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The impacts of parents on the concert attendance of their children: behavior, education, and household income[¶]

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Abstract

This study investigates how parents influence the consumption of music concerts by adolescent children between the age of 10-19. We attempt to reveal the differences in consumption of music concerts by adolescent children between high-income families and low-income families, identifying children with their parents. First, we employ logistic regression analysis to determine the impact of parents' behavior, educational background, and household income on their adolescent children's concert attendance. Second, we employ ordered logistic regression analysis to determine the impact of parents' behavior, educational background, and household income on the frequency of the concert attendance of their adolescent children. We utilize the individual anonymous microdata from the Survey on Time Use and Leisure Activities conducted by the Japanese Ministry of Internal Affairs and Communications in 1991, 1996, 2001, and 2006. Our results suggest that a child was more likely to attend a concert when their parent(s) attended together. Generally, it is well-known that low-income families prefer popular music, while high-income families prefer classical music. However, our results suggest that children from low-income families were less likely to attend classical music concerts and that children from high-income families were more likely to attend popular music concerts.

Key Words: inequal opportunity, education, concert attendance, logit model, ordered logit model
JEL Classification Codes: H32, H41, H42

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1. Introduction

Since Thomas Piketty's (2014) book *Capital in the Twenty-First Century* became a bestseller, income inequality has become one of the hot issues around the world. Recently, income inequality has also become one of the big issues in Japan. According to the report published by OECD (2015) (P. 29, L.L. 12-14), Japan had the sixth highest relative poverty rate among the OECD countries in 2012, and the report suggested that the large income inequality of Japan might result from fiscal consolidation and regulatory reform (OECD). Figure 1 reports the relative poverty rates in OECD countries in 2012 and indicates that Japan's relative poverty rate is 16.1 and is far higher than the OECD average of 11.5. The OECD Economic Survey of Japan in 2013 (OECD 2013) reported that Japan is the only OECD country where the poverty rate for all working households and all households with children increases when account is taken of the redistribution policies.

In Japan, the relative poverty rate among children is a serious issue. Figure 2 shows Japan's relative poverty rate by age group. In figure 2, the relative poverty rate among elderly is the highest among three age groups in 2009 and 2012. However, the relative poverty rate among elderly decreased from 2009 to 2012, while the relative poverty rate among children increased notably. Figure 3 shows the changes in the relative poverty rate among all generation and that among adolescent children. We calculate the relative poverty rate, using the microdata of the Survey on Time Use and Leisure Activities (STULA, *Shakaiseikatsu-kihon-chousa*).* For a reference, we report the relative poverty rate calculated by the Ministry of Health, Labour and Welfare (MHLW), Japan. Our relative poverty rates have smaller values than the governmental ones. In our calculations, children's relative poverty rate is not worse than that of all generations. Since children's relative poverty rate became higher after 2009, our calculations are not inconsistent with the OECD data. In figure 3, our calculations and the governmental ones show that the relative poverty rates have kept increasing since 1996.

Maintaining a cultured life is difficult for children who fall into relative poverty though it is essential for human capital development. The relationship between income inequality and consumption inequality of art and culture is also worth discussing. There are many empirical studies concerning income inequality and consumption inequality (Kruger and Perri, 2006; Aguiar and Bils, 2015; and Goetzmann et al., 2011). Kruger and Perri (2006) investigate whether income inequality is accompanied by consumption inequality, using data from a U.S. consumption survey. Goetzmann et al. (2011) investigates that the expanding of income inequalities has affected the art auction price, using time series data on the average auction price in London and data on inequalities constructed by Piketty (2010). Aquiar and Bils (2015) estimate consumption inequality to figure out how consumption inequality has mirrored income inequality in the U.S., controlling for mismeasurements in the consumer expenditure survey. Aquiar and Bils (2015) found that estimate elasticities of entertainment fees which includes the consumption of art and culture is the highest. This suggests that among all goods, art and culture are affected the most easily by the economy. We focus on music among art and culture because almost all adolescent children listen to music in daily life and because whether adolescent children could attend any live music concerts depends on their parents' behavior,

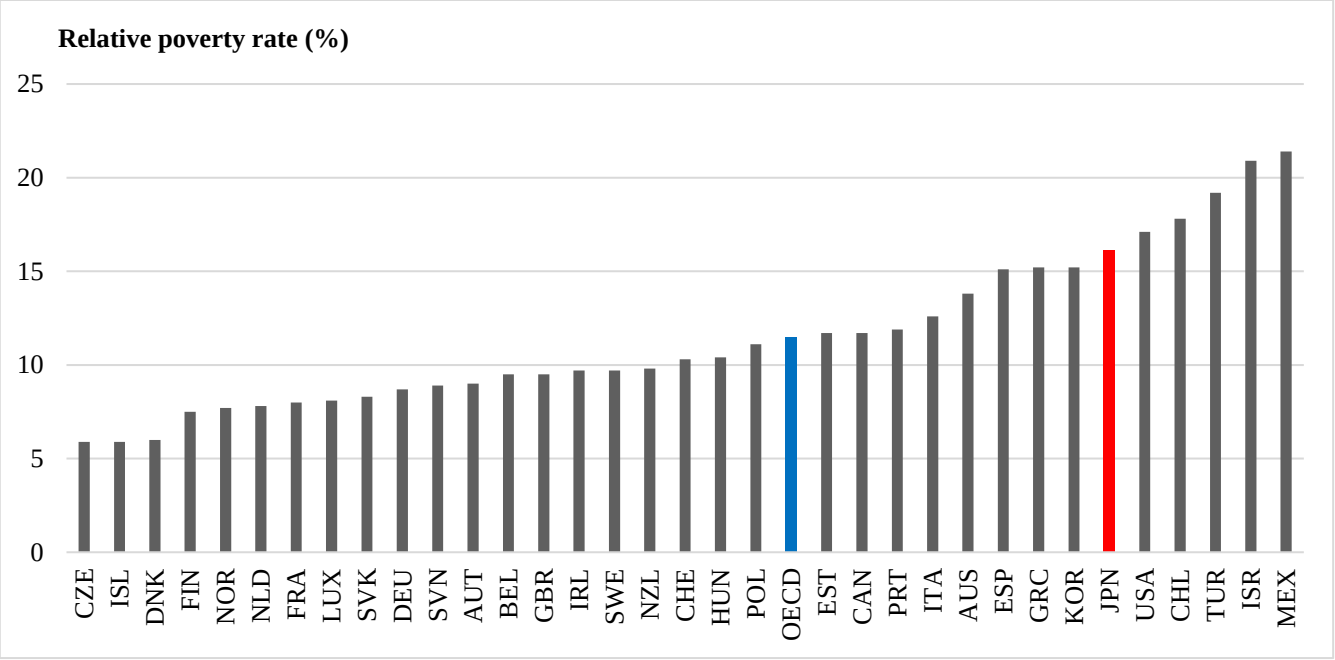
* See section 4 for the detail of the microdata of the STULA.

educational background and family income.

This study focuses on the impacts of parents' behavior, educational background, and household income on their adolescent children's consumption of music concerts because music is an important factor for human capital development. In sociology, Southgate and Roscigno (2009) empirically show that music involvement link academic achievement. Aschaffenburg and Maas (1997) show that cultural capital plays a strong role in determining school success, focusing on cultural participation including music. Thomas (1994) find that youth music participation is associated with a higher acceptance rate to medical school. Texas Commission on Drug and Alcohol Abuse (1999) show that children who involved in music were less likely to prefer alcohol, tobacco, and drug abuse. In psychology, many existing studies attempt to prove the relationship between listening to music and children's cognitive skills like intellectual development (for example, Shaw and Brothers, 1989; and Leng and Shaw, 1991). For example, Rauscher (1998) argues that listening to music has a positive effect on cognitive skills. Music trainings raises both mathematical skills (Bilhartz et al, 2000; Brothers et al., 1996; Costa-Giomi et al., 1999; Graziano et al., 1999; Gromko and Poorman, 1998; and Rauscher at al., 1997) and language skills (Douglas and Willatts, 1994; and Ho et al., 2003). Therefore, the key contribution of this paper is to determine the concert attendance that could improve adolescent children's cognitive skills, using Japanese data.

The rest of this paper is organized as follows. Section 2 discusses the existing papers on the relationship between income and cultural consumption. Section 3 explains the logistic model which is employed to examine the impacts of family income on the consumption of music concerts by their teenage children. Section 4 explains the source of the study data. Section 5 discusses the estimated results. Section 6 contains some belief summaries and the idea of future research.

Figure 1: Relative Poverty Rates of OECD countries

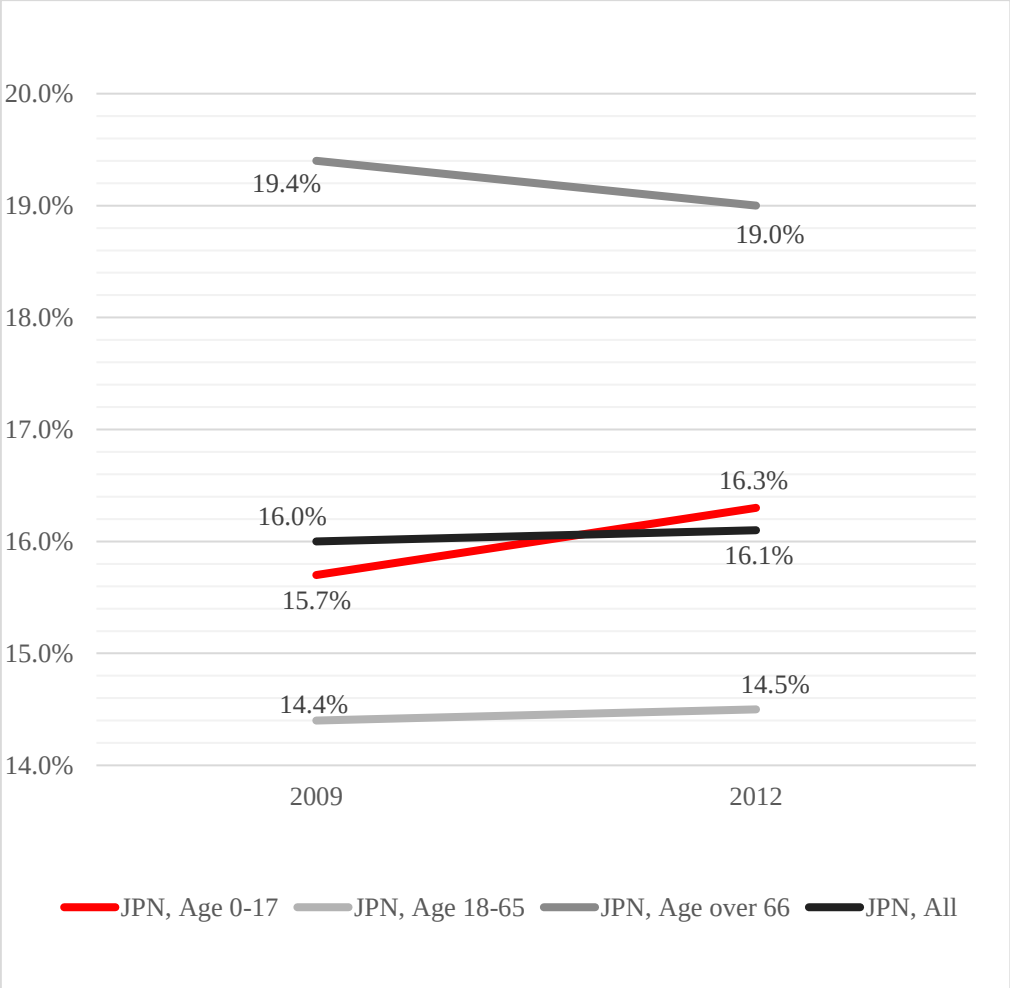


[1] The relative poverty rate is the share of the population with an income below half the median equivalent disposable income which defines household disposable income divided by the square root of the number of household members.

