ACEI working paper series

INTERGENERATIONAL TRANSMISSION OF MUSICAL EDUCATION

Victor Fernandez-Blanco Maria Jose Perez-Villadoniga

Juan Prieto-Rodriguez

AWP-01-2016 Date: January 2016

Intergenerational Transmission of Musical Education

Victor Fernandez-Blanco

Departamento de Economía, Universidad de Oviedo, Avenida del Cristo s/n, 33006 Oviedo, Spain; E-mail: vfernan@uniovi.es

Maria J. Perez-Villadoniga

Departamento de Economía, Universidad de Oviedo, Avenida del Cristo s/n, 33006 Oviedo, Spain; E-mail: mjpvilla@uniovi.es

Juan Prieto-Rodriguez

Departamento de Economía, Universidad de Oviedo, Avenida del Cristo s/n, 33006 Oviedo, Spain; E-mail: juanprieto@uniovi.es

Abstract

There is an extensive literature documenting the fact that there is a positive correlation between parental education and that of their children. While most research has focused on the transmission of formal schooling, there are other aspects of education that may be considered. For instance, music training has been shown to have a positive correlation with other cognitive abilities, such as mathematics and linguistics. In this paper, we analyze the intergenerational transmission of musical education. We have collected data on musical, general arts and formal education on a representative sample of Asturias, a Northern Spanish region. We find that the intergenerational link goes from both parents to their children. Furthermore, mothers' musical training has a greater impact on males than that of the fathers'. On the contrary, in the case of females, only the father-child link is significant.

Keywords: Music education, intergenerational transmission

JEL codes: I21, Z11

1. Introduction

The fact that there is a positive correlation between parental education and that of their children has been extensively documented in the literature.[1] The problem is to identify to what extent this correlation is due to causality, to genetics or to other (environmental) factors. The higher the genetic incidence, the higher the probability that people with more schooling, perhaps the more able individuals, will have more able children who in turn will also get more schooling. On the other hand, economic resources and information about the advantages of education are higher among people with more schooling. As education is a crucial determinant of individuals' labour market outcomes, identifying the causal component of this link has important consequences in the design of educational policies.

Most previous research in economics has focused on one aspect of education, namely formal schooling, as it is thought to be central for the education of children. Still, there are other dimensions of education that may be worth considering, such as musical instruction. Many researches, especially in psychology, have pointed to the long-term consequences of formal training in music. In particular, several studies have found a positive association between formal music lessons and abilities in nonmusical (e.g. linguistic, mathematical, and spatial) domains.[2] Although it is difficult to identify the direction of causality of this association, results from experimental studies indicate that music lessons cause small increases in children's IQ (Schellenberg, 2004). More recently and using a very rich dataset, Yang (2015) finds a positive effect of childhood musical activity on adolescents' educational achievements in Germany. Related to this literature, Thomas et al. (2015) follow a large number of students for several years and find that earning credits in arts (including music), reduces high school dropout.

Moreover, both under the hypothesis of stability of tastes (Stigler and Becker, 1977) and learning by consuming (Lévy-Garboua and Motmarquette, 1996), musical education is a key point in the consumption of music. In the first case, musical education increases information and, this way, it reduces the "real price" of music. In the second, it allows the individual to discover or develop her taste for music.

[1] For a survey see, for instance, Behrman (1997) or Holmlund et al. (2011).
[2] See, for instance, Schellenberg (2001) and Schellenberg (2009) for a review.

Although there is some education in music within formal schooling in Spain, including musical language and history of music, training in music is not generally provided. This makes taking music lessons a private decision. Hence, the role of parents is especially relevant in the provision of this type of education to their children. Parents may decide to send their children to take music lessons due to very different motives. Some reasons could be directly linked to music such as developing their kids' musical taste; others may be less straight such as developing other non-musical skills or even to display a higher socio economic status, i.e. conspicuous consumption.

In any case, it is plausible that parents with musical education are more aware of the links between musical skills and non-musical abilities and IQ or they may know better how music training affects musical taste and consumption. Therefore, they should be more likely to provide musical education to their children. In this paper we provide an insight on the intergenerational transmission mechanism of musical education. Up to our knowledge, this is the first paper dealing with this issue.

