Who Participates and how Much? Explaining Non-attendance and the Frequency of Attending Arts and Heritage Activities

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Abstract

In this paper, we propose the use of the zero-inflated negative binomial (ZINB) model to analyze cultural participation patterns in arts and heritage activities. This model allows us to analyze the difference between "true" non-attendees and possible attendees, while simultaneously allowing us to analyze the frequency of participation for possible attendees. We use data from the "Participation Survey in Flanders 2009" (N = 2047) to analyze the effects of different types of capital (cultural, social, and economic) and work and family related variables on both dimensions of arts and heritage participation in a working population, while taking gender differences into account. The group of true non-attendees consists of people with low levels of cultural, economic, and social capital and we do not find a gender difference regarding the likelihood of being a true non-attendee. Cultural and social capital are also important factors to explain the frequency of participation, but economic capital is not. Furthermore, women show higher frequencies of participation, and the effects of work and family related variables differ for men and women. Women are inclined to participate less when they have children and men are inclined to participate less when they have a full-time job.

Introduction

In the sociology of stratification, public attendance in the arts is usually classified as a form of symbolic consumption that generates a certain amount of status for the participating audience (Bourdieu, 1971, 1984; Chan, 2010; Collins, 2000; DiMaggio, 1982; Lizardo, 2008). Only a select proportion of the population attends these activities, and through participation, attendees distinguish themselves from non-attendees. The "cultural capital paradigm" of Pierre Bourdieu provides the most important sociological perspective to describe the generation of social distinction through cultural participation (Bourdieu, 1973; Bourdieu, 1984, 1986, 1987). The audience for the arts has developed an aesthetic disposition through cultural socialization processes in a culturally-oriented environment. This generates cultural capital that can be transposed into social or economic capital, and the interplay between these three forms of capital leads to more favorable positions in society. Cultural capital is highly selective, because only a relatively small proportion of the population develops an enthusiasm for "legitimate" culture. Other groups, who occupy less favorable positions, are excluded from "the cultural game". They will dismiss cultural participation in legitimate art forms as "not for the likes of us" and have no particular interest in attending these activities (Van Steen and Lievens, 2011).

Most contemporary cultural institutions and cultural policy strategies aim to break down this "elitist" barrier and develop programs to expand and diversify their audience (Alexander, 1996; Alexander and Bowler, 2014). Constraints to visiting these activities need to be eliminated as much as possible, in order to lower the threshold for cultural participation. The most manageable barriers for these institutions and policymakers tend to be entry prices and expanding the availability of activities and products to combat respectively monetary and time constraints (Alexander and Bowler, 2014; Bianchi, 2008). However, it is questionable whether lowering these barriers increases the appeal for the group of non-attendees. In line with the cultural capital paradigm, an aesthetic disposition provides the initial interest to participate in arts and heritage activities, and additional contextual factors, such as time and budget constraints, could influence the frequency of attending cultural activities for people who already have this initial interest (Bianchi, 2008; Kraaykamp et al., 2008).

This would imply that targeting practical and contextual constraints might lead to more frequent visits by the audience that already exists, but not to an expansion of the audience itself.

Furthermore, barriers and motivations to participate in cultural activities might differ for men and women. A recurring finding in research on cultural consumption is that compared with men, women have a stronger interest in legitimate culture and are inclined to visit more cultural events (DiMaggio, 2004; Roose and Vander Stichele, 2010; ter Bogt et al., 2011). This gender difference is usually explained at the intersection of more general explanations for cultural participation, such as cultural reproduction and class differences (Christin, 2012; Silva, 2005; Tepper, 2000). For women, the development of cultural capital in the form of aesthetic dispositions could have more relative value than economic capital, because the realm of culture has more female connotations, whereas the realm of economics has more male connotations. Because parents are aware of these differences, they invest more in the development of this disposition for their daughters, which leads to gendered cultural socialization patterns and a stronger propensity for women to become cultural participants.