[2] The Japanese data is based on the Comprehensive Survey of Living Conditions, which is submitted to the OECD by Japan. Another survey, the National Survey of Family Income and Expenditure, shows a much lower relative poverty rate of 10.1%.

Source: OECD Income Distribution and Poverty Database; Ministry of Health, Labor and Welfare (MHLW, Japan), Comprehensive Survey of Living Condition.

Figure 2: Relative Poverty Rates of Japan by Age Group

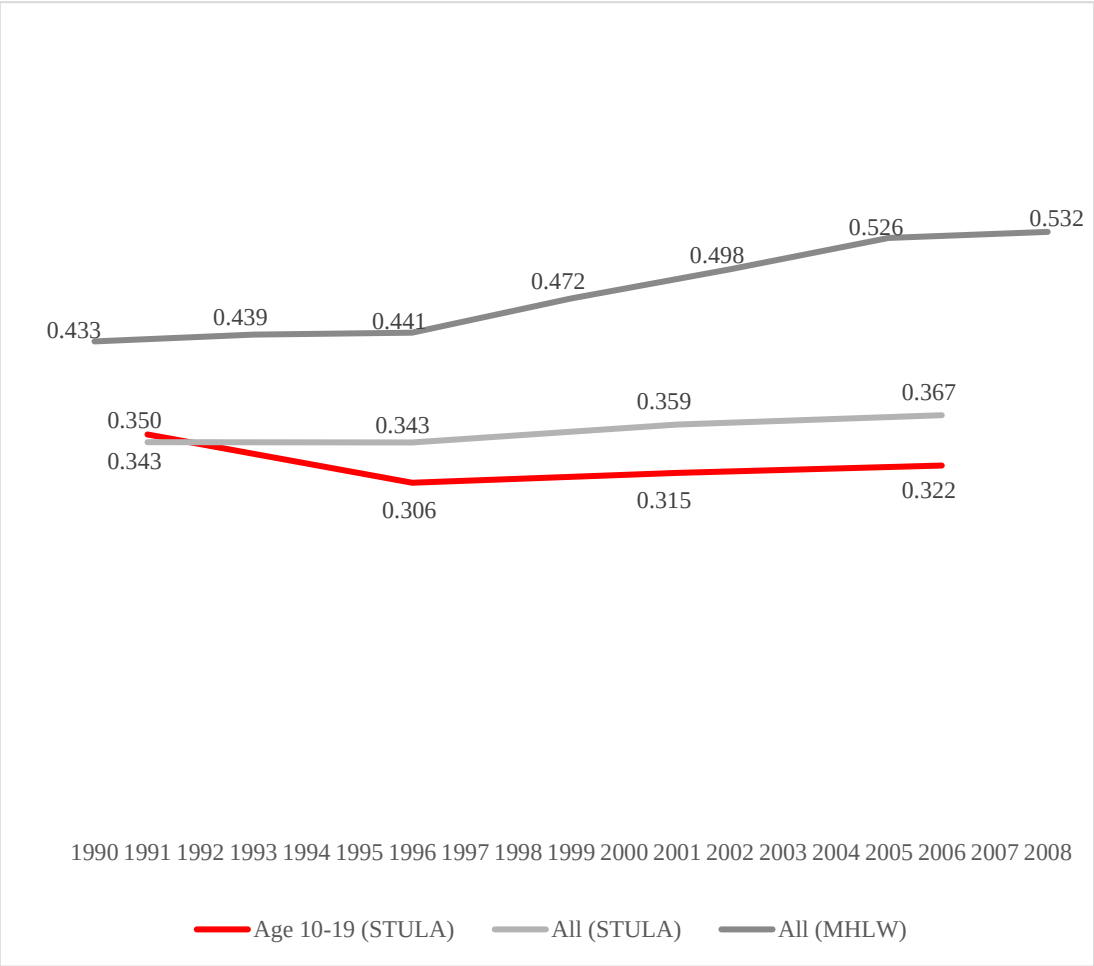


[1] The relative poverty rate is the share of the population with an income below half the "median equivalent disposable income", which defines household disposable income divided by the square root of the number of household members.

[2] The relative poverty rate is also available by broad age groups: child poverty (0-17 years old), working-age poverty (18-65 years old), and elderly poverty (over 66 years old).

Source: OECD (2018), the Poverty rate indicator, DOI: 10.1787/0fe1315d-en (Accessed on 07/03/2018).

Figure 3: The Change in Gini Coefficient



[1] The STULA has twelve classes for annual household income. Each class interval is one million yen for the 1st-10th lowest classes, five million yen for the second-highest one, and the top-coded for the first-highest one. We assume uniform distribution and set 1-million-yen class intervals for the 1st and 2nd highest classes to calculate the Gini coefficient. We also assume that the highest class is between 24 to 24.99 million yen.

[2] Figure 3 reports the Gini coefficient before redistribution calculated by the MHLW for a reference. Data is available from the following webpage: (https://www.mhlw.go.jp/wp/hakusyo/kousei/19/backdata/xls/01-01-08-09.xls) (Accessed on 07/03/2018)

2. The Relationship Between Income and Cultural Consumption

One of the most notable literatures which is concerning income and consumption of art and culture is Goetzmann et al. (2011) that focuses on the impacts of income inequality on the consumption of art by the high-income group. Since art in auction is sometimes used for speculation, Goetzmann et al. (2011) considers not only the impacts of income and income inequality on art price in auction but also the impacts of equities, using Ordinary Least Square (OLS) regression. Goetzmann et al. (2011) shows that the

expanding of income inequality has affected the art auction price and that the growth of personal income has not affected the art auction price, using time series data on the average auction price in London during the period from 1830 to 2007. Goetzmann et al. (2011) employs the indicator of income inequality proposed by Piketty (2010), where income inequality is defined by how much wealth is concentrated in the top 0.1 percent earners.

In contrast to Goetzmann et al. (2011), this paper focuses on the impacts of income inequality on the consumption of art by the low-income group because an increase in the lower-income population has become a hot issue in Japan. Komuro (2015, P.39) reports that the poverty rate had rapidly increased to 18% from 2007 to 2012 in Japan. In 2012, 900 million households received welfare payments. Thus, in Japan, the expansion of income inequality has accompanied an increase in lower-income group. Especially, this study examines the impacts of low family-income on their teenage children's consumption of music concerts.

Southgate and Roscigno (2009) is the literature that examines the impacts of parents on their children's concert attendance, using U.S. data. Southgate and Roscigno (2009) found that the music attendance of children and adolescents had been affected by race, gender, and parents and that the music attendance had been related to the academic achievement, empirically. There are some literatures that focus on the determinants of performing arts (see, for example, Baumol and Bowen, 1966; Lange et al., 1986; Luksetich and Lange, 1995; Ekelund and Ritenour, 1999; Prieto-Rodriguez and Fernandez-Blanco, 2000; and Toma and Meads, 2007). For example, Toma and Meads (2007) focuses on the determinants of the annual attendance of the mid-sized orchestra concerts, using aggregated data. Toma and Meads (2007) employed the reduced form equation which is driven from demand function and supply function. Prieto-Rodriguez and Fernandez-Blanco (2000) examine if the characteristics of average attendee of classical music concerts are the same as those of popular music concerts in Spain, estimating a bivariate probit model. Their estimated results suggest that educational status has positive effects on the consumption of classical music concerts and popular music concerts. Therefore, this paper could be the first paper to examine the impacts of family income on the consumption of music concerts of children, using microdata.

3. Models

Many existing studies employ binary discrete choice model to determine cultural participation (for example, Palma, M. L. et al., 2013). In order to model the probability of a child in the 10-19 years age attending at least one music concert in a year, this study employs the logit model as follows:

$$Z_{it}^{*} = logit(p_{it}) = \alpha + \sum_{s=1}^{t} X_{sit}\beta_s + \gamma_1 D_{1996} + \gamma_2 D_{2001} + \gamma_3 D_{2006}, \quad (1)$$

$$p_{it} = \exp(Z_{it}) / (1 + \exp(Z_{it})),$$

where Z_{it} takes the value 1 if child i attends at least one music concert in year t, and 0 otherwise, p_{it} is the probability that child i attends at least one music concert in year t, X_{sit} is a set of control variables which possibly affect child i's concert attendance in year t, D_{1996}, D_{2001}, and D_{2006} are 0-1 dummies which take the value 1 in the year 1996, 2001, and 2006, respectively, and 0 other wise, α is a constant, and

β_s, γ_1, γ_2, and γ_3 are coefficients to be estimated.

Moreover, in order to examine the impact of income level on the frequency of concert attendance, this study employs the ordered logit model as follows:

$$y_{it}^* = a + \sum_{s=1}^{t} X_{sit} b_s + c_1 D_{1996} + c_2 D_{2001} + c_3 D_{2006}, \tag{2}$$

$$\begin{aligned} y_{it} = 0 \quad & \text{if} \quad y_{it}^* < \mu_0, \\ = 1 \quad & \text{if} \ \mu_0 < y_{it}^* < \mu_1, \\ = 2 \quad & \text{if} \ \mu_1 < y_{it}^* < \mu_2, \\ = 3 \quad & \text{if} \ \mu_2 < y_{it}^* < \mu_3, \\ = 4 \quad & \text{if} \ \mu_3 < y_{it}^* < \mu_4, \\ = 5 \quad & \text{if} \ \mu_4 < y_{it}^* < \mu_5, \\ = 6 \quad & \text{if} \ \mu_5 < y_{it}^* < \mu_6, \\ = 7 \quad & \text{if} \ \mu_6 < y_{it}^* < \mu_7, \end{aligned}$$

where y_{it}^* s not observed, y_{it} is the frequency of child i's concert attendance in year t and the observed counterpart to y_{it}^*, X_{it} is a set of control variables which possibly affect the frequency of child i's concert attendance in year t, D_{1996}, D_{2001}, and D_{2006} are 0-1 dummies which take the value 1 in the year 1996, 2001, and 2006, respectively, 0 otherwise, a is a constant, and b_s, c_1, c_2, and c_3 are coefficients to be estimated. In equation (1), y_{it} takes 0 if the number of a child i's concert attendance in year t is 0, y_{it} takes 1 if the number of a child i's concert attendance in year t is 1 - 4 days, y_{it} takes 2 if the number of a child i's concert attendance in year t is 5 – 9 days, y_{it} takes 3 if the number of a child i's concert attendance in year t is 10 – 19 days (1 day per month), y_{it} takes 4 if the number of a child i's concert attendance in year t is 40 - 99 days (1 day per week), y_{it} takes 5 if the number of child i's concert attendance in year t is 100 – 199 days (2 – 3 days per week), y_{it} takes 6 if the number of a child i's concert attendance in year t is 200 days or more. As for the frequency of concert attendance, we generate the ordered discrete variable, following the classification in the STULA.