To carry out the empirical analysis we use an original dataset, which provides data on musical and general arts education, as well as formal schooling on a representative sample of Asturias, a region in the north of Spain. Our main findings show a positive effect of musical education from fathers to both sons and daughters. On the contrary, mothers' musical training seems to have a significant effect on that of their sons but not on their daughters'.

The structure of the paper is as follows. The next section provides a brief review of the literature on the intergenerational transmission of education. In section 3 we describe the data used in the empirical analysis and present the main results. Section 4 concludes.

2. The intergenerational transmission of education

The determinants of an individual's choice of schooling can be described by the following reduced–form equation:

$$Ed_i^c = \beta X_i + \beta^m Ed_i^m + \beta^f Ed_i^f + u_i \quad (1)$$

where Ed_i^c indicates the child's level of schooling in family i; X_i is a vector of child and family characteristics; Ed_i^m and Ed_i^f represent the educational attainment of the mother and the father, respectively; and u_i reflects any remaining unobservable factors that affects the child's schooling. If we only include one parent's educational level, the estimated transmission effect represents both the direct effect of the given parent's schooling and the indirect effect resulting from the other parent's schooling, which may be due to assortative mating on education. With the inclusion of the partner's education, the estimated coefficients measure the effects on the child's level of schooling of an increase in each parent's schooling, net of assortative mating.[3]

Assuming that both Ed_i^m and Ed_i^f are exogenous may lead to biased estimates of the effect of parental education on that of their children. This is because there are unobserved factors that influence parents' investments in education, such as ability, that are genetically transmitted and also affect their children's choices. This is the well-know ability bias (Griliches, 1977). Furthermore, other unobservable factors may be related to the family environment or to the ability to rear children, and affect both parents' and child's schooling decisions. This could be the omitted variables problem, leading to endogeneity bias.

In order to identify the causal effect of parents' education on that of their children, researchers have relied on one of three identifying strategies. A first approach exploits the difference in the level of schooling of twin parents and that of their children, under the assumption that twins have the same unobservable characteristics. Using data for the US, Behrman and Rosenzweig (2002) find a positive effect from the father's education but a negative, although insignificant, effect from the mother's education. Antonovics and Goldberger (2005) show that these results are sensitive to the construction and coding of the data. However, their findings show positive schooling effects for the father but not for the mother. This method has been subject to many criticisms, as it is based on samples

[3] However, as Holmlund et al. (2010) acknowledge, the interpretation of the coefficients for mothers and fathers separately is complicated due to the high correlation between the their levels of schooling.

drawn from atypical populations and the results may not be easily generalized to the non-twin population.

A second strategy has been to compare natural and adopted children. As there is no genetic relationship between adoptive parents' and adoptees, any correlation between the schooling of parents and that of children is due to the effect that parents have on children's environment. After controlling for assortative mating, Plug (2004) finds a large positive impact of adoptive father's schooling, but a small effect of the adoptive mother's schooling. Björklund et al. (2006) use a unique data set on Swedish adoptees and their biological and adoptive parents and find that both pre and post birth factors affect the children's educational level. In the case of mother's education, they find that pre birth factors are more important than post birth environment. As Chevalier (2004) notes, this method relies on the assumption that both natural and adoptive families provide the same environment, and the estimates may be biased. Furthermore, it does not allow distinguishing the effect of parental schooling from the ability to provide a better environment (Carneiro et al, 2013).

Third, another strand of research identifies the causal effect by using natural experiments, such as educational reforms that provide exogenous variations in the educational choices of parents. Black *et al* (2005) exploit the increase in the minimum school leaving age in Norway during the 1960s and only find a significant causal relationship between a mother's education and that of her son. Considering a similar reform that took place in the UK during the Sixties, Chevalier (2004) finds a positive effect of both parents education on that of their children. Moreover, the transmission mechanism seems to be from mothers to daughters and from fathers to sons. In a recent paper, Carneiro et al (2013) follow this approach using data from females in the US National Longitudinal Survey of Youth 1979, and their children. They instrument maternal education with variation in the costs of schooling across mother's cohorts in the US, and find important intergenerational effects of the mother's education on the child's cognitive skills and behaviour. However, these studies have been criticized as they identify the causal effect for individuals whose behaviour was affected by the reform, i.e. those with a low taste for education.

