Overprotection was predicted by child's gender and mother's marital status (P s < 0.01), with maternal Overprotection higher than grandparental Overprotection in the family ($P < 0.05$). *Autonomy* was predicted by mother's occupation. The interaction effect showed that mothers who were unemployed or worked physical labor jobs displayed less *Autonomy* than those with professional jobs (P s < 0.05). However, the association between any of the sociodemographic variables and *Care* was not statistically significant (all $P > 0.05$; results not shown in Table 4.).

5 Discussion

5.1 Relationships between parental bonding and grandparental bonding

Our study found that among Chinese children, parental and grandparental bonding was associated significantly and positively. This finding was consistent with previous studies indicating that parent-child relationship quality is related to the grandparent-grandchild relationship (Monserud 2008, Brown 2003, Mueller and Elder 2003, Ruiz and Silverstein 2007); however, they used different instruments and methods to assess parental and grandparental bonding. To the best of our knowledge, this is the first study to report children's bonding with mother, father, and grandparents using the same instrument that offers more comparable results. Parental bonding and grandparental bonding were correlated, which indicated that they might interact in children's psychosocial and physical outcomes. Therefore, though grandparent-child relationship is as important to children's psychosocial and physical outcomes as is the parents-child relationship (Yoo et al. 2006, Gao et al. 2012, Hoffmann and Bahr 2014, Murray et al. 2012, Pettit et al. 2008, Sear et al. 2000), further studies about the relationships between parental bonding or grandparental bonding and children's outcomes in co-residence families should consider the interaction

effect. More specifically, for example, when we explore the relationships between grandparental bonding and grandchildren's behavior problems, we need to control for parental bonding in co-residence families.

We did not find significant differences in *Care* between mother, father, and grandparents. This indicates that children perceived that they received the same type of care from parents and grandparents, which is consistent with previous research (Yago et al. 2014). One possible reason is that 81.6% children in our sample were the only child in the family and thus, both parents and grandparents showed their love and compassion to them. Mother showed less indifference and autonomy than did father and grandparents. It is possible that mother plays a central role in children rearing and has more contact with the children. Thus, children perceived that their mothers were more involved in their lives and they have less freedom. However, the exact reason for these results remains unclear, and further studies are needed to test whether the length of time that children contact with parents or grandparents may or may not influence parental or grandparental bonding. Our results showed that children perceived mothers overprotection to be greater than that of fathers and grandparents, which also supports the aforementioned argument that mothers play a central role in the family and may interfere too much in the life of a child. Presumably, even though grandparents play an important role in childcare, children still perceived greater intimacy with their parents than with their grandparents. In addition, children's bonding with parents and grandparents was measured by a child's self-evaluation instrument, and therefore, the children's subjective experience may have influenced the results.

5.2 Associations between sociodemographic factors and parental and grandparental bonding

5.2.1 Associations between children's gender and parental and grandparental bonding—We found that boys scored higher on their perceived parental and grandparental *Indifference* and *Overprotection*, and than did girls, which was inconsistent with previous findings that girls more than boys experienced their parents as demanding (a close relative of *Overprotection*) and boys experienced their parents as more intrusive (contrary to higher *Indifference*) (Thomson et al. 2014, Elstad and Stefansen 2014). Furthermore, girls perceived more grandparental overprotection in our study, inconsistent with a previous study that showed granddaughters had closer relationships with their grandparents (Hyde and Gibbs 1993). One of the possible reasons for the contradictions could be that the higher rate of adolescent behavior problems in modern society increases parents' and grandparents' awareness of the need to restrict boys properly (Leadbeater et al. 1999). Additional empirical research is warranted in China and other countries to clarify why parents and grandparents showed indifference to boys, but simultaneously had a strong tendency to be overprotective of them.

5.2.2 Associations between only children and parental and grandparental bonding—Whether or not one is the only child in the family appears to be an important associated factor of parental and grandparental *Indifference* in this sample. Specifically, the only children perceived their parents and grandparents to be less indifferent than did children with siblings. This is consistent with other findings that having more children or

grandchildren could reduce levels of grandparental involvement in childcare (Coall et al. 2009), and it is consistent with the traditional views that only children receive more care in China. Family and population structures have been changing rapidly in China, partly as a result of the family planning policy introduced in 1980 (Jinhong 2007). More and more families have only one child, and parents or grandparents paid excessive attention and care to the only child. Finally, these results reflect only the children's perceptions of parental and grandparental bonding, which may not reflect the perceptions of the parents or grandparents. Further research on parental/grandparental bonding should consider both children's and parents'/grandparents' views of the relationships, which may better explain the correlations.