4. Data and Variable Construction

4.1. The Survey on Time Use and Leisure Activities

To examines the impacts of parents' behavior and household income on their children's concert attendance, we utilize the microdata obtained from the Survey on Time Use and Leisure Activities (STULA, *Shakaiseikatsu-kihon-chousa*) which is provided by the National Statistics Center, through *Hitotsubashi* University, in accordance with the Statistics Act. In addition to family, education, and income, the STULA asked how many days over the year a responder engaged in the hobbies and amusement in the list, for example, watching works of art (excluding TV/smartphone/PC, etc.), watching vaudevilles, plays and dances (excluding TV/smartphone/PC, etc.), listening to classical music at concerts, etc., listening to popular music at concerts, etc., listening to music on CD or smartphone, etc., playing musical instruments, and so on. Activities done as a lesson, work or household work are excluded while activities within or outside school

are included. We focus on adolescent children's activities on listening to music because parents' behavior, education, and household income could influence what kind of music their children prefer. It is a well-known fact that educational background and parents' art appreciation behavior also affect someone's art appreciation behavior. The microdata of the STULA in 1991 and 1996 includes information on whether their family member had attended live music concert together. The microdata of the STULA in 2006 includes information on whether their parent had attended live music concert together.

The anonymous microdata in 1991, 1996, 2001, and 2006 is available from the STULA and the sample size of original microdata is 680,000 in total. Then, the samples of children who are in the age 10-19 are chosen, excluding missing data. As a result, 92,649 samples remain in our dataset. Table 1 presents the definition and the descriptive statistics of the variables.

We categorize the households into four groups by annual household income: low family-income group in which household income is less than 3 million yen; middle family-income group in which household income is between 3 million yen and 5.99 million yen; high family-income group in which household income is between 6 million yen and 8.99 million yen; and very high family-income group in which household income is 9 million yen and more. We investigate the impact of household income on the concert attendance of adolescent children, using the dummy variables of three family income groups, except for the middle family-income group as a baseline.

Table 1: Definitions and Descriptive Statistics for the Variables

Variable	Definition	Mean	S.D.	Min	Max	Obs
d_1996	A 0-1 dummy variable which takes 1 in 1996, and 0 otherwise	0.306	0.461	0	1	92,649
d_2001	A 0-1 dummy variable which takes 1 in 2001, and 0 otherwise	0.188	0.390	0	1	92,649
d_2006	A 0-1 dummy variable which takes 1 in 2006, and 0 otherwise	0.161	0.368	0	1	92,649
metro	A 0-1 dummy variable which takes 1 if the child lives in the Tokyo, Osaka, or Nagoya metropolitan area, and 0 otherwise	0.304	0.460	0	1	92,649
female	A 0-1 dummy variable which takes 1 if the child is a female sample, and 0 otherwise	0.498	0.500	0	1	92,649
married	A 0-1 dummy variable which takes 1 if the child is married, and 0 otherwise.	0.018	0.133	0	1	92,649
work	A 0-1 dummy variable which takes 1 if the child was engaged in any employment for the year, and 0 otherwise	0.220	0.414	0	1	92,649
Education						
student_jhs	A 0-1 dummy variable which takes 1 if the child is a junior high school student, and 0 otherwise	0.222	0.416	0	1	92,649
student_hs	A 0-1 dummy variable which takes 1 if the child is a high school student, and 0 otherwise	0.329	0.470	0	1	92,649
student_ts	A 0-1 dummy variable which takes 1 if the child is a technical college student, and 0 otherwise	0.045	0.207	0	1	92,649
student_us	A 0-1 dummy variable which takes 1 if the child is a university student, and 0 otherwise	0.052	0.222	0	1	92,649
graduate_jhs	A 0-1 dummy variable which takes 1 if the child does not go to any school after junior high school graduation for the year, and 0 otherwise	0.027	0.162	0	1	92,649
graduate_hs	A 0-1 dummy variable which takes 1 if the child does not go to any school after high school graduation for the year, and 0 otherwise	0.124	0.330	0	1	92,649
Income						
income1	A 0-1 dummy variable which takes 1 if the annual family income is less than 3 million yen, and 0 otherwise	0.165	0.371	0	1	92,649
income3	A 0-1 dummy variable which takes 1 if the annual family income is between 6 million yen and 8.99 million yen, and 0 otherwise	0.293	0.455	0	1	92,649
income4	A 0-1 dummy variable which takes 1 if the annual family income is over 9 million yen, and 0 otherwise	0.206	0.404	0	1	92,649

Table 1 (Continued)

Variable	Definition	Mean	S.D.	Min	Max	Obs
Concert attendance (children)						
d_cla	A 0-1 dummy variable which takes 1 if the child attended any classical music concert in the year, and 0 otherwise	0.117	0.322	0	1	92,649
freq_cla	An ordered discrete variable which takes 1, 2, 3, 4, 5, 6, and 7 if the child attended use 0, 1-4, 5-9, 10-19, 20-39, 40-99, 100-199, and 200 and more days in 2006 to attend classical music concerts, respectively	0.170	0.598	0	7	92,616
d_cla_pare [1]	A 0-1 dummy variable which takes 1 if the child attended any classical music concert with his/her parent in the year, and 0 otherwise	0.147	0.354	0	1	14,932
d_cla_fami [2]	A 0-1 dummy variable which takes 1 if the child attended any classical music concert with any family member in the year, and 0 otherwise	0.035	0.183	0	1	58,164
d_pop	A 0-1 dummy variable which takes 1 if the child attended any popular music concert in the year, and 0 otherwise.	0.155	0.362	0	1	92,649
freq_pop	An ordered discrete variable which takes 1, 2, 3, 4, 5, 6, and 7 if the child attended use 0, 1-4, 5-9, 10-19, 20-39, 40-99, 100-199, and 200 and more days in 2006 to attend popular music concerts, respectively	0.249	0.987	0	7	88,120
d_pop_pare [1]	A 0-1 dummy variable which takes 1 if the child attended any popular music concert with his/her parent in the year, and 0 otherwise	0.161	0.368	0	1	14,932
d_pop_fami [2]	A 0-1 dummy variable which takes 1 if the child attended any popular music concert with any family member in the year, and 0 otherwise	0.025	0.157	0	1	57,735
Recorded music						
d_rec [3]	A 0-1 dummy variable which takes 1 if a child listened to any recorded classical music like a CD or DVD in the year, otherwise 0.	0.806	0.395	0	1	75,259

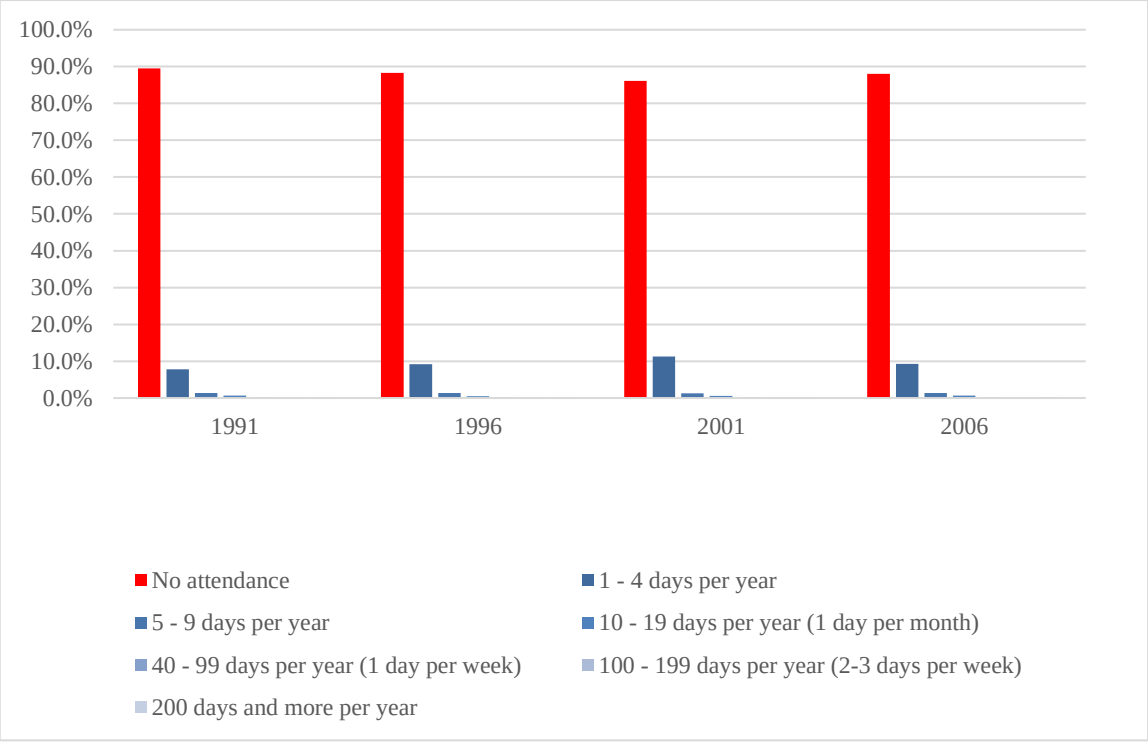
[1] Only the survey in 2006 asked the question item.

[2] Only the survey in 1991 and 1996 asked the question item.

[3] The survey in 1991, 1996, and 2006 asked the question item.

