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„The effect of mothers-in-law on the number of grandchildren: a cross-cultural analysis between Austria and Vietnam.“

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Abstract

Kin support is a very important determinant for those women who rear several children simultaneously. Hence, grandparents, in particular grandmothers, often support their offspring to increase the survival chances of their grandchildren. Maternal and paternal grandmothers have different impacts on the survival of their grandchildren and on the fertility of their offspring. Mothers-in-law mostly have a negative effect. The impact of mothers-in-law, who live in a co-residence with their daughters-in-law, on the number of grandchildren has been less examined. In this study, Austrian and Vietnamese women were investigated to determine whether a co-residence with the maternal or paternal grandmother had an effect on the total fertility rate (TFR) of the daughters and whether the probability to remain childless decreases with co-residence. Census data provided by IPUMS international were used. For Austria, we found a positive effect of mothers-in-law on the number of grandchildren. For Vietnamese women, living alone without any mother in the household leads to the highest number of children, and the probability to remain childless increases if co-residence occurs.

Keywords: kin support, female dispersal, mother-in-law, number of grandchildren, childlessness

Zusammenfassung

Kin support ist ein entscheidender Faktor für Frauen, die mehrere Kinder gleichzeitig großziehen. Vorallem Großeltern, insbesondere Großmütter, unterstützen ihren Nachwuchs um die Überlebenschancen ihrer Enkelkinder zu erhöhen. Maternale und paternale Großmütter haben unterschiedliche Einflüsse auf das Überleben ihrer Enkelkinder und auf die Fertilität ihrer Kinder. Schwiegermütter haben meistens einen negativen Effekt. Der Einfluss von Schwiegermüttern, die mit ihren Schwiegertöchtern zusammenleben, auf die Anzahl der Enkelkinder wurde bis jetzt wenig untersucht. In dieser Studie wurden österreichische und vietnamesische Frauen untersucht um herauszufinden, ob eine Koresidenz mit der maternalen oder paternalen Großmutter Einfluss auf die Gesamtfertilitätsrate der Frauen hat und ob die Wahrscheinlichkeit kinderlos zu bleiben bei einer Koresidenz sinkt. Dafür wurden Zensusdaten, die von „IPUMS international“ bereitgestellt wurden, verwendet. Für Österreich wurde ein positiver Effekt von Schwiegermüttern auf die Anzahl der Enkelkinder gefunden. Bei vietnamesischen Frauen führt das alleine leben, ohne eine Mutter im Haushalt, zur höchsten Anzahl von Kindern und die Wahrscheinlichkeit kinderlos zu bleiben erhöht sich, wenn eine Koresidenz mit einer Großmutter besteht.

Introduction

Women face a major problem during their lifetimes: managing the rearing of several children simultaneously is a high energetic burden that often cannot be managed alone. Therefore, women must enlist support from relatives to share the costs of raising their children [1]. Such kin support is a very important determinant for women who plan a family. Several relatives, apart from the parents, invest in the survival of a child. This, depends in part on the relatedness because improving the survival chances of a related child increases the own genetic success, according to kin selection theory. The closer the kinship between two individuals, the higher the investment. This explains why grandparents invest in their grandchildren [2]. Especially grandmothers play relevant roles in the lives of their grand-offspring. Grandfathers, either the maternal or the paternal one, typically have no significant effects on their grandchildren. The effects of grandmothers on their grand-offspring differ between maternal and paternal grandmothers. Most of the research done on maternal grandmothers found that they had a positive impact on the fertility of their offspring and increased the survival chances of the grandchildren [1]. In contrast, those studies that investigated the effects of paternal grandmothers on their grand-offspring showed different results. Beise and Volland (2002) established in the population of Krummhörn, Germany, a decrease in child mortality of children born in a patrilocal residence; at the same time, they determined that mothers-in-law decrease the child's survival chances. A study on Oromo grandmothers in rural Ethiopia showed that children born in a matrilocal household had a significantly lower risk of dying than those born in a patrilocal residence [4]. Despite these negative effects of mothers-in-law, some studies also point to positive impacts of paternal grandmothers on grandchildren [5, 6]. One such study investigated the influence of paternal grandmothers on grand-offspring survival. The author reported that, during the first year of the children's lives, the paternal grandmother had a beneficial influence on survival [5].