According to this explanation, it can be expected that women will have a stronger initial interest in cultural participation. Nevertheless, it has also been argued that women face more barriers to public attendance of cultural activities, because of time constraints (Bihagen and Katz-Gerro, 2000; Shaw, 1994). Full-time employment and family obligations related to childcare have the strongest impact on the time available for public leisure activities. Because women tend to be responsible for a larger share of household work, they have less available time for leisure activities that are not home based (Green et al., 1990). Full-time employment can also produce time constraints, but cultural capital can function as an asset in some occupational settings and this could cancel out the time-constraining effect. If this is especially true for female employment, women might be less inclined to decrease their cultural participation if they work full time (Collins, 1988, 2004). Again, in order to comprehend these processes, it is necessary to distinguish the influence of these factors on the propensity to become a cultural participant and their influence on the frequency of visits by these participants.

In this paper, we analyze attendees and non-attendees of cultural activities, and simultaneously the rates of participation of attendees, and we disentangle the gendered dynamics in the explanatory factors for cultural consumption. First, we expand on the arguments given above and formulate a number of hypotheses on factors related to non-attendance and frequencies of attendance. Next, we provide an overview of our research strategy and introduce the zero-inflated negative binomial (ZINB) model with interaction terms as the most appropriate model to test these hypotheses. We conclude with a discussion of the results and their relevance for the study of cultural participation patterns.

Theoretical Background

The cultural capital model: Possible attendees vs. non-attendees

Cultural sociologists have studied cultural consumption patterns extensively over the last three decades and empirical research on the subject has identified a number of factors that influence different types of cultural participation. The most important set of explanatory factors focuses on the reproduction mechanisms behind cultural participation (Aschaffenburg and Maas, 1997; Bourdieu, 1973; Bourdieu, 1984, 1986; Daenekindt and Roose, 2014; Kraaykamp and van Eijck, 2010; Willekens and Lievens, 2014). Cultural participation is studied as an operationalization of cultural capital that functions as a status generating “currency” for the upper classes, and which is acquired

during early socialization in the family and in the education system. Cultural socialization processes lead to an incorporated aesthetic disposition and this disposition is a fundamental requirement in order to understand and enjoy cultural activities or products. People who do not have this aesthetic disposition will not have an interest in culture and therefore they will not participate in cultural activities (or will only participate in a limited number of lowbrow activities). This aesthetic disposition will also help upper-class children to succeed in the education system, because formal education rewards a familiarity with formal culture and institutionalizes this embodied disposition into more prestigious educational degrees (Bourdieu, 1973; Bourdieu, 1984). Therefore, the school functions as the most important secondary socialization institute in terms of understanding the development of a culturally-oriented habitus. However, a number of authors have criticized this deterministic reproduction view of education and have contested that schooling can be an independent source of cultural capital, because it coincides with – and provides the necessary information-processing capacities to appreciate – cultural activities (DiMaggio, 1982; Ganzeboom, 1982). Nevertheless, family background and education level can be considered as the most important factors to explain an interest in "legitimate" or highbrow cultural forms.

Thus, according to the cultural capital paradigm, only a cultured faction of the upper and the middle classes will develop a disposition to participate in cultural activities, while other class factions will not. Cultural participation functions as a form of capital, because it is developed in opposition to the tastes and preferences of the lower classes. The lower classes usually shun formal cultural expressions as being irrelevant to their life conditions, and develop a "taste of necessity" with little room for aesthetics (Bourdieu, 1984). This opposite taste pattern will exclude them from upper-class social circles, which creates a structural homology between the symbolic distinctions and social distinctions (Bourdieu, 1984; Lamont and Molnar, 2002; Pachucki et al., 2007). People who have cultural capital occupy more powerful positions in the social space, because this form of capital is convertible into economic capital and social capital (Bourdieu, 1986). However, this interchangeability of forms of capital also works in the other direction, which implies that economic capital and social capital can also generate cultural capital. For example, when a person acquires more economic capital, he or she might gain access to new social networks and this could lead to an incentive to invest in cultural capital and start participating in cultural activities. At the other extreme, people who score low for all three forms of capital will be inclined to reject formal cultural expression, which creates a strong barrier to attending arts and heritage activities. This brings us to our first hypothesis:

Hypothesis 1.1. Cultural, economic, and social capital have a positive effect on the likelihood of becoming an attendee of arts and heritage activities.