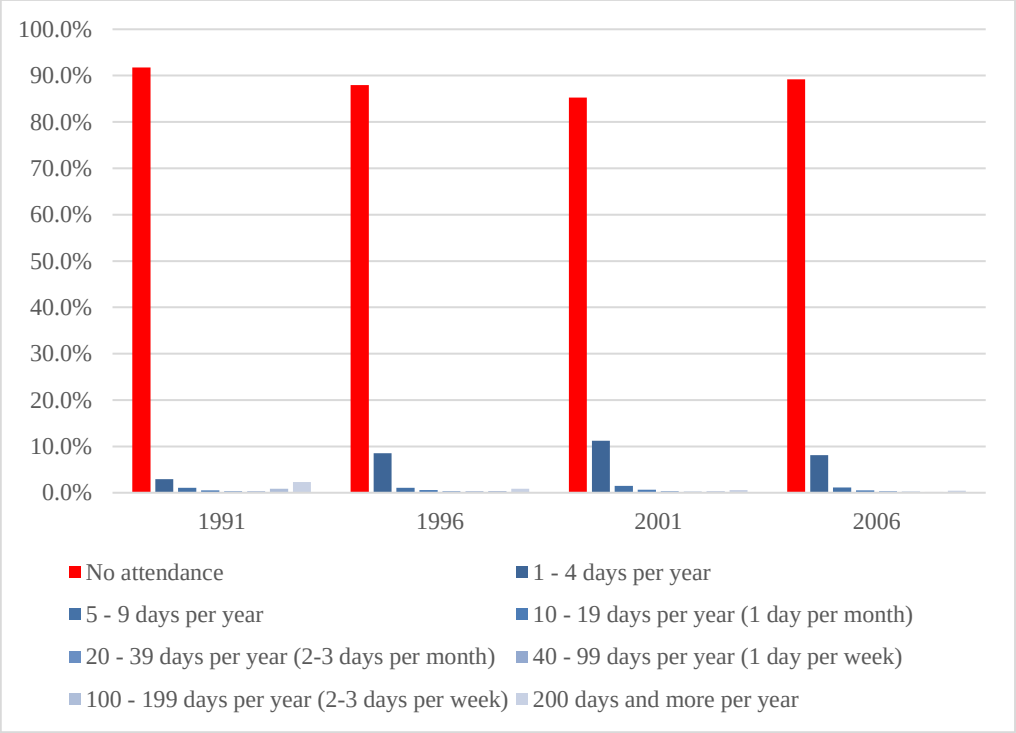
Figures 4 and 5 depict how many days adolescent children enjoyed classical music concerts and popular music concerts in a year. In four waves, classical music concerts and popular music concerts have the same tendency that most of children never listen to music at concerts. Ninety percent of children did not listen to classical music at concerts in a year, while eighty-five percent of children did not listen to popular music in a year. As the frequency of concert attendance increases, the number of children who listened to music at concerts declines.

Figure 4: The Frequency of Teenage Children's Classical Music Concert Attendance



[1] The sample size in 1991, 1996, 2001, and 2006 is 31,906, 28,388, 17,390, and 14,932, respectively.

Figure 5: The Frequency of Teenage Children's Popular Music Concert Attendance



[1] The sample size in 1991, 1996, 2001, and 2006 is 27,410, 28,388, 17,390 and 14,932, respectively.

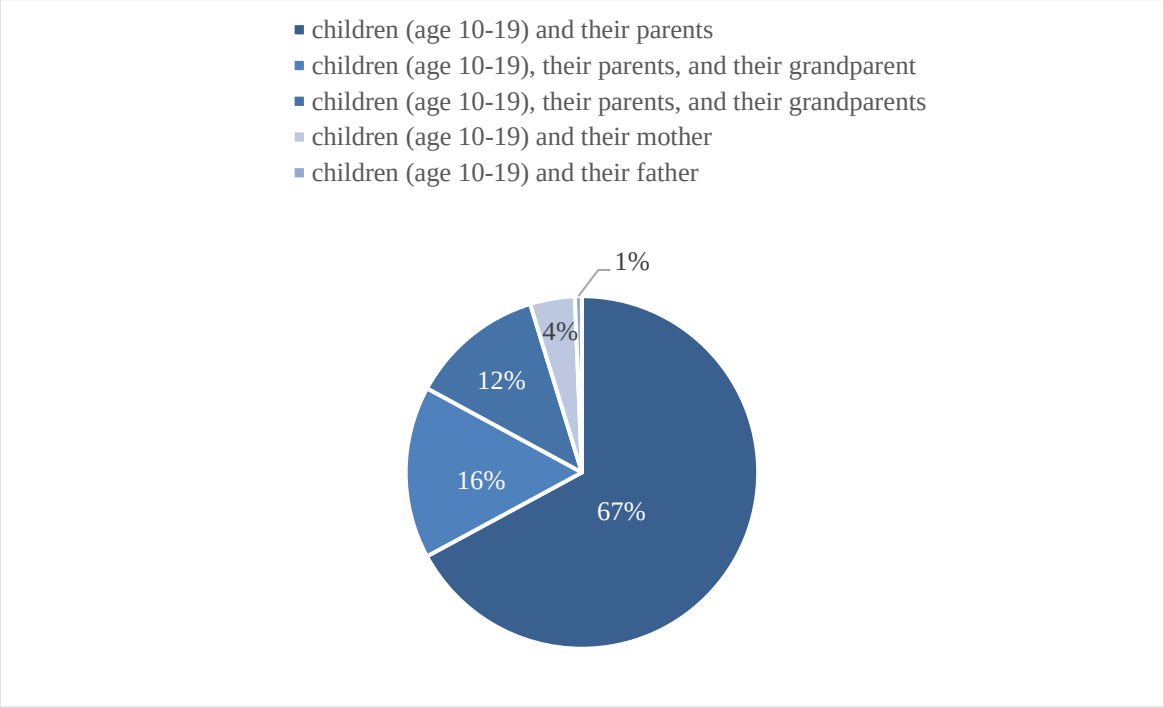
4.2. How to Identify an Adolescent Child with Their Parent(s)

To examine the impacts of parents' behavior and education on their children's concert attendance, we attempted to identify each adolescent child with their parent(s). The questionnaire of the STULA asks about the relationship between each household member and household head and all household members. The microdata of the STULA assigns the household type to each sample, using the information on all household members. We employed the information on the relationships between each household member to the household head and the household type to identify each adolescent child with their parents.

At first, we chose the samples of adolescent children with whom we could identify their parents. We dropped the children whose parents were not the respondents of the STULA. We kept an adolescent child who lived with their parents, one who lived with their single parent, one who lived with their parents and their grandparents, one who lived with their parents and their grandparent in a dataset. We dropped single household samples like university students who live apart from their parents because we have no clue to find their parents in the dataset. Children in our dataset could live with their brother(s) or sister(s).

Then, we focused on the relationship between an adolescent sample and their household head to identify their father and their mother. If an adolescent sample is a child of their household head, we judged their household head was their parent. If an adolescent sample is a grandchild of their household head, we judged that their household head's child was their parent. We judged that male parent was father and that his female partner was mother. Similarly, we judged that female parent was mother and that her male partner was father. Here, we did not judge if a child had a blood relationship with their parent(s). As a result, our dataset keeps five family types: (1) adolescent children and their parents; (2) adolescent children, their parents, and their grandparent; (3) adolescent children, their parents, and their grandparents; (4) adolescent children and their mother; and (5) adolescent children and their father. Figure 6 shows the percentage of each family types in our dataset. The most frequent family type is adolescent children and their parents. Its percentage is 67 percent. The percentage of a child who lives with a single parent is 5 percent.

Figure 6: The Family Types and Their Percentages in Our Dataset



[1] Figure 6 shows the family types and their percentages in the dataset, where we matched the samples of teenage children to their parents.

[2] We also exclude the samples that we have no clue to match adolescent children to their parents. For example, we exclude the children who live apart from their parents from the dataset because we have no clue to find their parents' samples.

Table 2 presents the definition and the descriptive statistics of variables when the dataset includes an adolescent child with whom we could identify their parent(s). Our dataset has 76,489

samples of the children with their parents' data. The mean value of each variable in table 2 is not far from that in table 1. In table 2, the percentage of children whose household income was 6 million yen and more is 0.544 (= 0.320 + 0.224) in the dataset excluded the children who lived apart from their parents. This is 0.045 percent higher than that of 0.499 (= 0.293 + 0.206) in table 1. Thus, when we investigate the impacts of parents' behavior and education on their adolescent children, we need to interpret the estimated results, considering the selection bias that the percentage of high-income households is too large.

Table 2: Definitions and Descriptive Statistics for the Variables

Variable	Definition	Mean	S.D.	Min	Max	Obs
d_1996	A 0-1 dummy variable which takes 1 in 1996, and 0 otherwise	0.328	0.469	0	1	76,489
d_2001	A 0-1 dummy variable which takes 1 in 2001, and 0 otherwise	0.199	0.400	0	1	76,489
d_2006	A 0-1 dummy variable which takes 1 in 2006, and 0 otherwise	0.157	0.364	0	1	76,489
metro	A 0-1 dummy variable which takes 1 if the child lives in the Tokyo, Osaka, or Nagoya metropolitan area, and 0 otherwise	0.311	0.463	0	1	76,489
female	A 0-1 dummy variable which takes 1 if the child is a female sample, and 0 otherwise	0.499	0.500	0	1	76,489
married	A 0-1 dummy variable which takes 1 if the child is married, and 0 otherwise	0.010	0.100	0	1	76,489
work	A 0-1 dummy variable which takes 1 if the child was engaged in any employment for the year, and 0 otherwise	0.188	0.391	0	1	76,489
Education (children)						
student_jhs	A 0-1 dummy variable which takes 1 if the child is a junior high school student, and 0 otherwise	0.239	0.427	0	1	76,489
student_hs	A 0-1 dummy variable which takes 1 if the child is a high school student, and 0 otherwise	0.347	0.476	0	1	76,489
student_ts	A 0-1 dummy variable which takes 1 if the child is a technical school student, and 0 otherwise	0.040	0.196	0	1	76,489
student_us	A 0-1 dummy variable which takes 1 if the child is a university student, and 0 otherwise	0.035	0.185	0	1	76,489
graduate_jhs	A 0-1 dummy variable which takes 1 if the child does not go to any school after junior high school graduation for the year, and 0 otherwise	0.022	0.148	0	1	76,489
graduate_hs	A 0-1 dummy variable which takes 1 if the child does not go to any school after high school graduation for the year, and 0 otherwise	0.108	0.310	0	1	76,489
Education (parents)						
fa_edu_hs	A 0-1 dummy variable which takes 1 if the child's father does not go to any school after high school graduation for the year, and 0 otherwise.	0.475	0.499	0	1	76,489
fa_edu_ts	A 0-1 dummy variable which takes 1 if the child's father does not go to any school after technical school graduation for the year, and 0 otherwise.	0.049	0.215	0	1	76,489
fa_edu_u	A 0-1 dummy variable which takes 1 if the child's father graduated from university, and 0 otherwise	0.241	0.428	0	1	76,489
mo_edu_hs	A 0-1 dummy variable which takes 1 if the child's mother does not go to any school after high school graduation for the year, and 0 otherwise	0.578	0.494	0	1	76,489
mo_edu_ts	A 0-1 dummy variable which takes 1 if the child's mother does not go to any school after technical school graduation for the year, and 0 otherwise	0.183	0.387	0	1	76,489
mo_edu_u	A 0-1 dummy variable which takes 1 if the child's mother graduated from university, and 0 otherwise	0.067	0.250	0	1	76,489

