Did Cultural and Artistic Education in the Netherlands increase Student Participation in High Cultural Events?

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Abstract

This study examines whether Cultural and Artistic Education that was implemented by the Dutch Ministry of Education, Culture and Science in 1999 caused students to participate more in high cultural events. A unique feature of the intervention was that students were free to choose the type of cultural event they participated in. So the intervention relied on the intrinsic motivation of students to participate in high cultural events, while there was no reason to assume that this motivation was present given the existing literature.

We find that Cultural and Artistic Education did increase the student participation in high culture, but did not increase student participation in popular culture. The effect of the intervention is, however, small. While student characteristics did not affect the observed differences in high cultural participation over time, the fraction of immigrant students in the class did: the lower this fraction, the more students participate in high cultural events. Finally, the effect seems to represent (at least partly) the intrinsic motivation of students for high culture.

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1 Introduction

In September 1999, the Ministry of Education, Culture and Science implemented an Arts and Culture policy program in the Netherlands that obligated fourth grade students in higher secondary education to participate in a course named Cultural and Artistic Education. The purpose of the program was to acquaint young students with a variety of art forms by letting them experience arts and culture and letting them reflect on the experienced arts and culture (Damen, Nagel, and Haanstra, 2010). A special feature of the program was that students were obligated to participate in cultural events but at the same time this participation had to reflect the students' own interest. Practically, this meant that students were free to participate in several cultural events of their choice, and gained experience by following the course and by participating in cultural events. This study examines whether this 'free choice' intervention caused students to participate more in events that are generally seen as high or conventional cultural events (museum, classical music, opera, ballet and theater).

The literature on cultural participation shows stabilization or an upward trend in high cultural participation for generations born before the 1960s and a downward trend for generations born after the 1960s. Moreover, younger generations increasingly focus on popular culture (e.g. the movies, a pop concert or a dance event). This trend is not only observed for the Netherlands but is also observed in other European countries (De Haan and Van Den Broek, 2003) and in the United States (Dimaggio and Mukhtar, 2004; National Endowment for the Arts, 2009). So, even though in general the cultural participation of students will increase due to the obligated nature of the program, there is no guarantee that students will participate more in high cultural events. If students are not intrinsically motivated to take part in high cultural events, then one would expect that the intervention increases participation in popular cultural events (such as the cinema, pop concerts or dance events), but not participation in high cultural events.

The contributions of this study are the following. First of all, we examine if students participated more in high culture due to Cultural and Artistic Education. To be precise, we identify the effect of the course assuming that cultural participation increases linearly with the students' age. For this purpose we use panel data that were collected as part of the Dutch research project 'Youth and Culture' (Ganzeboom and Nagel, 2002), an initiative of the Dutch Ministry of Education, Culture and Science and Cultuurnetwerk Nederland (Dutch expertise centre for arts and cultural education).

Moreover, and second, we examine whether the 'free choice' nature of the intervention is effective with respect to the participation of high cultural events. According to the traditional

economic principal-agent theory, student participation can only be increased by the program if the incentives given to the students are in line with their preferences. As pointed out above, a 'free choice' intervention therefore relies on the intrinsic motivation of students to participate in high cultural events for this course, while there is no reason to assume that this intrinsic motivation is present. The third contribution of this study is that we focus on culture, which is rather uncommon in the economic literature. Usually the focus is on the academic performance of students, but it is often argued that cultural capital contributes to student achievement and success in school, work and life (see, amongst others, De Graaf, 1997; Asschaffenburg and Maas, 1997; Niehof, 1997; Sullivan, 2000).

We proceed as follows. Section 2 explains the intervention in more detail, discusses the data that is used and shows the descriptive statistics. Section 3 discusses the theory, explains the identification strategy and show the models that are empirically estimated. In Section 4 we discuss the empirical results. The second part of Section 4 focuses specifically on that students may become more interested in culture as they become older and that this may bias the empirical results. By assuming that cultural participation depends linearly on the students' age, we test whether this age effect can explain the change in cultural participation over time. In Section 5, we conclude.

2 Intervention, Data and Descriptive Statistics

The Intervention

Since September 1999, all students in senior general education (havo) and pre-university education (vwo) in the Netherlands are required to participate in a course named Cultural and Artistic Education. The course is part of a larger policy plan of the Dutch government, concerned with the decrease in the cultural participation among the youth in the Netherlands, and requires students to participate in cultural events (museums, exhibitions, theatre performances, concerts, cinemas etc.). The main purpose is to acquaint young students with a variety of art forms by letting them experience arts and culture and by letting them reflect on the experienced arts and culture.

The course is offered in the fourth grade and part of the fifth grade, when students are on average between 15 and 17 years old. The duration of the course depends on the educational level (longer at the higher level), the preference of the school (some schools wish to use a more extended period of 2 years), and the individual progress of the students (since the course centers around individual cultural activities). Differences in duration with respect to the

educational level are related to the workload: 120 hours for senior general education and 160 hours for pre-university education. This means that the course takes longer for students in pre-university education and, as a consequence, these students have more time to participate in cultural events. We emphasize however, that student participation in cultural events is in this study always measured over a period of twelve months. In this way the indicator that measures how often students participate in cultural events takes into account that cultural events may be related to the season of the year.

Student participation in cultural events is subsidized since students are provided with a credit on a smartcard of 25 Euro, which they can use to pay the entrance fees of the cultural institutions. Additional to the course, all students have a Cultural Youth Passport (CJP), that gives them a discount whenever they participate in a cultural event.