In sum, while a positive effect of parents' schooling on that of their children is found, different identification strategies pose several concerns and yield different results.[4] Holmlund et al (2011) provide a comprehensive review of the literature on the intergenerational transmission of education to investigate the origin of these discrepancies. They apply the three methods to a Swedish data set, and conclude that the differences found can be explained by violations of the identifying assumptions. Also, a large part of the intergenerational effects found are driven by selection.

3. Empirical analysis

In this section, we first describe the data used in the empirical analysis. Then, we present the specification of the model and discuss the main results.

3.1 Data

We estimate the effect of parental musical education on that of their children using an original data set. The survey was conducted in 2006, and comprises a representative sample individuals living in Asturias, a region in the North of Spain. The sample consists of 800 individuals aged 18 or more, and provides extensive information on personal characteristics, such as age and gender, level of schooling, area of residence and self-reported social status classification. We also have information on whether respondents have any training in music and in general arts. Finally, individuals were asked to report information on both their father and mother, including whether they have any musical training.

Summary statistics at the individual level are displayed in the first panel of Table 1. We drop observations with missing values in any of the variables included in the

[4] In a recent paper, Farré et al (2012) propose an alternative identifying strategy. Assuming that the intergenerational transmission of unobservable characteristics is invariant to socioeconomic environment, they find that genetically transmitted ability is an important determinant of children educational attainment. With respect to the direct effect, they conclude that the effects for daughters are attributed to the mother, while for sons it is not possible to distinguish whether they are due to the father or to the mother.

regressions. This leaves us with a final sample of 786 observations, 52% of whom are females. The proportion of individuals who report having some musical training is 10%, and this proportion is slightly higher for females. On average, females are younger than males and are more likely to have college education. As expected, the proportion of parents who have musical education is lower than that of their children, about 4%.

3.2 Results

We now turn to examine the determinants of individuals' education in music. Following the previous discussion, we model the decision of investment in musical education according to the following expression:

$$M_i^c = \beta X_i + \beta^m M_i^m + \beta^f M_i^f + u_i \qquad (2)$$

where M_i^c represents the child's level of musical education in family i; and M_i^m and M_i^f represent the musical education attainment of the mother and the father, respectively. In the survey, individuals are asked to report whether they have any training in music, but not the type of training or the number of years devoted. So we estimate equation (2) using a probit model, where the dependent variable takes value 1 if the respondent has any training in music and 0 otherwise. Parents' musical education is also defined as a dummy variable equal to 1 if the parent has any training in music.

Despite the discussion about the possible sources of endogeneity when estimating general educational attainments, as displayed in Table 2, Smith-Blundell test of exogeneity do not reject the exogeneity of the father's or the mother's musical education at the 95% confidence level in any of the considered samples. This may be due to the specific type of education we are focused on or to the broad way in which individual and parental musical training is defined in our data base. Hence, we estimate equation (2) assuming that parents' education in music is exogenous. The other control variables include age, gender, school attainment and whether the individual has any education in general arts, self-reported social status and area of residence. To let the effect of parental musical training differ by gender, we estimate equation (2) for the whole sample, as well as for males and females separately.

Results for the whole sample are displayed in Table 3. In column (1) we consider the father-child link only, and find a positive and significant effect of fathers' musical training on the probability of their children receiving musical education. With respect to the mother-child link, as shown in column (2), we also observe a positive association, although the magnitude of the effect is smaller than that of the father although not significantly different. To provide a quantitative measure of the transmission mechanism, we compute the marginal effects at the mean of the regressors, displayed in Table A1 in the Appendix. Taking into account only father's musical education (column 1) or mother's musical education (column 2), individuals whose father has some musical training are 23.2% more likely to have musical education than those whose father has no training, while the maternal marginal effect is 15.3% at the mean.

As argued above, the estimated coefficients represent both the direct effect of the given parent's instruction in music and the indirect effect resulting from the other parent's training, due to assortative mating. To take the effect of the partner into account, in column (3) of Table 3 we include both the mother's and the father's musical training. As expected, the coefficients of both parents' musical education fall, especially in the case of maternal training, which becomes significant only at the 10% level. In this case, the marginal effect of the father falls to 20.1% and that of the mother to 10.3%. Regarding the other control variables, we find that older individuals exhibit a lower probability of having received music instruction, while individuals who have attended college are more likely to have musical training than those with primary education. If we combine this result with the positive effect linked to being member of the upper class, we assess a positive income effect in musical training. Besides, since training in general arts does not seem to have a significant effect, we can conjecture that musical education could be a specific arts training and not part of a general cultural education.