Table 2 (Continued)

Variable	Definition	Mean	S.D.	Min	Max	Obs
Income						
income1	A 0-1 dummy variable which takes 1 if the annual family income is less than 3 million yen, and 0 otherwise	0.109	0.312	0	1	76,489
income3	A 0-1 dummy variable which takes 1 if the annual family income is between 6 million yen and 8.99 million yen, and 0 otherwise	0.320	0.466	0	1	76,489
income4	A 0-1 dummy variable which takes 1 if the annual family income is over 9 million yen, and 0 otherwise	0.224	0.417	0	1	76,489
Concert attendance (children)						
d_cla	A 0-1 dummy variable which takes 1 if the child attended any classical music concert in the year, and 0 otherwise	0.117	0.322	0	1	76,489
freq_cla	An ordered discrete variable which takes 1, 2, 3, 4, 5, 6, and 7 if the child attended use 0, 1-4, 5-9, 10-19, 20-39, 40-99, 100-199, and 200 and more days in 2006 to attend classical music concerts, respectively	0.169	0.593	0	7	76,462
d_pop	A 0-1 dummy variable which takes 1 if the child attended any popular music concert in the year, and 0 otherwise.	0.151	0.358	0	1	76,489
freq_pop	An ordered discrete variable which takes 1, 2, 3, 4, 5, 6, and 7 if the child attended use 0, 1-4, 5-9, 10-19, 20-39, 40-99, 100-199, and 200 and more days in 2006 to attend popular music concerts, respectively	0.242	0.966	0	7	73,020
Concert attendance (parents)						
pare_d_cla	A 0-1 dummy variable which takes 1 if the child's father or mother attended any classical music concert in the year, and 0 otherwise	0.144	0.351	0	1	76,489
mo_d_cla	A 0-1 dummy variable which takes 1 if the child's mother attended any classical music concert in the year, and 0 otherwise	0.123	0.329	0	1	76,489
fa_d_cla	A 0-1 dummy variable which takes 1 if the child's father attended any classical music concert in the year, and 0 otherwise	0.054	0.226	0	1	76,489
pare_d_pop	A 0-1 dummy variable which takes 1 if the child's father or mother attended any popular music concert in the year, and 0 otherwise	0.178	0.382	0	1	76,489
mo_d_pop	A 0-1 dummy variable which takes 1 if the child's mother attended any popular music concert in the year, and 0 otherwise	0.148	0.355	0	1	76,489
fa_d_pop	A 0-1 dummy variable which takes 1 if the child's father attended any popular music concert in the year, and 0 otherwise	0.065	0.247	0	1	76,489
Recorded music						
d_rec [3]	A 0-1 dummy variable which takes 1 if a child listened to any recorded classical music like a CD or DVD in the year, otherwise 0.	0.806	0.395	0	1	75,259

[1] See Table 1 for footnotes

5. Results

5.1. Determinants of the Concert Attendance (All Adolescent Children)

We used Stata 16 for the variable construction and the estimation. Since we assume that the determinants of concert attendance could be different between classical music concerts and popular music concerts, classical music concerts and popular music concerts are analyzed separately. Since the data on whether the child attended any music concert with their parents is available only from the survey in 2006, we pooled the data in 2006 to examine parents' behavior on their children's concert attendance.

At first, we discuss on the impacts of parents' behavior on their children's concert attendance. Table 3 shows the estimated results of the logit model to investigate the determinants of the adolescent children's attending classical music concerts. On the other hand, table 4 reports those of the logit model to investigate the causes of attending popular music concerts. In table 3, the estimated coefficient of cla_pare is positive and significant in column (3-3). It suggests that children were more likely to attend the classical music concerts if their parents attended in classical music concerts together. The estimated coefficient of cla_fami is positive and significant in column (3-2). It suggests that children were more likely to attend the classical music concerts if their family members attended in classical music concerts together. In table 4, the estimated coefficient of pop_pare is positive and significant in column (3-3). It suggests that children were more likely to attend the popular music concerts if their parents attended in popular music concerts together. STATA could not calculate the estimated results when the logit model includes pop_fami as an explanatory variable. Thus, adolescent children were more likely to listen to music at concerts if their parents attended music concerts together.

Second, we discuss on the impacts of household income on children's concert attendance. Since the estimated coefficient of income1 shows different signs and significance among the columns in table 3, it was not sure if children who came from low-income household were less likely to attend classical music concerts. The estimated coefficient of income3 is positive in all columns and significant in columns (3-1) and (3-2). The estimated coefficient of income4 is positive and significant in all columns. As for classical music concerts, children who came from rich households were more likely to listen to music at concerts. The estimated coefficient of income1 is negative and not significant in column (4-1) while that is positive and significant at 10% level in column (4-2). The estimated coefficient of income3 is positive and significant in column (4-1) while that is negative and not significant in column (4-2). The estimated coefficient of income4 is positive and significant in column (4-1) while that is negative and not significant in column (4-2). As for popular music concerts, children's concert attendance did not seem to depend on household income.

Thirdly, we discuss on the impacts of the potential substitute goods of music concerts on the children's concert attendance: They are the recorded music like CD and the concerts of other music

genre. The estimated coefficient of d_rec is positive and significant in columns (3-2) and (3-3). The estimated coefficient of d_rec is positive and significant in column (4-2). It suggests that recorded music like CD had not been a substitute for classical music concerts and popular music concerts. On the contrary, listening to recorded music increased children's concert attendance. The estimated coefficient of d_pop is positive and significant in all columns of table 3. It suggests that the popular music concerts had not been the substitutes for the classical music concerts. Similarly, the estimated coefficient of d_cla is positive and significant in all columns of table 4. It suggests that the classical music concerts had not been the substitutes for the popular music concerts.

Fourthly, we discuss of the impact of some demographic factors on the children's concert attendance. In tables 3 and 4, the estimated coefficient of female is positive and significant in all models. It suggests that females were more likely to listen to music at concerts. It is consistent with other literatures that attempt to determine concert attendance. The estimated coefficients of engaging in daily work have different signs and significance among columns in table 3. Engaged in daily work did not affect the children's attending classical music concerts. The estimated coefficient of engaging in daily work (work) is positive and significant in all columns of table 4. The children who engaged in daily work were more likely to listen to popular music at concerts. The estimated coefficients of educational status suggest the different tendency between the classical music concerts and the popular music concerts. The estimated coefficients of graduate_jhs and graduate_hs are negative and significant in all columns of table 3. It suggests that children who did not go any school after junior high school graduation or high school graduation were less likely to attend the classical music concerts. The estimated coefficients of graduate_jhs show different signs and significance between columns (4-1) and (4-2). The estimated coefficient of graduate_hs is positive and not significant in columns (4-1) while it is positive and significant in column (4-2). It suggests that children with shorter schooling years were more likely to listen to music at concerts than elementary school students. Children with shorter schooling years were less like to attend the classical music concerts, while they were not less likely to attend the popular ones. In summary, our estimated results suggest that the determinants of concert attendance are different between classical music and popular music.

Table 3: Determinants of Attending Classical Music Concerts

Variable / Model	(3-1)		(3-2)		(3-3)	
d_cla_pare					1.995	***
					(0.063)	
d_cla_fami			3.138	***		
			(0.062)			
d_rec			0.972	***	1.137	***
			(0.068)		(0.091)	
d_pop	1.413	***	0.688	***	1.634	***
	(0.025)		(0.043)		(0.072)	
income1	-0.109	***	0.008		-0.075	
	(0.036)		(0.059)		(0.098)	
income3	0.179	***	0.133	***	0.073	
	(0.027)		(0.046)		(0.072)	
income4	0.377	***	0.358	***	0.069	
	(0.029)		(0.048)		(0.083)	
metro	-0.081	***	-0.103	***	0.000	
	(0.024)		(0.040)		(0.065)	
female	0.813	***	0.813	***	0.813	***
	(0.023)		(0.039)		(0.062)	
married	-0.582	***	-0.062		0.731	
	(0.138)		(0.157)		(0.605)	
work	-0.413	***	0.163	***	-0.199	
	(0.040)		(0.054)		(0.153)	
student_jhs	0.022		-0.278	***	-0.102	
	(0.031)		(0.052)		(0.074)	
student_hs	-0.319	***	0.130	***	-0.522	***
	(0.030)		(0.044)		(0.079)	
student_ts	-0.764	***	-0.399	***	-1.474	***
	(0.062)		(0.092)		(0.254)	
student_us	-0.022		0.472	***	-0.942	***
	(0.053)		(0.075)		(0.209)	
graduate_jhs	-1.386	***	-1.135	***	-1.037	***
	(0.133)		(0.180)		(0.367)	
graduate_hs	-1.121	***	-0.998	***	-1.367	***
	(0.058)		(0.083)		(0.270)	
d_1996	-0.126	***				
	(0.031)					
d_2001	0.041					
	(0.033)					
d_2006	-0.054					
	(0.035)					
Constant	-2.561	***	-4.306	***	-3.939	***
	(0.040)		(0.075)		(0.105)	
Pseudo R^2	0.11		0.21		0.25	
Wald test	6577.91 (17)	***	4533.75 (16)	***	2039.88 (16)	***
Log pseudolikelihood	-29977.48		-12553.30		-4110.60	
Number of obs	92,649		58,164		14,932	

[1] For each explanatory variable, the first line reports the estimated coefficient, and the second line reports the estimated robust standard error.

[2] For the Wald test, the Chi-squared value is reported as a test statistic, and the degree of the freedom of the Wald test is reported in parenthesis.

[3] *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Table 4: Determinants of Attending Popular Music Concerts [1]

Variable / Model	(4-1)		(4-2)	
d_pop_pare			1.255	***
			(0.065)	
d_pop_fami				
d_rec			1.752	***
			(0.122)	
d_cla	1.410	***	1.596	***
	(0.024)		(0.067)	
income1	-0.012		0.156	*
	(0.030)		(0.091)	
income3	0.130	***	-0.066	
	(0.025)		(0.073)	
income4	0.222	***	-0.010	
	(0.027)		(0.082)	
metro	0.114	***	0.144	**
	(0.021)		(0.064)	
female	0.682	***	0.578	***
	(0.020)		(0.061)	
married	-0.463	***	-0.302	
	(0.083)		(0.609)	
work	0.496	***	0.227	*
	(0.030)		(0.117)	
student_jhs	0.149	***	0.201	**
	(0.033)		(0.086)	
student_hs	0.579	***	0.491	***
	(0.029)		(0.085)	
student_ts	0.604	***	0.615	***
	(0.047)		(0.170)	
student_us	0.577	***	0.445	***
	(0.047)		(0.169)	
graduate_jhs	-0.347	***	0.156	
	(0.077)		(0.281)	
graduate_hs	0.067		0.472	**
	(0.041)		(0.188)	
d_1996	-0.555	***		
	(0.026)			
d_2001	-0.360	***		
	(0.029)			
d_2006	-0.683	***		
	(0.032)			
Constant	-2.545	***	-4.942	***
	(0.037)		(0.140)	
Pseudo R^2	0.10		0.19	
Wald test	7196.29 (17)	***	1482.56 (16)	
Log pseudolikelihood	-36192.737		-4152.706	
Number of obs	92,649		14,932	

[1] See Table 3 for footnotes.