Three innovative elements of the intervention are worth mentioning. The first is that the course is compulsory for all students in higher secondary education. In the past, arts education in the second stage of secondary education was offered only to those students who had chosen arts education as part of their examination courses – so to those students who already had an intrinsic interest in art. The new course exposes all students to arts education, disregarded the fact whether they have an intrinsic interest in arts.

Second, the intervention possesses cultural participation at its core — students *engage in* and *experience* culture. Most other arts education programs do focus on 'producing art' instead of on visiting arts and culture. The cultural activities are aimed to be a mixture of several arts disciplines. Arts history is important, but is additional to cultural participation. In contrast with previous arts courses, knowledge of art and culture is not merely taught by rote learning of historical facts and figures of art, but by stipulating the interrelationships between the different arts disciplines by means of a thematic approach, such as 'heroes', 'the city', and 'eternal love'. Also, practical art activities of students are a small part of the course, meant to support the preparation and 'digestion' of cultural activities, but they are no aim in themselves. The course thereby enables students to make their own choices out of the supply of cultural events.

Third, schools did not prescribe in which cultural events students should participate. Indeed students were obligated to participate in (some) cultural events but this participation had to reflect the students' own interest at the same time. In line with the philosophy of stimulating individual choice, these cultural activities are not limited to highbrow culture, but may include popular culture as well.

Data and Descriptive Statistics

This study uses data that were collected for 68 schools in 14 middle sized municipalities in the Netherlands, as part of the Dutch research project 'Youth and Culture', an initiative of the Dutch Ministry of Education, Culture and Science and Cultuurnetwerk Nederland. These schools were randomly selected from all schools within the municipality conditional on school type (i.e. senior general education or pre-university education). In this way, variation over school types was guaranteed. If schools had several classes per same grade, one of the classes was randomly selected.

From this data-sample we selected students for who we have at least two observations over time and were interviewed about their cultural participation and attitude towards culture and arts. This panel structure allows us to link changes in high cultural participation to the intervention. This leaves us with a selective sample of students on 26 schools in nine middle sized municipalities in the Netherlands.[1] Hence, we examine how cultural participation is influenced by the intervention for a non-representative sample of schools/students and it follows that we can only determine the local average treatment effect.

The sample contains information of two student cohorts in higher secondary education. The first student cohort was interviewed with a written questionnaire in September 1998 and in September 2000. The second student cohort was interviewed with a written questionnaire in May 2001 and in September 2002. In this study, and for both cohorts, the first interview is the measurement before the intervention, and the second interview, that takes place one year after the start of the intervention, is the measurement during the intervention. The second interview takes place one year after the start of the intervention, because cultural participation is measured over the past twelve months and, as such the second measurement measures the cultural participation during the first twelve months of the intervention. It follows that students report about their cultural participation in grades two and four.

For the first cohort there is information on 116 students and for the second cohort there is information on 192 students. Table 1 shows the school and student related descriptive statistics for these students. The sample contains approximately as many males as females and about 15 percent of the students are immigrant students, i.e. both mother and father are born outside the Netherlands. The average birth month is on average close to June, and there is substantial variation over the year. We note that birth month is used as a control variable in the analysis to examine how cultural participation depends on age, but

[1] These municipalities are Alkmaar, Delft, Enschede, Haarlem, Amersfoort, Nijmegen, Rotterdam, Utrecht and Zwolle.

Table 1: **Descriptive Statistics**

	Mean	**St.Dev.**
Student		
Female Student	0.54	0.50
Immigrant Student	0.15	0.36
Birth Month	6.61	3.36
School		
Average Classsize	23.27	3.68
Fraction of Girls	0.30	0.11
Fraction of Immigrant Students	0.23	0.24
Number of Students	294	
Number of Schools	26	

not to control for age effects. In Section 4 we explain in more detail how we control for the possibility that students participate more in (high) cultural events as they become older.

We observe one class for each school, with the exception of two schools for who we observe one class in each cohort and, hence, two classes per school. Differences between student averages and school averages occur because the school characteristics are based on *all* children who were in the class on the first observation moment, while the student characteristics are based on all children who were in the class on the observation moment and for whom we have information on their cultural participation. A randomly selected half of the students per class had to fill in a questionaire related to Cultural and Artistic Education, while the other half had to fill in a questionaire that was related to the use of ICT within the school. This explains why the student averages differ substantially from the school averages.

The average class size is around 23 and the standard deviation of 3.6 indicates that class size varies a little across schools. It is therefore important to control for the size of the class in the analysis as it can influence the extent to which schools can facilitate joint cultural trips, which on its turn may influence individual cultural participation.

How often students participate in cultural events is measured with an ordinal variable on a 6 point scale. The first four categories represent the cultural participation accurately from zero participations (category one) to three participations (category four), but the fourth category represents 4 to 11 participations and the fifth category represents 12 participations or more. The study at hand focuses on the aggregate participations in high culture and for this purpose we transform the latter two catergories into values such that we can add and substract the cultural participation in specific events. The fourth category (4 to 11 partici-

Table 2: **Descriptive Statistics on Cultural Participation**

High Culture	**Mean**	**St.Dev.**
Theater	0.65	1.22
Cabaret	0.34	0.92
Classical Concert	0.27	0.78
Ballet	0.25	1.12
Museum	1.46	1.89
Popular Culture		
Pop concert	0.95	1.71
Cinema	6.06	3.65
DJ/VJ event	1.97	3.42
Youth event	0.40	0.81
Average High Culture	2.97	3.75
Average Popular Culture	9.38	6.41

pation) is assumed to represent 7.5 participations and the fifth category (12 participation or more) is assumed to represent the lower bound of 12 participations.