To further investigate whether parental musical training has a differential impact depending on the gender of the child, we perform the analysis for males and females separately. Results in Table 4 show that both parents' musical education has a positive and significant effect on their sons' musical training (columns (1) to (3)). In contrast to the results for the whole sample, even after controlling for assortative mating, the impact of the mother's musical training is higher than that of the father regarding their sons' musical education. In quantitative terms, when both parents' musical education are taken

into account, father's musical education increases the probability of his son's training by 10%, whereas the effect of the mother's education is around 17,1% (Table A1).

The case of females (columns (4) to (6)) is somewhat different and we find that they are more likely to have musical training if their father has some musical education, but the effect of the mother's training is not significant. The marginal effects indicate that having a father with musical training increases the probability of females receiving musical education by 30%, and this effect remains unchanged when we include both parents' training in the regression.

With respect to the other determinants of musical education, we find a negative correlation between age and musical training for males, but not for females. Moreover, the effect of the self-declared social class is only significant for males. However, schooling is only significant for females and more educated females are more likely to have musical training, but there is no a significant link between males' musical education and their formal schooling.

4. Conclusions

It is widely accepted that more educated parents have children with more education, and there is an increasing empirical literature the origin of this link. While most research has focused on the intergenerational transmission of formal schooling, there are other aspects of education that may be considered. For instance, music training has been shown to have a positive correlation with other cognitive abilities, such as mathematics and linguistics. In this paper we focus on this dimension of education. Our goal is twofold: on the one hand, we study the determinants of musical training; on the other hand we want to provide an insight on the transmission of cultural values from parents to their children. The analysis has been done taking into account gender differences in the transmission mechanism.

Using an original data set, our main conclusions are the following. First, we find a positive and statistically significant effect of individuals' formal schooling on their decision to invest in musical training in the case of females, but not for males. Second, parental musical training is a relevant determinant of individuals' music education,

providing empirical evidence of an intergenerational transmission of cultural values (in the case of music education) from parents to their descendants.

Regarding the pattern of the transmission mechanism, it differs across genders. In the case of males, both parents' musical education has a positive effect on their son's musical instruction. Moreover, the effect of the mother's training is larger than that of the father. In the case of females, the transmission mechanism goes from fathers to daughters, whereas mothers' musical education seems to have no effect.

Males' decision of continuing musical training is really dependent on both father and mother's musical education and it is also linked to the social class but it is not linked with the schooling attainments. Both training domains are independent in this case and, therefore, it seems that males' music training is much more likely among "rich" people, not related with formal education and thus it has a high component of conspicuous consumption.

However, the pattern is very different in the case of women. Only father's musical training influences females' musical training decisions. We did not find an age or an art training effects but, for women, there is a very strong link between general education and musical training; therefore both types of training are complementary in the case of females and, once education is controlled for, music education is not connected with the social status of the family. Additionally, since we find no differences by age, music has often been a more central part of women's high education, not just for upper class families but for high educated people. However, men's music education is more common among young people reinforcing the idea that music has plahyed a traditional role in the education of women.

References

Antonovics, K. L. and A. S. Goldberger (2005), “Does Increasing Women’s Schooling Raise the Schooling of the Next Generation? Comment”, *American Economic Review*, 95(5): 1738-44.

Behrman, J. R. (1997), "Mother's Schooling and Child Education: A Survey", Mimeo, University of Pennsylvania.

Behrman, J. R. and M. R. Rosenzweig (2002), “Does Increasing Women's Schooling Raise the Schooling of the Next Generation?”, *American Economic Review*, 92(1): 323-334.

Björklund, A., Lindahl, M. and E. Plug (2006), “The Origins of Intergenerational Associations: Lessons from Swedish Adoption Data”, *Quarterly Journal of Economics*, 121(3): 999-1028.

Black, S. E., Devereux, P. J. and K. G. Salvanes (2005), “Why the Apple Doesn’t Fall Far: Understanding Intergenerational Transmission of Human Capital”, *American Economic Review*, 95(1): 437-449.

Carneiro, P., Meghir, C. and M. Parey (2013), “Maternal Education, Home Environment, and the Development of Children and Adolescents”, *Journal of the European Economic Association*, 11(Issue Supplement s1): 23–160.