5.2. Determinants of the Frequency of Attending Concerts (All Adolescent Children)

At first, we discuss on the impacts of parents' behavior on the frequency of their children's concert attendance. Table 5 shows the estimated results of the ordered logit model to determine the frequency of the adolescent children's attending classical music concerts. On the other hand, table 6 reports those of the ordered logit model to determine the frequency of the adolescent children's attending popular music concerts. In table 5, the estimated coefficient of cla_pare is positive and significant in column (5-3). It suggests that children attended the classical music concerts more frequently if their parents attended in classical music concerts together. The estimated coefficient of cla_fami is positive and significant in column (3-2). It suggests that children attended the classical music concerts more frequently if their family members attended in classical music concerts together. In table 6, the estimated coefficient of pop_pare is positive and significant in column (6-3). It suggests that children attended the popular music concerts more frequently if their parents attended in popular music concerts together. The estimated coefficient of pop_fami is positive and significant in column (6-2). It suggests that children attended the popular music concerts more frequently if their family members attended in popular music concerts together. Thus, adolescent children were more likely to listen to music at concerts if their parents attended music concerts together.

Second, we discuss on the impacts of household income on the frequency of children's concert attendance. Since the estimated coefficient of income1 shows different signs and significance among the columns in table 5, it was not sure if children who came from low-income household attended classical music concerts less frequently. The estimated coefficient of income3 is positive in all columns and significant in columns (5-1) and (5-2). The estimated coefficient of income4 is positive and significant in in columns (5-1) and (5-2). As for classical music concerts, children who came from rich households tended to listen to music at concerts more frequently. The estimated coefficients of income1 are not significant in columns (6-1) and (6-2) while that is positive and significant at 10% level in column (6-3). The estimated coefficient of income3 is positive and significant in column (6-1) while that is negative and not significant in columns (6-2) and (6-3). The estimated coefficient of income4 is positive and significant in column (6-1) while that is negative in columns (6-2) and (6-3). As for popular music concerts, the frequency of children's concert attendance did not seem to depend on household income.

Thirdly, we discuss on the impacts of the potential substitute goods of music concerts on the frequency of the children's concert attendance. The estimated coefficient of d_rec is positive and significant in columns (5-2) and (5-3). The estimated coefficient of d_rec is positive and significant in columns (6-2) and (6-3). It suggests that recorded music like CD had not been a substitute for classical music concerts and popular music concerts. On the contrary, listening to recorded music increased the frequency of children's concert attendance. The estimated

coefficient of d_pop is positive and significant in all columns of table 5. It suggests that the popular music concerts had not been the substitutes for the classical music concerts. Similarly, the estimated coefficient of d_cla is positive and significant in all columns of table 6. It suggests that the classical music concerts had not been the substitutes for the popular music concerts.

Fourthly, we discuss of the impact of some demographic factors on the frequency of the children's concert attendance. In tables 5 and 6, the estimated coefficient of female is positive and significant in all columns. It suggests that females listened to music at concerts more frequently. It is consistent with other literatures that attempt to determine concert attendance. The estimated coefficients of engaging in daily work have different signs and significance among columns in table 5. Engaged in daily work did not affect the children's attending classical music concerts. The estimated coefficient of engaging in daily work is positive and significant in all columns of table 6. The children who engaged in daily work listened to popular music at concerts more frequently. The estimated coefficients of educational status suggest the different tendency between the classical music concerts and the popular music concerts. The estimated coefficients of graduate_jhs and graduate_hs are negative and significant in all columns of table 5. It suggests that children who did not go any school after junior high school graduation or high school graduation attended the classical music concerts less frequently. The estimated coefficients of graduate_jhs is not significant in all columns of table 6. The estimated coefficient of graduate_hs is positive and significant in all columns of table 6. It suggests that children who did not go any school after high school graduation listened to music at concerts more frequently than elementary school students. Children with shorter schooling years attended the classical music concerts less frequently, while they attended the popular ones more frequently. In summary, our estimated results suggest that the determinants of the frequency of concert attendance are different between classical music and popular music.

Table 5: Determinants of the Frequency of Classical Music Concert Attendance [1]

Variable / Model	(5-1)		(5-2)		(5-3)	
d_cla_pare					1.906	***
					(0.060)	
d_cla_fami			2.850	***		
			(0.050)			
d_rec			0.940	***	1.107	***
			(0.066)		(0.090)	
d_pop	1.415	***	0.728	***	1.549	***
	(0.024)		(0.041)		(0.067)	
income1	-0.110	***	0.004		-0.058	
	(0.036)		(0.058)		(0.096)	
income3	0.167	***	0.112	**	0.071	
	(0.027)		(0.044)		(0.069)	
income4	0.356	***	0.310	***	0.055	
	(0.029)		(0.046)		(0.079)	
metro	-0.084	***	-0.097	***	-0.006	
	(0.024)		(0.038)		(0.061)	
female	0.805	***	0.766	***	0.801	***
	(0.023)		(0.037)		(0.060)	
married	-0.572	***	-0.061		1.043	
	(0.139)		(0.155)		(0.750)	
work	-0.401	***	0.191	***	-0.244	
	(0.040)		(0.052)		(0.152)	
student_jhs	0.042		-0.234	***	-0.035	
	(0.031)		(0.048)		(0.069)	
student_hs	-0.295	***	0.158	***	-0.401	***
	(0.030)		(0.041)		(0.075)	
student_ts	-0.737	***	-0.356	***	-1.324	***
	(0.062)		(0.089)		(0.253)	
student_us	0.011		0.496	***	-0.759	***
	(0.053)		(0.073)		(0.210)	
graduate_jhs	-1.356	***	-1.075	***	-0.972	***
	(0.135)		(0.178)		(0.362)	
graduate_hs	-1.107	***	-0.942	***	-1.224	***
	(0.059)		(0.080)		(0.268)	
d_1996	-0.115	***				
	(0.031)					
d_2001	0.037					
	(0.033)					
d_2006	-0.042					
	(0.035)					
Pseudo R^2	0.08		0.17		0.19	
Wald test	6772.1 (17)	***	6186.64 (16)	***	2395.61 (16)	***
Log pseudolikelihood	-38914.43		-16385.23		-5610.34	
Number of obs	92,616		58,131		14,932	

[1] See Table 3 for footnotes.

Table 6: Determinants of the Frequency of Popular Music Concert Attendance [1]

	(6-1)		(6-2)		(6-3)	
d_cla_pare					1.176	***
					(0.062)	
d_pop_fami			5.816	***		
			(0.065)			
d_rec			1.128	***	1.740	***
			(0.087)		(0.122)	
d_cla	1.491	***	0.922	***	1.552	***
	(0.026)		(0.066)		(0.065)	
income1	-0.009		0.100		0.156	*
	(0.036)		(0.066)		(0.091)	
income3	0.107	***	-0.075		-0.077	
	(0.028)		(0.060)		(0.071)	
income4	0.202	***	-0.109	*	-0.022	
	(0.031)		(0.066)		(0.079)	
metro	0.123	***	0.245	***	0.143	**
	(0.024)		(0.049)		(0.062)	
female	0.661	***	0.432	***	0.568	***
	(0.023)		(0.047)		(0.060)	
married	0.179		0.116		-0.065	
	(0.110)		(0.094)		(0.700)	
work	0.434	***	1.288	***	0.250	**
	(0.039)		(0.066)		(0.115)	
student_jhs	0.289	***	-0.474	***	0.234	***
	(0.035)		(0.086)		(0.082)	
student_hs	0.717	***	0.966	***	0.515	***
	(0.033)		(0.072)		(0.081)	
student_ts	0.715	***	0.865	***	0.651	***
	(0.056)		(0.114)		(0.168)	
student_us	0.640	***	0.837	***	0.482	***
	(0.059)		(0.108)		(0.167)	
graduate_jhs	-0.087		0.119		0.101	
	(0.100)		(0.147)		(0.269)	
graduate_hs	0.229	***	0.391	***	0.481	***
	(0.057)		(0.090)		(0.183)	
d_1996	0.507	***				
	(0.033)					
d_2001	0.676	***				
	(0.035)					
d_2006	0.374	***				
	(0.038)					
Pseudo R^2	0.07		0.31		0.14	
Wald test	6283.33 (17)	***	10198.51 (16)	***	1599 (16)	***
Log pseudolikelihood	-40084.42		-11314.22		-5739.85	
Number of obs	88,120		53,206		14,932	

[1] See Table 3 for footnotes.

5.3. The Impacts of Parents' Behavior, Education, and Household Income on Their Children's Concert Attendance

To investigate the impacts of parents' concert attendance and educational status on their adolescent children's concert attendance, we identified parents with their adolescent children, using the data on the relationship to household head. We regressed the logit model and the ordered logit model, using the children's samples identified with their parents. Here, we use the samples of only the children who lived with their parents.

At first, we discuss on the impacts of parents' behavior on their children's concert attendance. Table 7 shows the estimated results of the logit model to investigate the determinants of the adolescent children's attending classical music concerts and popular music concerts. In table 7, the estimated coefficient of pare_cla is positive and significant in column (7-1), and the estimated coefficient of pare_pop is positive and significant in column (7-3). It suggests that children were more likely to attend the music concerts regardless of music genre if their parents attended music concerts. Moreover, the estimated coefficient of mo_cla is positive and significant in column (7-1), and the estimated coefficient of mo_pop is positive and significant in column (7-3). It suggests that children were more likely to attend the music concerts regardless of music genre if their mothers attended music concerts. Similarly, the estimated coefficient of fa_cla is positive and significant in column (7-1), and the estimated coefficient of fa_pop is positive and significant in column (7-3). It suggests that children were more likely to attend the music concerts regardless of music genre if their fathers attended music concerts. Thus, adolescent children were more likely to listen to music at concerts if their parents attended music concerts.