In Table 2 we show how often students participate in cultural events and distinguish between high and popular culture. High culture is represented by attendance at museums, theaters (live performances and plays), cabarets, ballets and classical concerts. Popular culture, on the other hand, is represented by attendance at cinemas (movie-theaters), pop concert, DJ/VJ events and youth events. The latter are all the events that are specifically organized for young people, such as a festival. It has been shown that the cultural activities mentioned in the table tend to cluster in these two (related) patterns of behavior. People who go to museums also tend to go to the theater and classical concerts, while people who go to the movies also tend to go to pop concerts (De Haan and Van Den Broek, 2003; Damen et al., 2010).

Students attend popular culture more than high culture, which is consistent with the literature that describes that the decreasing interest among younger generations concerns high culture, not popular culture (see De Haan and Van Den Broek, 2003; Damen et al., 2010). The descriptives show that students most often go to the cinema, followed by going to a DJ/VJ event and by visiting a museum. Visiting a museum therefore is a rather 'popular' event, even though it is considered as a high cultural event. Classical concerts, ballet and cabaret 'perform' relatively poor, and students (amongst adults) hardly go to these events.

It is worth mentioning that highbrow cultural activities are associated with an elite lifestyle or can be seen as a status marker. However, since Peterson (1992), a number of

studies suggested that it is not just the participation in highbrow cultural events that is indicative of an elite lifestyle. Instead, the ability to combine highbrow culture with popular culture in an omnivorous lifestyle would have become the more relevant demarcation line between higher and lower social status groups (see, among others, Peterson and Kern, 1996; Van Eijck, 1999, 2001; Van Eijck and Knulst, 2005; Peterson, 2005; Vander Stichele and Laermans, 2006; Chan and Goldthorpe, 2007; Warde et al., 2008). Various empirical results show, indeed, that people tend combine high culture with popular culture more and more (Peterson and Kern, 1996; Van Eijck, 2001; Vander Stichele and Laermans, 2006), and that the participation in high culture is decreasing among recent cohorts (Van Eijck and Knulst, 2005; Dimaggio and Mukhtar, 2004). Still, the difference between highbrow and popular cultural activities and how they evolve, is worth studying. Although popular culture may not be rejected anymore by the higher social status groups, the highbrow cultural activities are still the main distinction between the omnivorous lifestyle of the higher social status groups and that of the lower status groups.

3 Theory and Empirical Model

Theory

We wish to evaluate the effect of Cultural and Arts Education on high and popular cultural participation. Let us focus for the moment only on the effect on high cultural participation and let Y be the outcome variable that represents the number of high cultural participations. The effect of the intervention can then be expressed as:

$$D = Y_{1it} - Y_{0it}, \tag{1}$$

where Y_{1it} represents how often student i at time t participates in high cultural events given that he or she participates in the course, and where Y_{0it} represents how often student i at time t participates in high cultural events given that he or she does not participate in the course. A problem that occurs is that we cannot determine D because we do not observe the two potential outcomes Y_{0it} and Y_{1it} at the same time ((Splawa)-Neyman, J., (1923) 1990; Roy, 1951; Rubin, 1974, 1976; Holland, 1986). To the potential outcomes that we do not observe is usually referred as the counterfactual outcomes.

Obviously we do not observe students who follow the course and who, at the same moment, do not follow the course. Instead we observe the cultural participation of two

student cohorts. For the first cohort we observe cultural participation before the start of the course from September 1997 to September 1998, i.e. Y_{0it}, and during the course from September 1999 to September 2000, i.e. Y_{1it+2}. For the second cohort we observe cultural participation before the start of the course from May 2000 to May 2001, i.e. Y_{0it}, and during the course from September 2001 to September 2002, i.e. Y_{1it+2}. It applies that we evaluate the effect of the intervention by comparing the cultural participation of the same student between time t and time $t+2$.

Strictly speaking, Y_{1it+2} should be $Y_{1it+1}$for the second cohort, since the two measurement periods follow (almost) directly after each other. Without loss of generality we use Y_{1it+2}, such that the same theoretical model can be used for both cohorts.

Given that we approximate Y_{1it} by Y_{1it+2}, the average treatment effect can be written as (Cameron and Trivedi, 2005):

$$\begin{aligned} D =& E(Y_{1it+2}|I=1) - E(Y_{0it}|I=0) = \\ & E(Y_{1it+2} - Y_{0it}|I=1) + \{E(Y_{0it}|I=1) - E(Y_{0it}|I=0)\}, \end{aligned} \tag{2}$$

where $I = 1$ indicates that the students were enrolled in Cultural and Artistic Education, and $I = 0$ indicates that they were not enrolled in Cultural and Artistic Education. The first term on the second line is the average treatment effect on the treated and the second term in braces represents a 'bias'. Since, we are interested in the average treatment effect on the treated this requires that $E(Y_{0it}|I=1) = E(Y_{0it}|I=0)$. However, in general this condition may not be met due to compositional differences, selection on observables and unobservables and time effects.