5.2.3 Associations between parents' marital status, mother's occupation and parental and grandparental bonding—In line with previous researches (Kiernan and Huerta 2008, Alami et al. 2014, Algarvio et al. 2013), children perceived more overprotection of married mothers. These results suggest that family status (single mother families or intact families) influences mother-child relationships. In addition, from the interaction effect in the model, we found children perceived more autonomy from mothers who had professional work. One possible explanation is that mothers with professional occupations are more likely have higher education levels and have better knowledge of parenting, therefore giving their children more autonomy. This result may not only be applied in China, but also in other countries in which maternal employment is normative (U.S. Bureau of Labor Statistics, 2011).

6 Limitations and Future Prospects

The study has its limitations. First, we used the children's self-reports to assess parental and grandparental bonding, which may be subject to social desirability and other forms of reporting bias. Second, the region in which this study took place has higher economic status in general than other regions in China, which may reduce the generalizability of our findings. Third, due to the nature of the cross-sectional design, no causality can be established between parental and grandparental bonding and sociodemographic factors. For example, mother can change occupation in the future, and it can not be seen whether that will affect bonding or whether bonding causes her to change occupation. Finally, we used the PBI to assess the overall grandparent-grandchild relationship rather than specific grandparent-grandchild relationship (e.g., paternal grandfather, paternal grandmother, maternal grandfather or maternal grandmother bonding), which also needs further study.

Despite its limitations, this study provides a better understanding of the relationships between children's bonding with parents and grandparents, and several sociodemographic factors (children's gender, only child, parents' marital status, and mother's occupations) related to parental and grandparental bonding as measured by the same instrument. By using the same instrument, our results provide a new basis for studying parental and grandparental bonding and establishes the scientific basis for further family bonding studies by clustering parental and grandparental *Care*, *Indifference*, *Overprotection*, and *Autonomy* together. Although this study investigated family bonding in China, our findings may be applied to countries undergoing similar social development and reform. Indicators (e.g., gender, only

children, parents' marital status, and mother's occupation) of parental and grandparental bonding may be useful to future studies of child and adolescent well-being.

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Table 1

Demographic and family characteristics of 905 children

Characteristics	Frequency ^a	Percent	Range	<i>M</i> ± <i>SD</i>
Gender				
Boys	479	52.9		
Girls	426	47.1		
Age, y			10–14	12.05± 0.36
Grandparents' caring years			1–14	6.53±3.72
3	226	25.0		
4–6	237	26.2		
7	375	41.4		
Age of children firstly contacted with grandparents (y)			0–11	1.63±1.70
0–1	632	75.1		
2	210	24.9		
Only child				
Yes	620	81.6		
No	140	18.4		
Residence				
City	579	70		
Suburban	138	16.7		
Rural	110	13.3		
Father's education level				
Middle school	238	32		
High school	389	52.3		
College	117	15.7		
Mather's education level				
Middle school	316	42.4		
High school	349	46.8		
College	80	10.7		
Father's occupation				
Unemployed	28	3.6		
Physical worker	435	55.4		
Professional worker	322	41		
Mother's occupation				
Unemployed	204	25.3		
Physical worker	344	42.6		
Professional worker	259	32.1		
Marital status of parents				
Married	669	96.4		
Divorced	25	3.6		

^aThe frequency of children differs across sample characteristics because of missing value.

Table 2

Descriptive Statistics and Correlations of PBI-M, PBI-F and PBI-G and subscales' *Cronbach's Alpha* (N=905)

	PBI-M				PBI-F				PBI-G			
	1	2	3	4	5	6	7	8	9	10	11	12
PBI-M												
1. Care	-											
2. Indifference	-.445**	-										
3. Overprotection	-.222**	.621**	-									
4. Autonomy	.574**	-.209**	-.126**	-								
PBI-F												
5. Care	.504**	-.261**	-.083*	.372**	-							
6. Indifference	-.234**	.614**	.503**	-.077*	-.339**	-						
7. Overprotection	-.171**	.529**	.642**	-.052	-.059	.670**	-					
8. Autonomy	.314**	-.106**	-.040	.574**	.536**	-.133**	-.024	-				
PBI-G												
9. Care	.400**	-.205**	-.072*	.266**	.449**	-.147**	-.041	.269**	-			
10. Indifference	-.198**	.565**	.445**	-.010	-.090*	.649**	.588**	.024	-.272**	-		
11. Overprotection	-.117**	.421**	.532**	-.010	-.029	.511**	.633**	.085*	-.050	.606**	-	
12. Autonomy	.217**	-.067*	-.002	.399**	.242**	-.019	0.006	.473**	.551**	-.102**	.023	-
Mean	14.25	4.15	4.62	11.76	13.74	4.76	4.24	12.51	14.79	4.48	5.56	13.18
SD	3.67	3.76	3.53	4.34	3.96	4.16	3.97	4.43	3.45	4.08	4.22	4.19
<i>Cronbach's Alpha</i>	0.820	0.757	0.676	.821	.815	.774	.779	.830	.768	.759	.728	.793