Chevalier, A. (2004), “Parental Education and Child's Education: A Natural Experiment”, IZA Discussion Paper No. 1153.

Farré, L., Klein, R. and F. Vella (2012), “Does Increasing Parents’ Schooling Raise the Schooling of the Next Generation? Evidence Based on Conditional Second Moments”, *Oxford Bulletin of Economics and Statistics*, 74(5): 676-690.

Griliches, Z. (1977), "Estimating the Returns to Schooling: Some Econometric Problems", *Econometrica*, 45(1): 1-22.

Holmlund, H., Lindahl, M. and E. Plug (2011), “The Causal Effect of Parent’s Schooling on Children’s Schooling: A Comparison of Estimation Methods,” *Journal of Economic Literature*, 49(3): 615-651.

Lévy-Garboua, L. and C. Montmarquette (1996), “A Microeconometric Study of Theatre Demand”, *Journal of Cultural Economics*, 20: 25-50.

Plug, E. (2004), “Estimating the Effect of Mother's Schooling on Children's Schooling Using a Sample of Adoptees”, *American Economic Review*, 94(1): 358-68.

Schellenberg, E. Glenn (2001), "Music and Nonmusical Abilities", *Annals of the New York Academy of Sciences*, 930: 355-71.

Schellenberg, E. G. (2004), “Music Lessons Enhance IQ”, *Psychological Science*, 15(8): 511-14.

Schellenberg, E. G. (2009), "Music Training and Nonmusical Abilities: Commentary on Stoesz, Jakobson, Kilgour, and Lewycky (2007) and Jakobson, Lewycky, Kilgour, and Stoesz (2008)", *Music Perception*, 27(2): 139-43.

Stigler, G. J. and G. S. Becker (1977), "De Gustibus Non Est Disputandum", *American Economic Review*, 67: 76-90.

Thomas, M. K., Singh, P and K. Klopfenstein (2015), "Arts education and the high school dropout problem", *Journal of Cultural Economics*, *forthcoming*.

Yang, P. (2015), "The Impact of Music on Education Attainment", *Journal of Cultural Economics, forthcoming*.

Table 1. Descriptive statistics

Individuals' characteristics						
	Total		Males		Females	
	Mean	St. Dev	Mean	St. dev	Mean	St. dev
Female	0.523	0.450				
Training in music	0.102	0.303	0.093	0.291	0.109	0.313
Training in general arts	0.053	0.225	0.043	0.202	0.063	0.244
Education						
Primary Education	0.244	0.430	0.227	0.419	0.260	0.439
Secondary Education	0.369	0.483	0.440	0.497	0.304	0.461
College Education	0.359	0.480	0.307	0.462	0.406	0.492
Age interval						
18-24 years of age	0.115	0.319	0.093	0.291	0.134	0.341
25-34 years of age	0.235	0.424	0.251	0.434	0.221	0.416
35-49 years of age	0.270	0.444	0.235	0.424	0.302	0.460
50-64 years of age	0.209	0..407	0.208	0.406	0.209	0.407
65 or more years of age	0.172	0.377	0.213	0.410	0.134	0.341
Social status						
Low Class	0.154	0.361	0.176	0.381	0.134	0.341
Middle Class	0.763	0.425	0.731	0.444	0.793	0.406
Upper Class	0.083	0.276	0.093	0.291	0.073	0.260
Father's training in music	0.041	0.198	0.045	0.208	0.036	0.188
Mother's training in music	0.036	0.185	0.043	0.202	0.029	0.169
Number of observations	786		375		411	

Table 2. Smith-Blundell test of exogeneity

	Whole sample	Males	Females
Fathers' music education	0.130 $\chi^2(1)$ P-value = 0.778	2.51 $\chi^2(1)$ P-value = 0.113	0.35 $\chi^2(1)$ P-value = 0.552
Mothers' music education	0.182 $\chi^2(1)$ P-value = 0.700	1.95 $\chi^2(1)$ P-value = 0.163	3.37 $\chi^2(1)$ P-value = 0.066

Table 3. Determinants of musical training for the whole sample– Probit estimation