In the study at hand, selection on observables and unobservables are not problematic since *all* students do not follow the course at time t and do follow the course at time $t+2$. So, for example, we do not have that students who are intrinsically more interested in culture and arts can be found with higher probability in the intervention group. The same argument can be made for selection at the school level, since the program was implemented in *all* schools in the Netherlands. Nevertheless, we should control for student and school characteristics, $\mathbf{x_i}$, because the effect of Cultural and Arts Education may be different across schools and across students. For example, it may be that students with higher educated parents are more often confronted with artistic and cultural events and, as a consequence, these students may be more (or less) interested in arts and culture.

Time effects, however, can bias the estimate. First of all, students may be more inter-

ested in artistic and cultural events as they become older, and so an increase in cultural participation between t and $t+2$ may be the result of this age effect instead of the intervention itself. To control for this age effect we use information of students from the first cohort who were also interviewed in March 1999, i.e. on time $t+1$, and were asked how often they participated in cultural events between March 1998 and March 1999. Assuming that cultural participation depends linearly on age, and that there are no other dynamic factors that affect cultural participation, we can test whether the change in cultural participation between $t+1$ and $t+2$ offsets the change in cultural participation between t and $t+1$. An increase in cultural participation between t and $t+2$ cannot be attributed to the intervention if the change in cultural participation between $t+1$ and $t+2$ and between t and $t+1$ is not significantly different from one another. We note, however, that even if we were to find that the change in cultural participation between $t+1$ and $t+2$ offsets the change in cultural participation between t and $t+1$, it may be that the age effect lowers the effect size.

Second, an increase in high cultural participation may be the consequence of differences in national or regional policies over time that are directly or indirectly related to the cultural participation of students. Since there is information on the cultural participation of students who live in very different regions in the Netherlands, we can control for regional differences in the empirical analysis. However, this does not exclude the possibility that the average treatment effect is caused by differences in national policies over time. Articles of Van den Broek et al. (2005) and Van der Grinten et al. (2008) show, however, that there were no policy changes on a national level related to the cultural participation of students. Therefore no differences in national policies occured between period t and $t+2$ that could nfluence our findings.

Given that we control for the abovementioned time effects, we have that $Y_{0it} \perp I|\mathbf{x_{it}}$ such that $E(Y_{0it}|\mathbf{x_{it}}, I=1) = E(Y_{0it+2}|\mathbf{x_i}, I=0)$. Generally, $Y_{0it} \perp I|\mathbf{x_i}$ is referred to as unconfoundedness (Imbens, 2005), or ignoribility (Rubin, 1978; Wooldridge, 2001). Under the assumption that the ignorability assumption is satisfied, Angrist and Krueger (1999) show that the average treatment effect conditional on $\mathbf{x_i}$ is given by $E(Y_{1it+2} - Y_{0it}|I=1) = E(\Delta_{\mathbf{x_i}}|I=1) = E(Y_{1it+2}|\mathbf{x_i}, I=1) - E(Y_{0it}|\mathbf{x_i}, I=0)$. Even though ignoribility does not guarantee that we control for unobserved factors that partly determine I and Y, the so-called selection on unobservables, this seems not problematic in our study due to the panel nature of our data.

We emphasize and reiterate that in this study identification of the treatment effect is established by assuming, first, that national policies on time t related to the cultural partici-

pation of students are comparable to those on time $t+1$ and $t+2$, and, second, by assuming that cultural participation depends linearly on age.

Empirical model

A straightforward way to examine how the intervention affects the high cultural participation of students is by estimating an equation of the following form:

$$Y_{it} = \beta_0 + S'_{it}\beta_1 + X'_i\beta_2 + I'_{ijk}\beta_3 + \epsilon_{it}, \tag{3}$$

where S represents school or class characteristics, X represents students characteristics and where I is a variable that indicates whether the student is enrolled in Cultural and Artistic Education. In the sequel, we index all variables by an i for student i ($i = 1, ..., N$) and by a t for the time period ($t = 0, 2$). As is usual, the error term, ϵ_{it}, is assumed to be normally distributed with mean zero and variance σ^2_ϵ and all explanatory variables are assumed independent of the error term.

By conditioning on school and student characteristics we control for differences at the school and the student level (such as class size, ethnicity and gender) that may affect cultural participation. Moreover, we control for unobservable student characteristics (e.g. parental education) due to the panel structure of our data because it is not likely that the influence of parental education at $t = 0$ is different from the influence on $t = 2$. We note, that this argument does not hold for the effect that student age may have on cultural participation and therefore we separately address this problem in Section 4.

If we would estimate equation (3) using a pooled OLS, we would, first of all, ignore unobserved school and regional effects that show up in the error term in a systematic manner, causing a bias in the parameter estimates. Differences in regional policies may, for example, affect the cultural participation of students and unobserved differences between schools may affect the extent to which schools are able to facilitate certain events. To control for unobserved differences at the regional and school level we estimate equation (3) using a pooled OLS with school fixed effects, i.e. including dummy variables at the school level, thereby allowing for constant differences in the outcome variable at the school level. By including these school dummies, we at the same time correct for regional differences, as the 26 schools in our sample are located at very different regions in the Netherlands.

Second, the error terms are not likely to be independent at the student level. Students who participate often in cultural events at time $t = 0$ are also likely to participate often

in cultural events at time $t = 2$ and vice versa. Therefore, it is crucial to use clustered standard errors at the student level. In this way we assume that the behavior of students is not correlated, i.e. $E(\epsilon_i, \epsilon_{i'})$ if $i \neq i'$, and that the error terms for student i may be correlated over t .