Another factor related to cultural participation that has received increased attention in the last decade, is gender variations in cultural preferences and participation patterns. A number of studies have shown that highbrow cultural participation is more prevalent among women (Bihagen and Katz-Gerro, 2000; Christin, 2012; Dimaggio and Mohr, 1985; Roose and Waege, 2002). One traditional explanation for this gender gap in cultural participation is gender-specific socialization patterns in the family (Collins, 1988, 1992; McHale et al., 2003; Mohr and Dimaggio, 1995; Tepper, 2000). Girls are socialized in gender roles that emphasize compliance with formal culture, which leads to a stronger inclination to adopt an aesthetic disposition (Collins, 2004; Kaufman and Richardson, 1985; Weitzman, 1979). Boys on the other hand, are socialized in gender roles that stress self-gratification, which requires a degree of resistance to authority (Mickelson, 1989). Therefore, they will be less inclined to adopt an aesthetic disposition that leads to an interest in formal culture. This model

suggests that girls are more susceptible to cultural reproduction processes within the family. In a classical study, Dimaggio (1982) shows that early exposure to the arts has a stronger impact on the grades of upper-class female students than on those of male upper-class students, which suggests that cultural capital is transmitted more easily to girls than to boys. Thus, the gendered socialization model predicts that women are more liable to cultural reproduction processes in the family and will be more inclined to participate in cultural activities if they have been brought up in a family where cultural capital is present. Therefore, we formulate the following two hypotheses:

Hypothesis 1.2. Women have a higher likelihood than men of becoming attendees in arts and heritage activities.

Hypothesis 1.3. The positive effect of parental cultural participation on the likelihood of becoming an attendee in arts and heritage activities is stronger for women than for men.

The individual-decision model: Frequency of cultural participation by possible attendees.

The cultural reproduction model explains the genesis of an aesthetic disposition that leads to an initial interest in cultural activities. However, it is not only dispositions that determine the actual choice to participate in a cultural activity. There are also a number of internal and external factors that will influence to what extent a disposition results in social action. In other words, a number of additional motives and barriers can have an effect on the propensity of people to participate in cultural activities. These factors have been studied more extensively in cultural economics than in cultural sociology (for an exception: Kraaykamp et al., 2008). Economic research uses individual-decision models to determine the consumer demand for cultural activities (Ateca-Amestoy, 2008; Ateca-Amestoy and Prieto-Rodriguez, 2013; Seaman, 2005). According to this model, cultural participants differ in their cultural needs and their actual participation patterns are determined by the available resources and restrictions to satisfy this need. Ateca-Amestoy (2008) finds three important resources to explain the frequency of attending theatre performances: time, money, and social and cultural capital. Thus, all three forms of capital are recognized as important motivations for cultural participation, but practical constraints such as time restrictions are also taken into account. The amount of capital a person possesses will not only result in the presence of an incentive to participate, it will also affect the strength of this incentive. On the other hand, time constraints can obstruct the practical possibility to participate, which could lead to lower frequencies of cultural attendance. These time constraints are often related to family and work obligations (Kraaykamp et al., 2008; Kraaykamp et al., 2009). Having a full-time job decreases the amount of available leisure time, which implies that the allocation of this time becomes more competitive. Childcare is another, family-related time-consuming obligation that could also restrict the frequency of visits to cultural attractions. The predictions of the individual-decision model can be summarized in the following hypotheses:

Hypothesis 2.1. Cultural, economic, and social capital have a positive effect on the frequency of participating in arts and heritage activities.

Hypothesis 2.2. Having children has a negative effect on the frequency of participating in arts and heritage activities.

Hypothesis 2.3. Working full time has a negative effect on the frequency of participating in arts and heritage activities.

The individual-decision model takes prior experiences of cultural activities or cultural socialization as one of the most important motivators for participating in cultural activities. Therefore, the same argument about gendered socialization patterns can be made to explain higher frequencies of women to visit arts and heritage attractions. Furthermore, women might have a stronger motivation to develop the cultural capital they have already acquired through cultural socialization, because they receive relatively greater benefits from cultural capital in later life. The development of cultural capital enhances women's opportunities on the marriage market (Dimaggio and Mohr, 1985) and the labor market, because cultural capital is valued more strongly in "feminine" jobs (Collins, 1988). Men on the other hand, benefit more strongly from direct investment in the social and the economical realm (Erickson, 1996). Therefore, it can be expected that parental participation in the arts will have a stronger and more lasting influence on the cultural participation of women, which will lead to more frequent participation in arts and heritage activities. First, because girls are more strongly encouraged to develop an aesthetic disposition and second, because they benefit more strongly from this disposition in later life. Thus, according to the gendered socialization model, we can formulate the following hypotheses:

Hypothesis 2.4. Women attend arts and heritage activities more frequently than men do.