Second, we discuss on the impacts of parents' educational background on children's concert attendance. The estimated coefficient of fa_edu_hs is positive and significant at 10% level in columns (7-1) and (7-2) of table 7. The estimated coefficient of fa_edu_ts is positive and not significant in columns (7-1) and (7-2). The estimated coefficient of fa_edu_u is positive and significant at 1% level in columns (7-1) and (7-2). Children were more likely to attend classical music concerts as their fathers' final educational backgrounds were higher. The estimated coefficient of mo_edu_hs is positive and not significant in columns (7-1) and (7-2). The estimated coefficient of mo_edu_ts is positive and significant in columns (7-1) and (7-2) at 1% level. The estimated coefficient of mo_edu_u is positive and significant in columns (7-1) and (7-2) at 1%level. Children were more likely to attend classical music concerts as their mothers' final educational backgrounds were higher. As for classical music concerts, mothers' educational background affected their children's concert attendance more strongly than fathers. The estimated coefficient of fa_edu_hs is not significant in columns (7-3) and (7-4). The estimated coefficient of fa_edu_ts is positive and not significant in columns (7-3) and (7-4). The estimated coefficient of fa_edu_u is positive and not significant in columns (7-3) and (7-4). Fathers' educational backgrounds did not affect their children's concert attendance. The estimated

coefficient of mo_edu_hs is positive and significant in columns (7-3) and (7-4) at 5% level. The estimated coefficient of mo_edu_ts is positive and significant in columns (7-3) and (7-4) at 5% level. The estimated coefficient of mo_edu_u is positive and not significant in columns (7-3) and (7-4). Children were more likely to attend popular music concerts if their mothers' final educational backgrounds are high school graduate or technical school graduate. As for popular music concerts, mothers' educational background affected their children's concert attendance while fathers' ones did not.

Thirdly, we discuss on the impacts of household income on children's concert attendance. Since the estimated coefficient of income1 is negative and significant in columns (7-1) and (7-2), it was sure that children who came from low-income household were less likely to attend classical music concerts. The estimated coefficient of income3 is positive and not significant in columns (7-1) and (7-2). The estimated coefficient of income4 is negative and not significant in columns (7-1) and (7-2). As for classical music concerts, children who came from low-income households were less likely to listen to music at concerts. The estimated coefficient of income1 is negative and not significant in columns (7-3) and (7-4). The estimated coefficient of income3 is positive and significant in columns (7-3) and (7-4). The estimated coefficient of income4 is positive and significant in columns (7-3) and (7-4). As for popular music concerts, children who came from low-income households were more likely to listen to music at concerts.

Next, we discuss on the impacts of the potential substitute goods of music concerts on the children's concert attendance. The estimated coefficient of d_pop is positive and significant in columns (7-1) and (7-2). It suggests that the popular music concerts had not been the substitutes for the classical music concerts. Similarly, the estimated coefficient of d_cla is positive and significant in all columns (7-3) and (7-4). It suggests that the classical music concerts had not been the substitutes for the popular music concerts.

Then, we discuss of the impact of some demographic factors on the children's concert attendance. In table 7, the estimated coefficient of female is positive and significant in all columns. It suggests that females were more likely to listen to music at concerts. The estimated coefficient of engaging in daily work is negative and significant in columns (7-1) and (7-2). Engaging in daily work did not affect the children's attending classical music concerts. The estimated coefficient of engaging in daily work is positive and significant in columns (7-3) and (7-4). The children who engaged in daily work were more likely to listen to popular music at concerts. The estimated coefficients of educational status suggest the different tendency between the classical music concerts and the popular music concerts. The estimated coefficients of graduate_jhs and graduate_hs are negative and significant in all columns. It suggests that children who did not go any school after junior high school graduation or high school graduation were less likely to attend the classical music concerts, and that children who did not go any school after high school graduation were less likely to attend the popular music concerts. The estimated coefficient

of graduate_hs is positive and significant in columns (7-3) and (7-4). It suggests that children who did not go any school after high school graduation were more likely to listen to popular music at concerts than elementary school students. Our estimated results also show that children were less likely to attend classical music concerts after elementary school graduation and that children were more likely to attend popular music concerts after elementary school graduation. In summary, our estimated results suggest that the determinants of concert attendance are different between classical music and popular music.

Table 7: Determinants of Attending Music Concerts (Children Living with Their Parent(s)[1]

	Classical music concert				Popular music concert			
	(7-1)		(7-2)		(7-3)		(7-4)	
pare_d_cla	1.745	***			pare_d_pop	0.963	***	
	(0.028)					(0.025)		
mo_d_cla			1.624	***	mo_d_pop			0.918	***
			(0.031)					(0.027)
fa_d_cla			0.802	***	fa_d_pop			0.479	***
			(0.043)					(0.039)
d_pop	1.331	***	1.343	***	d_cla	1.313	***	1.313	***
	(0.029)		(0.029)			(0.028)		(0.028)
income1	-0.137	***	-0.129	***	income1	-0.048		-0.045	
	(0.049)		(0.049)			(0.041)		(0.041)	
income3	0.014		0.014		income3	0.087	***	0.085	***
	(0.031)		(0.032)			(0.028)		(0.028)	
income4	-0.013		-0.014		income4	0.140	***	0.135	***
	(0.036)		(0.036)			(0.031)		(0.031)	
metro	-0.102	***	-0.104	***	metro	0.096	***	0.097	***
	(0.028)		(0.028)			(0.024)		(0.024)	
female	0.857	***	0.860	***	female	0.729	***	0.732	***
	(0.027)		(0.027)			(0.023)		(0.023)	
married	-0.735	***	-0.740	***	married	-0.420	***	-0.428	***
	(0.257)		(0.259)			(0.138)		(0.138)	
work	-0.314	***	-0.310	***	work	0.532	***	0.531	***
	(0.049)		(0.049)			(0.036)		(0.036)	
student_jhs	0.045		0.053		student_jhs	0.207	***	0.208	***
	(0.035)		(0.035)			(0.037)		(0.037)	
student_hs	-0.270	***	-0.266	***	student_hs	0.675	***	0.675	***
	(0.034)		(0.035)			(0.033)		(0.033)	
student_ts	-0.766	***	-0.753	***	student_ts	0.678	***	0.680	***
	(0.077)		(0.078)			(0.055)		(0.055)	
student_us	-0.204	***	-0.211	***	student_us	0.578	***	0.578	***
	(0.072)		(0.074)			(0.060)		(0.061)	
graduate_jhs	-1.020	***	-1.004	***	graduate_jhs	-0.259	***	-0.261	***
	(0.152)		(0.151)			(0.096)		(0.097)	
graduate_hs	-0.945	***	-0.944	***	graduate_hs	0.146	***	0.145	***
	(0.070)		(0.071)			(0.050)		(0.050)	
fa_edu_hs	0.064	*	0.067	*	fa_edu_hs	-0.002		0.002	
	(0.039)		(0.039)			(0.032)		(0.032)	
fa_edut_ts	0.078		0.079		fa_edu_ts	0.085		0.087	
	(0.064)		(0.065)			(0.057)		(0.057)	
fa_edu_u	0.138	***	0.135	***	fa_edu_u	0.032		0.037	
	(0.046)		(0.046)			(0.040)		(0.040)	
mo_edu_hs	0.063		0.048		mo_edu_hs	0.081	**	0.071	**
	(0.044)		(0.044)			(0.034)		(0.034)	
mo_edu_ts	0.177	***	0.153	***	mo_edu_ts	0.100	**	0.087	**
	(0.052)		(0.052)			(0.044)		(0.044)	
mo_edu_u	0.251	***	0.195	***	mo_edu_u	0.064		0.051	
	(0.063)		(0.064)			(0.058)		(0.058)	
d_1996	-0.150	***	-0.135	***	d_1996	-0.545	***	-0.540	***
	(0.036)		(0.036)			(0.030)		(0.030)	
d_2001	-0.090	**	-0.073	*	d_2001	-0.382	***	-0.380	***
	(0.039)		(0.039)			(0.032)		(0.032)	
d_2006	-0.192	***	-0.176	***	d_2006	-0.778	***	-0.776	***
	(0.043)		(0.044)			(0.039)		(0.039)	
Constant	-3.030	***	-3.027	***	Constant	-2.905	***	-2.900	***
	(0.059)		(0.060)			(0.050)		(0.050)	
Pseudo R^2	0.18		0.19		Pseudo R2	0.12		0.13	
Wald test	8323.68 (24)	***	8515.88 (25)	***	Wald test	7436.14 (24)	***	7533.54 (25)	***
log pseudolikelihood	-22666.47		-22486.14		log pseudolikelihood	-28465.10		-28385.58	
Number of obs	76,489		76,489		Number of obs	76,489		76,489	

[1] See Table 3 for footnotes.

5.4. The Impacts of Parents' Behavior, Education, and Household Income on the Frequency of Their Children's Attending Concerts

At first, we discuss on the impacts of parents' behavior on the frequency of their children's concert attendance. Table 8 shows the estimated results of the logit model to investigate the determinants of the frequency of the adolescent children's attending classical music concerts and popular music concerts. In table 8, the estimated coefficient of pare_cla is positive and significant in column (8-1), and the estimated coefficient of pare_pop is positive and significant in column (8-3). It suggests that children attended the music concerts more frequently regardless of music genre if their parents attended music concerts. Moreover, the estimated coefficient of mo_cla is positive and significant in column (8-1), and the estimated coefficient of mo_pop is positive and significant in column (8-3). It suggests that children attended the music concerts more frequently regardless of music genre if their mothers attended music concerts. Similarly, the estimated coefficient of fa_cla is positive and significant in column (8-1), and the estimated coefficient of fa_pop is positive and significant in column (8-3). It suggests that children attended the music concerts more frequently regardless of music genre if their fathers attended music concerts. Thus, adolescent children listened to music at concerts more frequently if their parents attended music concerts.

Second, we discuss on the impacts of parents' educational background on the frequency of children's concert attendance. The estimated coefficient of fa_edu_hs is positive and significant at 10% level in columns (8-2). The estimated coefficient of fa_edu_ts is positive and not significant in columns (8-1) and (8-2). The estimated coefficient of fa_edu_u is positive and significant at 1% level in columns (8-1) and (8-2). Children attended classical music concerts more frequently if their fathers' final educational backgrounds were college graduate or university graduate. The estimated coefficient of mo_edu_hs is positive and not significant in columns (8-1) and (8-2). The estimated coefficient of mo_edu_ts is positive and significant in columns (8-1) and (8-2) at 1% level. The estimated coefficient of mo_edu_u is positive and significant in columns (8-1) and (8-2) at 1%level. Children attended classical music concerts more frequently if their mothers' final educational backgrounds were technical school graduate or college graduate or university graduate. As for classical music concerts, mothers' educational background affected their children's concert attendance more strongly than fathers. The estimated coefficient of fa_edu_hs is not significant in columns (8-3) and (8-4). The estimated coefficient of fa_edu_ts is positive and not significant in columns (8-3 and (8-4). The estimated coefficient of fa_edu_u is positive and not significant in columns (8-3) and (8-4). Fathers' educational backgrounds did not affect the frequency of their children's concert attendance. The estimated coefficient of mo_edu_hs is positive and significant at 5% level in column (8-3). The estimated coefficient of mo_edu_ts is positive and significant at 5% level in column (8-3). The estimated coefficient of mo_edu_u is positive and not significant in columns (8-3) and (8-4). Children attended popular music concerts more frequently if their mothers' final educational backgrounds are high school graduate or technical school graduate. As for popular music concerts,

mothers' educational background affected the frequency of their children's concert attendance while fathers' ones did not.