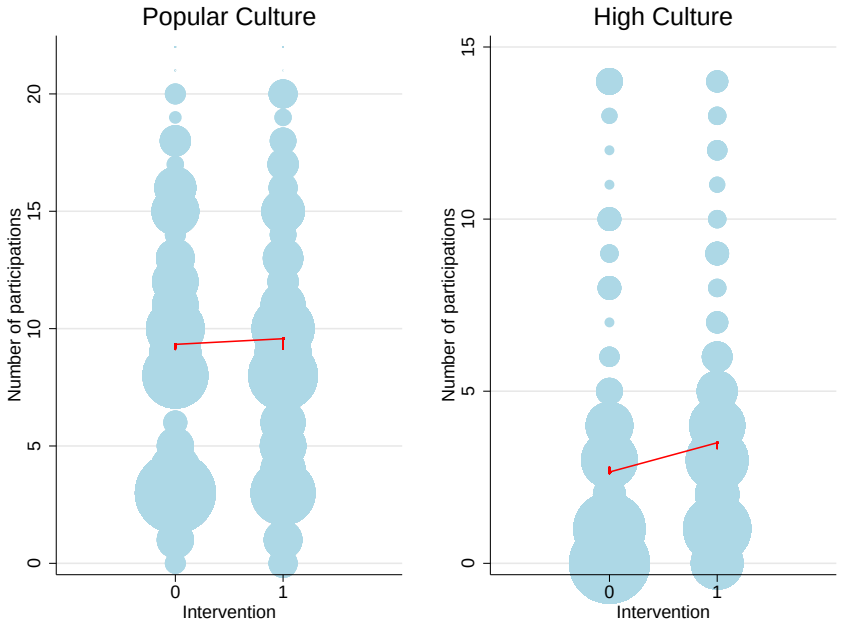
We estimate two different models in this study. First we estimate equation (3) by means of a pooled OLS using clustered standard errors at the student level (model 1). Then we estimate model and include school fixed effects (model 2). The causal effect of the intervention on high cultural participation is measured in model 2, while by comparing the estimation results of both models we obtain more information on how school and regional factors influence our estimate.

4 Empirical Results

Figure 1 shows the number of high and popular cultural participations before the intervention and twelve months after the start of the intervention. The y-axis shows the distribution of the number of participations in cultural events, while the x-axis shows how this distribution varies before (intervention = 0) and twelve months after the start (intervention = 1) of the intervention. The size of the blue circles show the proportion of students who participate a certain amount of times in a cultural event. So, observing a relatively large circle at, say, three high cultural participations, shows that a rather large proportion of students participated three times in a high cultural event. The red line connects the average cultural participations before and twelve months after the start of the intervention, and thus shows whether the number of cultural participations increased on average.

The figure shows that students participate more in popular events than in high cultural events, and suggests, at the same time, that high cultural participation did increase more due to the intervention than the participation in popular culture. Even though the figure nicely illustrates the change in cultural participation between the two observation periods, this increase does not need not to be the consequence of the intervention. It may for example be that underlying characteristics at the student, school and regional level cause the observed difference in cultural participation.

Figure 1: **Participation in Popular and High Culture**



We therefore estimate equation (3) separately for high and popular cultural participation by means of a pooled OLS using clustered standard errors at the student level. The estimation results of the empirical specification where we include school fixed effects reveals whether the intervention and cultural participation are causally related. By estimating the model with and without school fixed effects we furthermore obtain information on how school and regional factors influence the estimate, as we have pointed out in Section 3. We note that, for the moment, we do not take into account that observed changes in cultural participation may be caused by students who are becoming more interested in cultural events as they become older. The estimation results are presented in Table 3.

The second and third columns of Table 3 show the estimation results for high culture and the fourth and fifth columns show the estimation results for popular culture. The dependent variable represents the logarithm of the number of cultural participations, first of all, because we believe that the probability of participating once more in, for example, a high cultural event decreases with the realized number of participations in high cultural events. Second, by taking logarithms, the estimate is less sensitive to outliers.

Let us first focus on high cultural participation, the main focus of this study. The

Table 3: Estimation Results

	High Culture				Popular Culture			
	Model 1		**Model 2**		**Model 1**		**Model 2**	
Intervention	0.294 ***	(0.048)	0.316***	(0.051)	0.049	(0.049)	0.066	(0.051)
Student Characteristics:								
Student is female	0.014	(0.256)	0.006	(0.430)	-0.021	(0.245)	-0.028	(0.071)
Immigrant student	0.144	(0.198)	0.150	(0.124)	0.181	(0.244)	0.024	(0.114)
Birth month	-0.013	(0.011)	0.016	(0.011)	0.012	(0.010)	0.016*	(0.010)
Pre-university education	-0.028	(0.076)	0.083	(0.082)	-0.230***	(0.065)	-0.151**	(0.074)
School Characteristics:								
Average classsize	-0.005	(0.009)	0.012	(0.014)	-0.004	(0.005)	0.002	(0.011)
Fraction of girls	0.210	(0.256)	0.624	(0.430)	-0.134	(0.247)	-0.428	(0.349)
Fraction of immigrant students	-0.651***	(0.198)	-1.020***	(0.423)	0.181	(0.244)	0.097**	(0.490)
Cohort	0.035	(0.163)	0.170	(0.265)	0.122	(0.145)	0.336	(0.187)
Constant	1.012 ***	(0.323)	0.458	(0.423)	2.194***	(0.275)	1.929***	(0.331)
School Fixed Effects	No		Yes		No		Yes	
R^2	0.07		0.22		0.057		0.126	
Number of Observations	588		588		588		588	

Note: */**/** means statistically significant at the 10/5/1 percent level. Standard errors are clustered at the school level and are printed in parentheses.

estimates of model 2 show that Cultural and Artistic Education did increase the high cultural participation of students but the effect size of the intervention is small (approximately one more high cultural event). Comparing the estimation results of model 1 and 2, we find that the effect of the intervention tends to be somewhat larger when we include school fixed effects. Hence, the estimate coefficient that is associated with the intervention is downward biased due to differences at school and regional level. Apparently, for some schools (or regions) the cultural participation of students increased significantly less compared to other schools (or regions).