Note: N=905, PBI: Parental Bonding Instrument; PBI-M: Parental Bonding Instrument for mother; PBI-F: Parental Bonding Instrument for father; PBI-G: Parental Bonding Instrument for grandparents;
SD: Standard Deviation;

* $P < 0.05$,

** $P < 0.01$.

Non-adjusted associations of sociodemographic factors and PBI for mother, father and grandparents. (*M*±*SD*, *F*/*t*)

Table 3

	Gender		<i>t</i> / <i>F</i>	<i>P</i>
	Male	Female		
Paternal Care	13.48±3.97	14.04±3.94		
Maternal Indifference	4.58±4.16	3.67±3.31	3.669	0.000
Paternal Indifference	5.49±4.52	3.94±3.53	5.696	0.000
Grandparental Indifference	5.17±4.46	3.69±3.45	5.529	0.000
Maternal Overprotection	5.07±3.81	4.12±3.12	4.101	0.000
Paternal Overprotection	4.81±4.42	3.60±3.30	4.638	0.000
Grandparental Overprotection	6.11±4.52	4.95±3.76	4.177	0.000

	Only child		<i>t</i> / <i>F</i>	<i>P</i>
	Yes	No		
Maternal Indifference	3.96±3.69	4.82±4.12	-2.438	0.015
Paternal Indifference	4.41±3.96	5.67±4.82	-3.245	0.001
Grandparental Indifference	4.29±4.03	5.28±4.52	-2.557	0.011
Paternal Overprotection	4.07±3.85	4.94±4.61	-2.317	0.021

	Mother's occupation			<i>t</i> / <i>F</i>	<i>P</i>
	Unemployed	Physical worker	Professional worker		
Maternal Care	14.02±3.60	14.01±3.80	14.71±3.50	3.204	0.041
Paternal Overprotection	4.78±4.44	4.38±3.90	3.75±3.77	3.941	0.020
Maternal Autonomy	11.04±4.09	11.78±4.59	12.34±4.24	5.051	0.007

Table 4
Adjusted associations of sociodemographic factors and PBI for mother, father and grandparents

Dependent variable	Independent variables	B coefficient	Std. Error	t	P	Type III Tests of Fixed Effects	
						F	P
Indifference	Children's bonding with					8.755	0.000
	Mother	-0.36	0.13	-2.774	0.006		
	Father	0.17	0.13	1.326	0.185		
	Grandparents	Reference					
	Gender						
	Male	1.38	0.25	5.606	0.000	31.424	0.000
	Female	Reference					
	Only child						
	Yes	-0.98	0.32	-3.088	0.002	9.539	0.002
	No	Reference					
Overprotection	Children's bonding with						
	Mother	1.48	0.70	2.125	0.034	8.064	0.000
	Father	-0.88	0.70	-1.263	0.207		
	Grandparents	Reference					
	Gender						
	Male	1.17	0.26	4.569	0.000	20.872	0.000
	Female	Reference					
	Parents' marital status						
	Married	0.42	0.80	0.530	0.596	0.631	0.427
	Divorced	Reference					
Autonomy	Mother × Parents' marital status	-2.47	0.71	-3.483	0.001	6.932	0.002
	Father × Parents' marital status	-0.43	0.71	-0.601	0.548		
	Grandparents × Parents' marital status	Reference					
	Intercept	13.66	0.24	57.940	0.000	9752.394	0.000

Dependent variable	Independent variables	B coefficient	Std. Error	t	P	Type III Tests of Fixed Effects	
						F	P
Children's bonding with	Mother	-1.43	0.16	-9.184	0.000	42.174	0.000
	Father	-0.71	0.16	-4.588	0.000		
	Grandparents	Reference					
	Mother's occupation						
Physical worker	Unemployed	-0.83	0.33	-2.535	0.011	3.581	0.028
	Physical worker	-0.58	0.29	-2.013	0.044		
	Professional worker	Reference					