Thirdly, we discuss on the impacts of household income on children's concert attendance. Since the estimated coefficient of income1 is negative and significant in columns (8-1) and (8-2), it was sure that children who came from low-income household attended classical music concerts less frequently. The estimated coefficient of income3 is positive and not significant in columns (8-1) and (8-2). The estimated coefficient of income4 is negative and not significant in columns (8-1) and (8-2). As for classical music concerts, children who came from low-income households listened to music at concerts less frequently. The estimated coefficient of income1 is positive and not significant in columns (8-3) and (8-4). The estimated coefficient of income3 is positive and significant at 10% level in columns (8-3). The estimated coefficient of income4 is positive and significant at 5% level in columns (8-3) and (8-4). As for popular music concerts, children who came from high-income households listened to music at concerts more frequently.

Next, we discuss on the impacts of the potential substitute goods of music concerts on the frequency of the children's concert attendance. The estimated coefficient of d_pop is positive and significant in columns (8-1) and (8-2). It suggests that the popular music concerts had not been the substitutes for the classical music concerts. Similarly, the estimated coefficient of d_cla is positive and significant in all columns (8-3) and (8-4). It suggests that the classical music concerts had not been the substitutes for the popular music concerts.

Then, we discuss of the impact of some demographic factors on the children's concert attendance. In table 8, the estimated coefficient of female is positive and significant in all columns. It suggests that females listened to music at concerts more frequently. The estimated coefficient of engaging in daily work is negative and significant in columns (8-1) and (8-2). Engaging in daily work reduces the frequency of children's attending classical music concerts. The estimated coefficient of engaging in daily work is positive and significant in columns (7-3) and (7-4). The children who engaged in daily work listened to popular music at concerts more frequently. The estimated coefficients of educational status suggest the different tendency between the classical music concerts and the popular music concerts. The estimated coefficients of graduate_jhs and graduate_hs are negative and significant in all columns. It suggests that children who did not go any school after junior high school graduation or high school graduation attended the classical music concerts less frequently, and that children who did not go any school after high school graduation attended the popular music concerts less frequently. The estimated coefficient of graduate_hs is positive and significant in columns (7-3) and (7-4). It suggests that children who did not go any school after high school graduation listened to popular music at concerts more frequently than elementary school students. Our estimated results also show that children attended classical music concerts after elementary school graduation less frequently and that children were more likely to attended popular music concerts more frequently after elementary school graduation. In summary, our estimated

results suggest that the determinants of the frequency of concert attendance are different between classical music and popular music. It is consistent with the results in tables 5 and 6.

Table 8: Determinants of Frequency of Concert Attendance (Children Living with Their Parent(s)[1]

	Classical music concert				Popular music concert			
	(8-1)		(8-2)		(8-3)		(8-4)	
pare_d_cla	1.704	***			pare_d_pop	1.062	***	
	(0.027)					(0.027)		
mo_d_cla			1.570	***	mo_d_pop		0.995	***
			(0.030)				(0.029)	
Fa_d_cla			0.753	***	fa_d_pop		0.523	***
			(0.039)				(0.040)	
d_pop	1.301	***	1.302	***	d_cla	1.355	***	1.352	***
	(0.028)		(0.028)			(0.030)		(0.030)	
income1	-0.144	***	-0.137	***	income1	0.007		0.009	
	(0.049)		(0.049)			(0.047)		(0.047)	
income3	0.004		0.005		income3	0.042	*	0.041	
	(0.031)		(0.031)			(0.031)		(0.032)	
income4	-0.030		-0.031		income4	0.085	**	0.080	**
	(0.035)		(0.035)			(0.035)		(0.036)	
metro	-0.104	***	-0.103	***	metro	0.108	***	0.111	***
	(0.027)		(0.027)			(0.027)		(0.027)	
female	0.839	***	0.839	***	female	0.694	***	0.695	***
	(0.026)		(0.026)			(0.026)		(0.026)	
married	-0.719	***	-0.724	***	married	0.221		0.204	
	(0.260)		(0.262)			(0.181)		(0.181)	
work	-0.288	***	-0.282	***	work	0.496	***	0.492	***
	(0.048)		(0.049)			(0.046)		(0.046)	
student_jhs	0.074	**	0.082	**	student_jhs	0.328	***	0.331	***
	(0.033)		(0.033)			(0.038)		(0.038)	
student_hs	-0.221	***	-0.211	***	student_hs	0.785	***	0.787	***
	(0.033)		(0.033)			(0.036)		(0.036)	
student_ts	-0.699	***	-0.681	***	student_ts	0.786	***	0.790	***
	(0.077)		(0.077)			(0.065)		(0.065)	
student_us	-0.129	*	-0.125	*	student_us	0.634	***	0.637	***
	(0.072)		(0.073)			(0.074)		(0.074)	
graduate_jhs	-0.977	***	-0.961	***	graduate_jhs	-0.087		-0.083	
	(0.154)		(0.153)			(0.123)		(0.124)	
graduate_hs	-0.917	***	-0.913	***	graduate_hs	0.305	***	0.306	***
	(0.071)		(0.071)			(0.067)		(0.067)	
fa_edu_hs	0.061		0.065	*	fa_edu_hs	-0.002		0.000	
	(0.039)		(0.039)			(0.037)		(0.037)	
fa_edu_ts	0.065		0.063		fa_edu_ts	0.076		0.073	
	(0.063)		(0.063)			(0.063)		(0.063)	
fa_edu_u	0.128	***	0.125	***	fa_edu_u	0.030		0.033	
	(0.045)		(0.046)			(0.045)		(0.045)	
mo_edu_hs	0.071		0.057		mo_edu_hs	0.072	**	0.058	
	(0.044)		(0.044)			(0.042)		(0.042)	
mo_edu_ts	0.173	***	0.151	***	mo_edu_ts	0.089	**	0.071	
	(0.052)		(0.052)			(0.050)		(0.050)	
mo_edu_u	0.255	***	0.203	***	mo_edu_u	0.067		0.044	
	(0.062)		(0.063)			(0.063)		(0.064)	
d_1996	-0.146	***	-0.131	***	d_1996	0.520	***	0.525	***
	(0.035)		(0.035)			(0.038)		(0.038)	
d_2001	-0.098	***	-0.082	**	d_2001	0.646	***	0.647	***
	(0.038)		(0.038)			(0.040)		(0.040)	
d_2006	-0.173	***	-0.159	***	d_2006	0.296	***	0.300	***
	(0.043)		(0.043)			(0.045)		(0.045)	
Pseudo R^2	0.14		0.15		Pseudo R2	0.09		0.09	
Wald test	9271.73 (24)	***	9785.85 (25)	***	Wald test	6640.56 (24)	***	6828.27 (25)	***
Log pseudolikelihood	-29957.77		-29795.71		Log pseudolikelihood	-32102.23		-32032.70	
Number of obs	76,462		76,462		Number of obs	73,020		73,020	

[1] See Table 3 for footnotes.

6. Concluding Remarks

This study focuses on the impacts of parents' behavior, educational background, and household income on their adolescent children's music concert attendance because the consumption of music concerts could reflect income inequality well. Almost all teenagers listen to music in daily life but whether a teenager could attend any live music concerts depends on their household income. We regressed the logit model to investigate the impacts of parents' behavior, educational background, and household income on the likelihood of their adolescent children's concert attendance. Additionally, we regressed the ordered logit model to investigate the impacts of parents' behavior, educational background, and household income on the frequency of their adolescent children's concert attendance. Using data is the individual anonymous microdata from the Survey on Time Use and Leisure Activities in 1991, 1996, 2001, and 2006. To investigate the impacts of parents' behavior and education on children's concert attendance, we identified adolescent children to their parents using the information on the relationship between each family member and their household head. To investigate the impacts of household income on children's concert attendance, we divide children into four family income group: These are; (1) low family-income-group of which family income is less than 3 million yen; (2) middle family-income group of which family income is between 3 million yen and 5.99 million yen; (3) high family-income group of which family income is between 6 million yen and 8.99 million yen; and (4) very high family-income group of which family income is 9 million yen and more.

Our findings are the following three. First, our estimated result shows that adolescent children were more likely to attend music concerts regardless of genre if their parents attended music concerts together. Also, our estimated result shows that adolescent children were more likely to attend music concerts regardless of genre if their parents attended music concerts. Moreover, parents' concert attendance raised the frequency of their adolescent children's music concert attendance regardless of genre. Second, our results suggest that parents' educational background affect their children's concert attendance and frequency of attending concert rather than their children's education. When we control parents' concert attendance, our estimated results show that parents' educational background has different effect on the concert attendance between classical music and popular music: Children were more likely to attend the classical music concert if their fathers educational background is a university graduate; Children were more likely to attend classical music concerts if their mothers educational background is a technical college graduate or a university graduate; Fathers' educational background never affect their children's concert attendance of popular music; And children were more likely to attend popular music concerts if their mothers educational background is a high school graduate or a technical college graduate. Similarly, when we control parents' concert attendance, our estimated results show that parents' educational background has different effect on the frequency of attending concerts between classical music and popular music: Children attended classical music concerts more frequently if their fathers educational background is a university graduate; Children attended classical music concerts more frequently if their mothers educational background is a technical school graduate or a university graduate; Fathers' educational background never affect their

children's concert attendance of popular music; And children were attended popular music concerts more frequently if their mothers educational background is a high school graduate or a technical college graduate. Third, our results suggest that adolescent children who belong to low family-income group were less likely to attend classical music concerts and that adolescent children who belong to very high family-income group were more likely to attend popular music concerts.

This study shows the strong relationship between parents' behavior, educational background, and household income and their adolescent children's concert attendance. Our estimated results suggest that children were likely to attend both classical music concerts and popular music concerts when their parents attended concerts together. Our estimated also results suggest the possibility that household income has determined the preference for classical music concerts. These results imply that the opportunity to access classical music concerts is not equal among adolescent children. The cultural policy to realize the equal opportunity to attend classical music concerts is needed. For example, the government need to supply more free classical music concerts of which targets are parents and their children.

We still have two main remaining problems. The first one is the sample period. We should add the microdata in 2011 and 2016 to our dataset. The second one is the identification of adolescent children to their parents. In this study, we eliminated the single parent families, where adolescent children live with their single parents, their grandparent(s). If an adolescent child lived with their single parent, their uncle(s) or aunt(s), and their grandparent(s), we cannot judge who is their parent in a dataset. If an adolescent child lives with their single parent and their grandparent(s) only, we can judge who is their parent. In future research, we need to reconsider if we should add such a child to the dataset. It would be better to control the family size to investigate the impact of household income on the children's concert attendance.

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