Student characteristics, such as gender, ethnicity and birth month do not influence differences in high cultural participation. The birth month result is interesting, because the change in high cultural participation seems to be comparable between older and younger students and therefore differences in cultural participation depend linearly on the students' age. This is exactly the identifying assumption we make in this study.

Because the composition of the class may change between the two measurement periods, we control for differences in class size and for differences in the fraction of girls and the fraction of immigrant students. The fraction of girls and class size do not affect changes in cultural participation significantly. However, the change in high cultural participation is influenced by the fraction of immigrant students in school.

We do not find that Cultural and Artistic Education influences the popular cultural participation of students. When we consider the school specific characteristics, we find that the change in popular cultural participation is influenced by the fraction of immigrant students in school. Immigrant students may have substituted high culture for popular culture and, since we have controlled for the effect of the intervention, this is likely a preference effect. Students in pre-university tend to participate less in popular cultural activities. Also month of birth is related with the change in popular cultural participation, but the estimate is close to zero and only marginally significant. Damen et al. (2010) examine how Cultural and Artistic Education correlate with the cultural participation of students in the Netherlands, and their findings are roughly consistent with ours.

If the finding that the 'free-choice' intervention increased high cultural participation of students is consistent with the traditional economic principal-agent theory, then students are intrinsically motivated to participate in high cultural events when visiting arts and culture for a school course. However, it may be that the intervention was meant to be a 'free-choice' intervention, but that in reality schools forced students to participate in high cultural activities. A subsample of 175 students answered a subjective question on whether

they could freely choose the cultural event of their choice. The answers revealed that 94 percent of the students were free in their choice, while for 6 percent of the students schools were decisive in the choice of cultural event. This subjective question roughly suggests that the intervention really was a 'free-choice' intervention and that the observed increase in high cultural participation was not (entirely) realized by the schools forcing their students to participate in these events.

Another reason why the intrinsic motivation of students may not have caused the effect measured is related to the subsidy received by the students. There is no information on whether the credit on the smartcard (25 Euro) together with the discount students receive by using their Cultural Youth Passport was enough to pay the entrance fees of all the cultural activities students participated in. It is possible that the increased participation in high culture does not represent the students' preferences, but instead represent the preferences of the parents. For example, parents could have decided to give a contribution for high cultural events, as they consider these events to have educational value. However, two arguments support the idea that it is likely that our findings represent the intrinsic motivation of students for high culture. The first argument is because cultural events are heavily subsidized for students in the Netherlands, and so parental contributions may not have been necessary. More importantly, and second, it is not clear why students who are not motivated to participate in high culture to begin with, would choose a high cultural activity and then ask a contribution to their parents. We therefore conclude that the effect we find represents (at least partly) the intrinsic motivation of students for high culture when involved in an arts course.

Do students become more interested in high culture as they get older?

Students may become more interested in artistic and cultural events as they become older, and it can be argued that the estimates in Table 3 that are associated with high cultural participation are driven by this age effect. In this section we test this argument by using information of students from the first cohort who were asked three, instead of two times how often they participate in high and popular cultural events. The first two interview moments were in September 1998 and March 1999 and in these interviews students are asked how often they participated in cultural events during the past twelve months. During these pre-intervention periods these students did not participate in Cultural and Artistic Education. The third interview moment was in September 2000 and in this interview the cultural

Table 4: **Descriptive Statistics**

	Sub-sample 3 interviews		Whole sample 2/3 interviews		
	Mean	**St.Dev.**	**Mean**	**St.Dev.**	**|Diff.|**
Student					
Female Student	0.53	0.50	0.54	0.50	0.03
Immigrant Student	0.12	0.32	0.15	0.36	0.03
Birth Month	6.69	3.26	6.61	3.36	0.08
Cultural participation					
0-High Culture	2.49	3.70	2.56	3.86	0.07
1-High Culture	3.45	3.43	3.38	3.59	0.14
Number of Students	67		294		

Note: */**/*** means statistically significant at the 10/5/1 percent level.

participation of students is measured twelve months after the start of the intervention.