Hypothesis 2.5. The positive effect of parental art participation on the frequency of participation in arts and heritage activities is stronger for women than for men.

This gender difference in the propensity to visit cultural events can also have a reciprocal influence on the frequencies of partners attending cultural activities. The individual-choice model focuses on personal characteristics to explain individual choices to participate in cultural activities, but most of the time, people do not participate alone. Audience research indicates that cultural activities are more often visited by couples than by single individuals (Roose and Waege, 2002). Among these couples, women tend to take the initiative to attend cultural activities, especially when they have a larger amount of cultural capital (Silva and Le Roux, 2011). Furthermore, Upright (2004) finds that women's amount of cultural capital will not only influence joint attendance of cultural activities, it will also have a positive influence on individual visits by the male partner. Therefore, we can expect that married men will show higher frequencies of cultural participation. Because the allocation of couples' leisure time is usually the result of a tradeoff between the preferences of both partners, we can expect that the frequency of visits for women might actually be lower if they are married.

Hypothesis 2.6. Being married has a positive effect on the frequency of attending arts and heritage activities for men and a negative effect on the frequency of visits for women.

Time constraints related to family obligations can also have a differential effect for men and women (Shaw, 1994). The effect of young children in the household could be a stronger barrier for female participation, because women invest more time and personal resources in childcare than men do (Craig, 2006; Silva and Le Roux, 2011). Young children in particular require the presence of at least one supervising parent at home, and this is more often the mother than the father. Because mothers are more tied to the home when there are children, they will opt for home-based leisure activities and reduce their participation in public activities (Green et al., 1990). Men on the other hand, are less inclined to reduce their social activities when they have children at home (Craig, 2006), so we do not

expect a decline in cultural participation for men when there are children present in the household. This brings us to the following hypothesis:

Hypothesis 2.7. Having children has a stronger negative impact on the frequency of participation in arts and heritage activities for women than for men.

Full-time employment can also cause time restrictions with regard to engaging in cultural activities, because it reduces the availability of leisure time. However, in some cases cultural participation might be a leisure activity that is less prone to time constraints related to employment, because cultural capital can be deployed as an asset in certain employment settings. Collins (1988, 1992, 2004) argues that this effect might be stronger for women because they are more often involved in "front stage" work that requires first-line impression management, which implies self-indoctrination, self-idealization, and formal manners. This produces a stronger gender difference in cultural participation by the working class, where men are more often employed in "backstage" blue-collar work, in which formal culture is rejected in favor of a distinctive working-class culture. Lizardo (2006) suggests that this "front stage" effect for women is also present in the economically dominant upper-class. He observes that women are less inclined than men to decrease their participation in cultural activities if they are employed in more market-oriented fields. For men, cultural participation generates less return on investment in male occupations, which makes full-time work more likely to function as a time constraint. In line with this argument, Kraaykamp et al., (2009) show that working part time has a positive impact on the cultural participation of men and their partners, while this is not the case for women. Therefore, we formulate the following hypothesis regarding full-time employment:

Hypothesis 2.8. Working full time has a negative effect on the frequency of attending arts and heritage activities for men, but not for women.

Data and methods

Data

To test our hypotheses we use data from the "Participation Survey in Flanders 2009" (Lievens and Waege, 2011). This dataset consists of 3,194 randomly selected Flemish respondents aged between 14 and 85, who were questioned using computer assisted face-to-face interviewing (with a response rate of 68%). Because our research questions relate to the population that is active in the labor force, we excluded respondents who were enrolled full time in education or who were above the pensionable age (65) at the time of interview. After deletion of cases with missing values on the variables in our analyses, we retain a dataset of 2047 cases. The respondents were asked about their cultural participation patterns, taste preferences, and background characteristics.