Dispersal - the movement of an individual from the area in which it was born to another location - is a widespread phenomenon in many human populations. A large number of mammals,

including primates such as langurs, tend to a male-dominated dispersal. This is probably because female primates must avoid predation and infanticide, and they also need food availability for their lifetime reproductive success. There are, however, species that favour female-biased dispersal. Humans are such a species, tending to female dispersal and patrilocalilty. This means that women move to their spouse's household to live there in a co-residence with their husbands and mothers-in-law [7, 8].

For this research, we hypothesize that living in co-residence with the own mother or mother-in-law decreases the probability of remaining childless and the number of offspring is higher than that of women who live alone with their husbands.

Methods

The present study uses census data of Austria from the years 1981 and 2001 and census data of Vietnam from 2009, provided by IPUMS international. For our analysis, we included data of married women aged between 15 and 50 because only these women fulfilled our criteria. All selected women have both a mother and a mother-in-law who are still alive. Furthermore, the spouses of the women must live in the same household as their wives. This yielded a total of 194,924 women for Austria and 2,348,434 for Vietnam.

Additionally, we identified whether a co-residence either between the own mother or the mother-in-law exists or whether the women live in separate households from their mothers.

The following variables were included for our analysis to investigate whether grandmothers have an effect on the number of their grandchildren and whether they decrease their daughter's probability of remaining childless.

- Presence of the own mother/mother-in-law in the households (*MotherPresent*; 0= no mother present; 1= own mother present; 2= mother-in-law present)
- Age of the women (*Age*; encoded in years from 15-50)
- Education of the women (*Education*; 1= less than primary completed; 2= primary completed; 3= secondary completed; 4= university completed)
- Employment of the women (*Employment*; 0= not employed; 1= employed)
- Number of born children/childlessness (*Number of children/Childlessness*; 0= childless; 1= one or more children)

For Austria, none of the women were educated in the category "less than primary completed". We therefore omitted this variable for Austria.

For all further analysis we used the "R" version 3.2.3. The following generalized linear mixed model (glmm) was performed via PQL (Penalized Quasi-Likelihood) in the "R" library "MASS". For Austria we investigated the variables *MotherPresent*, *age*, *education* and *employment*

regressing a) on the *number of children* based on a poisson error structure and b) on *childlessness* based on a binomial error structure. Religion (detailed encoded for Austria) was used as a random factor. The same glmm was performed for Vietnam with ethnicity (detailed encoded for Vietnam in two Categories: 1= Kinh and 2= Others) as random factor. We included all pairwise interactions and removed all non-significant interactions stepwise.

Results

a. Average number of grandchildren

The glmm for Austria reveals the lowest number of grandchildren in households where the mother's mother is present. Conversely, living with the mother-in-law increases total fertility. When no grandmother is present in the household, the number of grand-offspring is intermediate (Table 1 and Figure 1). As predicted, education and employment are both negatively, and age is positively, associated with the number of children (Table 1). The vast majority of Austrian women live without any grandmother, followed by living in co-residence with the mother-in-law and the own mother (Figure 1).

The Vietnamese population shows a somehow different pattern for the average number of children for each woman. In Vietnam, more children were born in households where no grandmother is present than in households where co-residence exists. A co-residence with the maternal grandmother leads to the fewest grandchildren. Women who live with their mothers-in-law exhibit an intermediate value (Table 2 and Figure 1). Living in an urban area and education are both negatively associated with offspring count, whereas age and employment show a positive association. The living arrangements for Vietnamese women show the same pattern as for Austrian ones. For Austria no suitable data for the variables urban and rural were available.