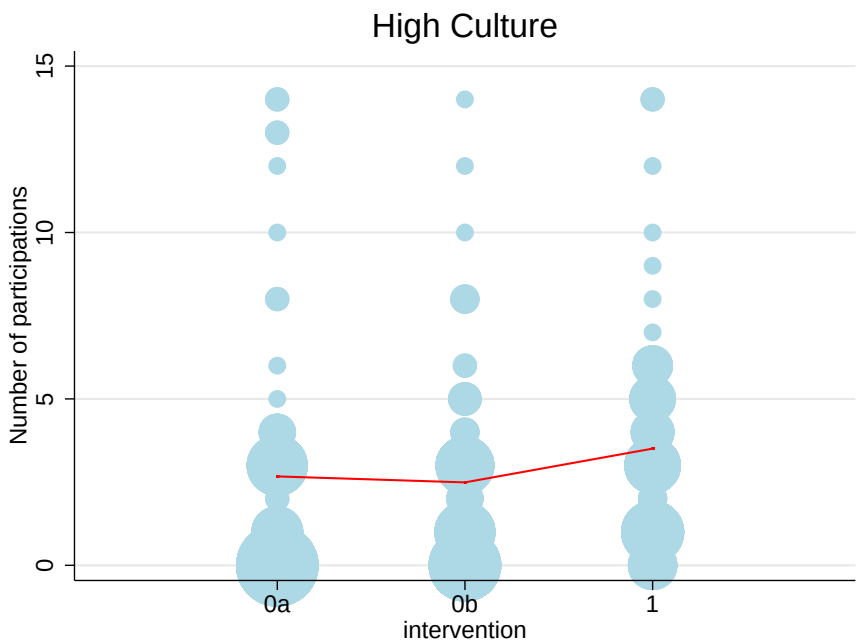
A drawback of this robustness check is that we verify how 'becoming older' influences our estimate for 67 students of the first cohort, using three observations per student, and, as a consequence, we assume that the findings for these students are representative for whole student sample. Therefore, in Table 4 we compare the 67 students for whom we have three observation moments with the whole student sample, for whom we have at least two observation moments. We find that the two student samples are comparable in gender, ethnical background and birth month. In Table 4, we furthermore compare the average participations in high culture for both student samples for the first observation moment and the last observation moment. This is important, because the effects in Table 3 are conditional on these observation moments. We find that the participation of the sample of students for who have 3 observation moments is comparable to that of the sample of students for who we have at least two observation moments. We note that we focus only on high cultural participation. First of all, because this is the main focus of the study at hand, but more importantly, and second, because Table 3 showed that the intervention does not affect the participation in popular culture. Hence, there is no need to disentangle the effect of the intervention and the age effect for the participation in popular culture.

In Figure 2, we show the participation in high culture for the students for whom we have three moments of measurement. The interpretation of this figure is similar to Figure 1, with this exception that the first two observation moments are denoted by $0a$ and $0b$. The zero indicates that both moments refer to a period without an intervention and the a and b refer to the first and second measurement, respectively. Let us assume for the

moment that participation changes between periods in the figure can only be the result of the intervention, an age effect or both. It then implies that the change in cultural participation between $0a$ and $0b$ can only be caused by an age effect, since in both periods there was no intervention. A change in cultural participation between $0b$ and 1, however, can be caused by the intervention, an age effect or both. Under the assumption that cultural participation depends linearly on the students age, we can then test whether the change in cultural participation between $0b$ and 1 offsets the change between $0a$ and $0b$, and thereby we test whether students become more interested in high cultural events as they become older. More formally, we test whether the slope of the line drawn between $0b$ and 1 differs significantly from the slope of the line drawn between $0a$ and $0b$. If we were to find that both slopes are not significantly different, then we can not reject that a good approximation of the change in cultural participation between $0a$ and 1 is a straight line, which is consistent with the idea that cultural participation depends linearly on the students age.

The figure shows that the cultural participation remains stable between $0a$ and $0b$, and then increases between $0b$ and 1. So an eye-ball analysis suggests that the intervention caused students to participate more in high culture. Extrapolating this result to the whole sample, it means that the effect of the intervention shown in Table 3 is not the result of an age effect. However, as we have explained above, we do not control for regional and school effects and therefore we should perform a more formal analysis.

Figure 2: **High Cultural Participation with Three Moments of Measurement**



Because we have three observation moments for each student we perform an analysis taking first differences and estimate the following two equations simultaneously:

$$\begin{aligned} \Delta Y_{is} &= \beta_{0s} + \Delta S_{is}\beta_{1s} + \Delta X'_{is}\beta_{2s} + I'_{is}\beta_{3s} + \nu_{is} \\ &= \gamma_0 + I'_{is}\gamma_1 + \nu_i \end{aligned} \tag{4}$$

where $s = 1, 2$ and refers to the first and second evaluation period, respectively. The first period difference in high cultural participation, i.e. $s = 1$, represents $Y_{i0a} - Y_{i0b}$ and for this period the variable I equals zero because none of the outcomes are influenced by the intervention. The second period difference in high cultural participation, i.e. $s = 2$, represents $Y_{i0b} - Y_{i1}$ and for this period the variable I equals one because outcome Y_{i1} is influenced by the intervention. It follows that the estimation coefficient that is associated with I measures if the slope in period one differs significantly from the slope in period two.

Again the error term, v_i is assumed to be normally distributed with mean zero and variance σ_ϵ^2 and all explanatory variables are assumed independent of the error term. Furthermore, S represent characteristics at the school and class level and X represent characteristics at the student level and these characteristics are assumed to have a constant effect on ΔY_{is},

Table 5: First Difference Estimation Results

	model A		model B		model C	
Intervention	0.258**	(0.108)	0.283**	(0.110)	0.259*	(0.113)
Constant	0.062	(0.050)	-0.004	(0.050)	-0.405	(0.363)
School Fixed Effects	No		Yes		Yes	
Fraction of Immigrant students in Class	No		No		Yes	
R^2	0.058		0.059		0.064	
Number of Observations	134		134		134	

Note: */**/** means statistically significant at the 10/5/1 percent level. Standard errors are clustered at the student level and are printed in parentheses.

i.e. the effect of S_{i0a} on $\Delta Y_{is}$is assumed to be equal to the effect of S_{i0b} on ΔY_{i1}, which is a rather non-restrictive assumption.