Dependent variable

Our dependent variable is a count variable of the number of visits to arts and heritage events in the six months prior to the interview. The selection of highbrow activities includes visits to art museums or exhibitions, classical concerts, theater, dance and ballet performances, and heritage activities (heritage

buildings, lectures, and walks). This results in a count variable with a mean of 3.69 and a standard deviation of 6.58. The minimum is 0 and the maximum is 108 visits.

Independent variables

We include two variables as indicators of the prior amount of cultural capital. The first variable is years of schooling, scaled between 1 and 11 (1 = in the education system up to the age of 14), which represents institutionalized cultural capital. The second variable is parental cultural participation, indicating cultural capital acquired through socialization in the family of origin. The respondent was asked if he or she recalled whether their parents attended the different arts and heritage activities when the respondent was between 12 and 14 years old. We include one dummy for parental arts participation, which is 1 when one of the parents participated in at least one arts or heritage activity. Social capital is included as a trichotomous variable, indicating the number of people the respondent generally spent their leisure time with (1 = 0 to 4 people, 2 = 5 to 10 people, 3 = more than 10 people). Economic capital is included as an evaluation of household income. Using a 7-point scale, respondents were asked to indicate to what extent they were able to manage on their household income (1 = very difficult, to 7 = very easy). This operationalization provides a proxy for the amount of money available in the household for leisure pursuits. Gender is included as a dummy variable (1 = female) and age is a continuous variable scaled between 1 and 47 (1 = 18 years old; 47 = 65 years old).

Table 1: Frequencies of categorical independent variables

Variables	Categories	*N*	*%*
Gender	Male	1,041	50.85%
	Female	1,006	49.15%
Arts participation parents	No	1,130	55.20%
	Yes	917	44.80%
Social Network	0 to 4 people	660	32.24%
Social Network	5 to 9 people	574	31.75%
Social Network	10 or more people	813	39.72%
Married	No	809	39.52%
	Yes	1,238	60.48%
Children	No	1,468	71.71%
	Yes	579	28.29%
Employment	No work	535	26.14%
Employment	Part time	736	36.67%
Employment	Full time	776	37.91%

Table 2: Descriptive statistics for continuous dependent variables

Variables	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Age	27.13	12.30	1	48
Years of education	6.35	2.76	1	11
Income	4.97	1.16	1	7

Table 3: N of interaction terms

Interaction terms	*N*	%
Female × arts participation		
Parents	427	20.86%
Female × marriage	624	30.48%
Female × children	292	14.26%
Female × no work	314	15.34%
Female × part-time work	465	22.72%
Female × full-time work	227	11.09%

Being married is included as a dummy variable, which is coded 1 for married respondents. Having children is also included as a dummy variable, coded 1 when there was a child younger than 12 years old present in the household. Employment status is a trichotomous variable: 1 = no work (less than 6 hours paid work per week), 2 = part-time work (7 to 36 hours of paid work per week), and 3 = full-time work (37 or more hours of paid work per week). An overview of these variables is presented in Table 1.

The zero-inflated negative binomial model

In order to select a suitable model to test our hypotheses concerning cultural participation, we need to take into account the nature of our dependent variable. Cultural participation is operationalized as a count variable of attendances of cultural activities in the six months prior to the interview. The Poisson model is a commonly-used technique for analyzing count data. The problem here is that nearly half of the population had not participated in these activities in Flanders (Lievens and Waege, 2011). In our model, 35 percent of the respondents did not participate in any arts or heritage activity in the six months. Furthermore, some respondents engaged in a very large number of activities (maximum = 108). Therefore, we can expect overdispersion and a disproportionate amount of zero values in the dependent variable. The negative binomial model has been suggested as an alternative to analyze the frequency of participation, because it can handle overdispersion of the data by taking the log of the expected counts (Christin, 2012; Land et al., 1996) However, when half of the sample scores zero, the estimates can still be biased and the negative binomial model might not converge (Atkins and Gallop, 2007; Elhai et al., 2008).