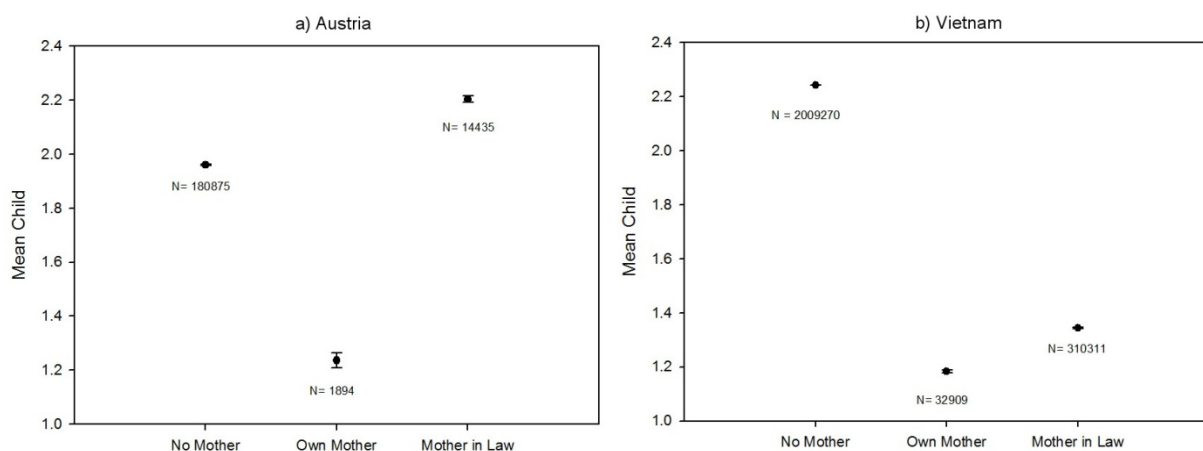


Figure 1 Effects of the presence of the grandmothers on the mean number of grandchildren for a) Austria and b) Vietnam.

Table 1 Number of grandchildren in Austria

Variable	Value	Std.Error	t-Value	p-Value
(Intercept)	-0.0900	0.0334	-2.6920	0.0071
Own mother present (no mother)	-0.2567	0.0179	-14.3247	< 0.001
Mother-in-law present (no mother)	0.1167	0.0051	23.0484	< 0.001
Age	0.0247	0.0002	134.4474	< 0.001
Secondary completed (primary completed)	-0.1669	0.0030	-55.3131	< 0.001
University completed (primary completed)	-0.2646	0.0091	-29.2133	< 0.001
Employed (not employed)	-0.2091	0.0029	-72.6156	< 0.001
DF	194,924			
	(Intercept)	(Residual)		
StdDev	0.1747	0.8579		

Table 2 Number of grandchildren in Vietnam

Variable	Value	Std.Error	t-Value	p-Value
(Intercept)	-0.4224	0.0639	-6.6114	< 0.001
Own mother present (no mother)	-0.2308	0.0026	-90.4126	< 0.001
Mother-in-law present (no mother)	-0.1295	0.0009	-146.8796	< 0.001
Age	0.0389	0.0000	966.7597	< 0.001
Primary completed (less than primary completed)	-0.1702	0.0007	-244.4530	< 0.001
Secondary completed (less than primary completed)	-0.3073	0.0012	-250.1149	< 0.001
University completed (less than primary completed)	-0.4129	0.0018	-232.4055	< 0.001
Urban (rural)	-0.1241	0.0008	-153.5897	< 0.001
Employed (not employed)	0.0348	0.0010	34.4839	< 0.001
DF	2,348,434			
	(Intercept)	(Residual)		
StdDev:	0.0903	0.6771		

b. Probability to remain childless

The pattern for childlessness in Austria was comparable to that for the average number of children. Table 3 shows that women have the lowest probability to remain childless if the mother-in-law is present in the same household, whereas women who live with their own mother have the highest probability to remain childless. Women who live without either show an intermediate value. Moreover, higher education and employment are associated with a higher probability of remaining childless, but increasing age leads to a lower probability (Table 3).

The descriptive statistic for childlessness in Austria shows: 10% if mother-in-law is present, 27.7% if own mother is present and 11.1% if no mother is present in the household.