Finally, we assume that $\Delta S_{is} = S_{i0a} - S_{i0b} = S_{i0} - S_{i1} = 0$ and that $\Delta X_{is} = X_{i0a} - X_{i0b} = X_{i0} - X_{i1} = 0$, i.e. we assume that school and student characteristics do not change over time. Due to this assumption ΔS_{is} and ΔX_{is} drop out the equation such that we obtain the second equation in (4). By making this assumption we estimate less parameters, which improves the accuracy of our estimates. To be specific, if we would not make this assumption and take up the same variables as in equation (3) we would have to estimate 7 more parameters while we only have 134 observations.

From Table 3 we know that only the fraction of immigrant students in the class influences the difference in high cultural participation. Therefore, we estimate three models. First we estimate the second equation in (4) with clustered standard errors at the student level (model A). Then we estimate model A again and include school fixed effects (model B). Then we estimate model B again and include the fraction of immigrant students in the class as a control variable, to see whether this changes our result. We note that in each model we have 134 observations for 67 students in 6 schools. It follows that we estimate 2 parameters in Model A, 7 parameters in model B, and 8 parameters in Model C. The estimation results are shown in Table 5.

For all three estimation models we find that the intervention dummy is positive and (marginally) significant and so the increase in high cultural participation in period two offsets the increase in period one. We find that including school fixed effects and including a variable that indicates the fraction of immigrant students in the class do not affect the estimate that is associated with the intervention. The effect of the intervention is smaller than in Table 3 and this may be due to an age effect, but may also be due to the number of

observations, which is smaller.

On the basis of the Table 5 results we reject the hypothesis that a good approximation of the change in cultural participation between $0a$ and 1 is a straight line. We cannot empirically test whether high cultural participation depends linearly on age (although the non-significance of birth month in Table 3 points in this direction) and therefore conclude that Cultural and Artistic Education has increased the participation of students in high culture, assuming that high cultural participation depends linearly on the students' age. The impact of the intervention is, however, small.

5 Concluding remarks

This study examines whether Cultural and Artistic Education that was implemented by the Dutch Ministry of Education, Culture and Science in 1999 caused students to participate more in events that are generally seen as high or conventional cultural events (museum, classical music, opera, ballet and theater). The intervention required *all* fourth grade students in higher secondary education to participate in Cultural and Artistic Education, and required students to participate in cultural events. A unique feature of the intervention was that the cultural participation of students had to reflect their own interest and as a consequence, more participation in high culture was not guaranteed. The traditional economic principal-agent theory predicts that students participate more in high culture only if the incentives that are given to them are in line with their preferences. Because students were free to choose the type of cultural event they participated in, it follows that the intervention relied on the intrinsic motivation of students to participate in high cultural events, while there was no reason to assume that this intrinsic motivation is present given the existing literature (see, for example, De Haan and Van Den Broek, 2003, Dimaggio and Mukhtar, 2004; National Endowment for the Arts, 2009).

The data used in this study are panel data collected for 26 schools in nine middle sized municipalities in the Netherlands. As such, we have a non-representative sample of schools and are able to determine the local average treatment effect only. Identification of the effect of Cultural and Artistic Education on high cultural participation is established by using a third observation moment for a sub-sample of students. This third observation moment allows us to distinguish between the effect of the intervention itself and the effect that students become more interested in high culture as they get older.

We find that Cultural and Artistic Education did increase the student participation in

high culture, but the effect is small (approximately one more high cultural event). We do not find that students participated more in popular culture due to the intervention. Furthermore, we find that student characteristics, such as gender, ethnicity and birth month, do not affect the observed differences in high cultural participation over time. The characteristic that did seem to matter was the fraction of immigrant students in the class: the lower this fraction, the more students participate in high cultural events.

If the finding that the 'free-choice' intervention increased high cultural participation of students is consistent with the traditional economic principal-agent theory, then students are intrinsically motivated to participate in high cultural events when visiting arts and culture for a school course. A subjective question confirmed the 'free-choice' nature of the intervention, in the sense that students experienced that they were free to participate in a cultural event of their choice. Unfortunately, there is no information on whether the credit on the smartcard (25 Euro) together with the discount students receive by using their Cultural Youth Passport was enough to pay the entrance fees of all the cultural activities students participated in. The consequence could be that the increased participation in high culture does not represent the students' preferences, but instead represent the preferences of the parents. For example, parents could have decided to give a contribution for a high cultural event, as they consider such an event to have educational value. However, there are two reasons why it is likely that our findings represent the intrinsic motivation of students for high culture. First of all, cultural events are subsidized for these students in the Netherlands, and so parental contributions may not have been necessary. More importantly, and second, it is not clear why students who are not motivated to participate in high culture to begin with, would choose a high cultural activity and then ask a contribution to their parents. We therefore conclude that the effect we find represents (at least partly) the intrinsic motivation of students for high culture.

Finally, we comment that this study examines the short term effect of the intervention. Even though we find that the intervention has an effect on high cultural participation, it is not clear whether this influences the high cultural taste of students on the long term. For further research it would therefore be interesting to examine on the long term effects of Cultural and Artistic Education.

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