One possible solution is to transform the dependent variable into a dummy variable that distinguishes non-participants from participants. In this way, we can fit a binary logistic regression model with interaction terms. However, this entails a major loss of information because the frequency of

participation cannot be taken into account. A second possible alternative is to construct a dependent variable with more than two categories (for example: non participants, occasional participants, and frequent participants) and use a multinomial logistic regression model to analyze the different categories of cultural participation. However, we need to include interaction terms in our model, and the interpretation of interaction terms in a multinomial logistic regression model is not straightforward (Jaccard, 2001). Furthermore, we expect that there are two related processes at work that explain cultural participation, which need to be modelled simultaneously (Ateca-Amestoy, 2008; Ateca-Amestoy and Prieto-Rodriguez, 2013). A large proportion of the excess of zero values in our dataset comprises respondents who do not have a disposition to participate in cultural activities, and the factors that explain their absence of participation might be different from those that explain the frequency of participation by possible attendees.

The zero-inflated negative binomial (ZINB) model offers a solution to the problem, because it allows us to model the effects of our dependent variables simultaneously on the propensity to never attend cultural activities and on the frequency of visits by people who do attend them (Ateca-Amestoy, 2008; Ateca-Amestoy and Prieto-Rodriguez, 2013). This type of model has already been widely applied in the sociology of health, to analyze mental health visits (Elhai et al., 2008; Elhai and Ford, 2007), smoking behavior (Sheu et al., 2004), and sick leave (Baetschmann and Winkelmann, 2012). Zero-inflated regression models integrate the logistic component of binary logistic regression and the Poisson or negative binomial model (Heilbron, 1994; Lambert, 1992). The logistic component is used to calculate the zero-inflated parameters that distinguish two latent groups (the "always zero" and the "not always zero"). The logistic component is also used to calculate weights to correct for the disproportionate amount of "zero" values, and these weights are implemented in the Poisson or negative binomial model. Accordingly, the ZINB model does not analyze the always zero group of non-attendees as a completely separate group (which is the case in hurdle models); it only accounts for the *excess* of zero values in the model. Therefore, the model makes a number of behavioral assumptions that fit with our expectations. We expect to find a group of "true" non-attendees (the always zero group) and a group of possible attendees (the not always zero group). Because not all respondents who score zero are necessarily "true" non-attendees (it is possible that they coincidently did not attend a cultural activity in the relevant period) it seems appropriate to expect that there are a number of possible attendees who score zero for the number of visits. We do expect that different explanatory factors are important to explain the excess of zero values than to explain the frequencies of visits (actual counts) of possible attendees. When we compare the ZINB model with the zero-inflated Poisson model and the ordinary negative binomial model, the ZINB model clearly stands out as the preferred model (see Appendix A).

We use parallel modelling in order to determine whether the dependent variables have a differential influence on non-participation and on the frequency of participation. In subsequent models, the relevant interaction terms are included to answer the research questions regarding differential gender effects. We add four interaction terms with gender: one with parental arts participation (Model 2), one with marriage (Model 3), one with having children (Model 4), and one with employment status (Model 5). Non-significant interaction effects are deleted in subsequent models.

Table 4: ZINB model: Odds rations based on maximum likelihood zero-inflation parameter estimates

		Arts and heritage									
		Model 1		Model 2		Model 3		Model 4		Model 5	
Intercept (1)		5.45	*	4.94	*	4.78	*	5.77	*	5.92	*
Gender	Male										
	Female	0.82		1.02		1.39		0.73		0.51	
Age		0.99		1		0.99		1		1	
Years of education		0.78	***	0.77	***	0.77	***	0.77	***	0.79	***
Arts participation parents	No										
	Yes	0.38	*	0.57		0.36	*	0.4	*	0.33	*
Income		0.8	*	0.79	*	0.79	*	0.79	*	0.79	*
Social Network	0 to 4 people										
Social Network	5 to 9 people	0.5	†	0.53	†	0.49	†	0.51	†	0.5	†
Social Network	10 or more people	0.36	**	0.35	**	0.35	**	0.36	**	0.36	**
Married	No										
	Yes	1.22		1.22		1.83		1.22		1.26	
Children	No										
	Yes	1.29		1.29		1.36		1.08		1.03	
Employment	No work	0.66		0.68		0.64		0.65		0.45	
Employment	Part Time	0.79		0.74		0.75		0.77		0.83	
Employment	Full time										
Gender × Arts participation parents	Female × Yes			0.44							
Gender × Married	Female × Yes					0.48					
Gender × Children	Female × Yes							1.63		1.89	
Gender × No work	Female × Yes									2.20	
Gender × Part time	Female × Yes									1.08	
Gender × Full time	Female × Yes										