The glmm for childlessness in Vietnam shows a different picture. The probability to remain childless is highest under co-residence with the mother-in-law. The small difference between mother/mother-in-law on the probability of remaining childless suggests that the negative effect of both mothers on having at least one child is comparable. Importantly, living without either leads to the lowest probability to remain childless. Age is positively associated with having at least one child, but a higher education, employment and living in an urban area increase the chance of being childless (Table 4). The descriptive statistic for childlessness in Vietnam shows: 17% if mother-in-law is present, 17.1% if own mother is present and 3.6% if no mother is present in the household.

Table 3 Probability to remain childless for Austrian

Variable	Value	Std.Error	t-Value	p-Value
(Intercept)	0.4206	0.1062	3.9615	< 0.001
Own mother present (no mother)	-0.6102	0.0578	-10.5487	< 0.001
Mother-in-law present (no mother)	0.1597	0.0314	5.0888	< 0.001
Age	0.0685	0.0011	64.0590	< 0.001
Secondary completed (primary completed)	-0.3068	0.0180	-17.0350	< 0.001
University completed (primary completed)	-0.8292	0.0380	-21.7981	< 0.001
Employed (not employed)	-1.1301	0.0201	-56.2855	< 0.001
DF	194,924			
	(Intercept)	(Residual)		
StdDev	0.4681	1.0448		

Table 4 Probability to remain childless for Vietnamese

Variable	Value	Std.Error	t-Value	p-Value
(Intercept)	-1.8890	0.1082	-17.4517	< 0.001
Own mother present (no mother)	-0.8422	0.0194	-43.4904	< 0.001
Mother-in-law present (no mother)	-0.8864	0.0089	-100.0036	< 0.001
Age	0.1914	0.0008	229.9484	< 0.001
Primary completed (less than primary completed)	-0.2603	0.0109	-23.7893	< 0.001
Secondary completed (less than primary completed)	-0.6429	0.0142	-45.1207	< 0.001
University completed (less than primary completed)	-0.9582	0.0181	-52.8077	< 0.001
Urban (rural)	-0.3684	0.0102	-36.2807	< 0.001
Employed (not employed)	-0.2027	0.0122	-16.6041	< 0.001
DF	2,348,434			
	(Intercept)	Residual		
StdDev:	0.1489	1.4523		

Discussion

According to studies that investigate the impacts of grandmothers on grandchildren, maternal grandmothers are the only ones with a positive effect on the survival chances and nutritional status of their grandchildren. Paternal grandmothers, in contrast, show a reverse effect and are perceived as being the less supportive grandmothers [1, 3, 4]. Our results, however, suggest that mothers-in-law are not the “evil” in the households; instead, their effect on the fertility of their daughters-in-law is positive. In Austria, living in a co-residence with the paternal mother leads to the highest number of children and the lowest probability of remaining childless. This could be an effect of the paternity uncertainty. Kemkes-Grottenthaler (2005) noted that mothers-in-law focus their attention immediately on their daughters-in-law and help them indirectly, e.g. in the household or with the dishes while the daughters-in-law pay attention to raising their children. Perhaps this continuous support increases the probability of a new pregnancy and therefore raises the reproductive success of both women. Furthermore, the paternity uncertainty decreases [5].

In Vietnam, grandmothers appear to more likely have a negative effect on the grand-offspring. A plausible explanation is Vietnam’s Two-child policy, which has been in existences since 1988. Another reason for the low number of children in co-residences is tradition. Vietnamese live patrilocally after their marriage and co-reside with the husband’s parents for a few years. After that they disperse and live in a separate household. During these initial years the couple is preoccupied with protecting, caretaking and supporting the paternal parents financially because the retirements funds for Vietnamese elderlies are very low. Thus, the couple has less time for their own children [9, 10].

As predicted, more highly educated and employed women have the fewest children and the highest probability of remaining childless, except Vietnamese women, who give birth to more children if they are employed. This phenomenon of the influence of status on reproduction in humans was already reported in recent studies [11, 12].

Surprisingly, maternal grandmothers in both countries have negative impacts on the reproductive success of their daughters. This could be because they offer direct support mostly at the age of weaning when the mother reduces her attention on the child [13, 14].

More investigations have to be done in this field to see if the effect of co-residing grandmothers on the number of their grandchildren depends on cultural differences.

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