		Total	
	(1)	(2)	(3)
Female	0.0150	0.034	0.033
	[0.164]	[0.151]	[0.163]
Father musical education	0.964***		0.875***
	[0.266]		[0.280]
Mother musical education		0.705***	0.534*
		[0.236]	[0.280]
25-34 years of age	-0.084	-0.145	-0,091
	[0.146]	[0.142]	[0.137]
35-49 years of age	-0.351**	-0.451***	-0.377***
	[0.151]	[0.151]	[0.144]
50-64 years of age	-0.415*	-0.476**	-0.447*
	[0.227]	[0.209]	[0.232]
65 or more years of age	-0.465	-0.483*	-0.491
	[0.302]	[0.263]	[0.299]
Training in general arts	0.457*	0.447	0.450
	[0.272]	[0.289]	[0.279]
Secondary school	0.342	0.340	0.341
	[0.278]	[0.270]	[0.275]
College	0.825***	0.806***	0.795***
	[0.210]	[0.204]	[0.209]
Middle class	-0.058	-0.138	-0.073
	[0.242]	[0.227]	[0.244]
Upper class	0.348*	0.217	0.304*
	[0.181]	[0.147]	[0.176]
Number of observations	786	790	786
LR	912.66	268.60	1478.81
BIC	541.76	549.79	544.96
AIC	476.42	484.38	474.96

Notes: robust standard errors clustered at the area of residence in parentheses. The reference category is a male, aged between 18 and 24, with primary education, and no training in general arts, classified as low social status. Regressions include dummies for the area of residence. *Significant at 10% level; **significant at 5% level; ***significant at 1% level.

Table 4. Determinants of musical training by gender– Probit estimation

	Males			Females		
	(1)	(2)	(3)	(4)	(5)	(6)
Father musical education	0.925***		0.642**	1.183***		1.181***
	[0.286]		[0.258]	[0.432]		[0.442]
Mother musical education		1.135***	0.920**		0.130	0.025
		[0.346]	[0.378]		[0.358]	[0.404]
25-34 years of age	-0.006	0.011	0.017	-0.043	-0.164	-0.043
	[0.210]	[0.214]	[0.197]	[0.125]	[0.137]	[0.122]
35-49 years of age	-1.085***	-1.054***	-1.040***	0.212	0.054	0.209
	[0.360]	[0.377]	[0.359]	[0.175]	[0.157]	[0.169]
50-64 years of age	-0.509	-0.505	-0.526	0.073	-0.065	0.070
	[0.363]	[0.376]	[0.374]	[0.321]	[0.322]	[0.318]
65 or more years of age	-0.801**	-0.776**	-0.815**	0.339	0.211	0,337
	[0.351]	[0.309]	[0.338]	[0.352]	[0.264]	[0.359]
Training in general arts	0.519	0.634*	0.583	0.483	0.442	0,482
	[0.418]	[0.382]	[0.411]	[0.384]	[0.383]	[0.381]
Secondary school	0.211	0.232	0.226	0.772**	0.675**	0.771***
	[0.357]	[0.355]	[0.361]	[0.301]	[0.343]	[0.296]
College	0.350	0.344	0.318	1.627***	1.535***	1.624***
	[0.318]	[0.321]	[0.323]	[0.200]	[0.223]	[0.187]
Middle class	-0.064	-0.228	-0.143	-0.026	-0,077	-0.025
	[0.248]	[0.264]	[0.259]	[0.421]	[0.356]	[0.415]
Upper class	0.731**	0.562**	0.637**	0.090	-0.031	0.090
	[0.320]	[0.283]	[0.309]	[0.279]	[0.256]	[0.277]
Number of observations	375	378	375	411	412	411
LR	83.49	92.85	95.73	1373.61	331.69	2082.71
BIC	264.36	262.60	265.52	310.96	320.405	316.98
AIC	213.31	211.44	210.54	258.72	268.12	260.72

Notes: robust standard errors clustered at the area of residence in parentheses. The reference category is a male, aged between 18 and 24, with primary education, and no training in general arts, classified as low social status. Regressions include dummies for the area of residence. *Significant at 10% level; **significant at 5% level; ***significant at 1% level.

Appendix

Table A1. Marginal effects

	Whole sample			*Males*			*Females*		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
Fathers' music education	23.22	--	20.08	17.97	--	10.01	29.78	--	29.72
Mothers' music education	--	15.26	10.34	--	23.82	17.08	--	1.96	0.33