† $p < 0.10$

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Results

In Table 4 we present the odds ratios of belonging to the always zero group (the "true" non-attendees). The first model includes all dependent variables without interaction terms. All forms of capital (cultural, economic, and social) reduce the odds of belonging to the always zero group. When the parents participated in cultural activities, the odds of belonging to the always zero group are lower (odds ratio = 0.38). The odds also become smaller by a factor of 0.78 for each additional year of education. Thus, both types of cultural capital have a negative effect on belonging to the group of non-participants. Economic capital also has a negative, significant effect: The odds of belonging to the group of non-participants are lower (0.80) when satisfaction with income is higher. People with a social network of 10 or more people also show significantly lower odds of belonging to the always

zero group (odds ratio = 0.38), compared with people having a social network of 0 to 4 people. These effects are in line with our first hypothesis: cultural, economic, and social capital are necessary to cross the threshold for participation in arts and heritage activities.

Table 5: ZINB model: Maximum likelihood negative binomial parameter estimates

		Arts and heritage									
		Model 1		Model 2		Model 3		Model 4		Model 5	
Intercept (2)		-0.54	**	-0.61	**	-0.52	*	-0.61	**	-0.65	**
Gender	Male										
	Female	0.18	*	0.29	**	0.14		0.28	***	0.39	***
Age		0.03	***	0.03	***	0.03	***	0.03	***	0.03	***
Years of education		0.13	***	0.13	***	0.13	***	0.13	***	0.14	***
Arts participation parents	No										
	Yes	0.32	***	0.44	***	0.31	***	0.31	***	0.29	***
Income		0.03		0.03		0.02		0.03		0.03	
Social Network	0 to 4 people										
Social Network	5 to 9 people	0.04		0.05		0.04		0.04		0.03	
Social Network	10 or more people	0.17	*	0.17	*	0.18	*	0.17	*	0.17	*
Married	No										
	Yes	-0.07		-0.07		-0.1		-0.07		-0.07	
Children	No										
	Yes	-0.38	***	-0.37	***	-0.36	***	-0.19		-0.23	*
Employment	No work	-0.18	†	-0.17	†	-0.19	†	-0.18		-0.22	
Employment	Part time	-0.18	*	-0.19	*	-0.19	*	-0.19	*	0.00	
Employment	Full time										
Gender × Arts participation parents	Female × Yes			-0.22	†						
Gender × Married	Female × Yes					0.08					
Gender × Children	Female × Yes							-0.38	*	-0.32	*
Gender × No work	Female × Yes									0.00	
Gender × Part time	Female × Yes									-0.35	*
Gender × Full time	Female × Yes										
Dispersion		1.26		1.26		1.27		1.26		1.25	

† $p < 0.10$

* $p < 0.05$

** $p < 0.01$

***$p < 0.001$

Gender and age do not have an effect on the odds of belonging to the group of non-attendees. Thus, it is not the case that women have higher odds of showing an initial interest in attending cultural activities. The same is true for the family and work-related variables. Being married, having children, or holding a part-time job has no discriminating effect on belonging to the group of possible attendees or non-attendees. In subsequent models, we also do not find significant interaction effects.

The same set of variables is included in the negative binomial part of the model to analyze the frequency of participation for the possible attendees. These results are presented as negative binomial regression parameters in Table 5. Arts participation by the parents (0.32) and years of education (0.13) also have a positive effect on the frequency of participation in arts and heritage activities. Thus, both forms of cultural capital have a positive effect on both the odds of belonging to the group of arts and heritage participants and the frequency of participation in these activities.

Social capital also has a positive effect on the frequency of cultural participation. Respondents with a social network of 10 or more people show higher rates of participation (0.17). Satisfaction with income does not have an effect on the frequency of participation by possible attendees. Thus, economic capital has a positive effect on belonging to the group of attendees but is not a prerequisite for showing high rates of participation in cultural activities. Therefore, we can conclude that our second set of hypotheses is confirmed for cultural and social capital, but not for economic capital.

Gender (0.18) and age (0.03) have a positive effect in the negative binomial part of our model. Among the group of possible attendees, women show higher frequencies of participation than men. Age also has a positive effect, which means that the rates of participation are higher among the older age groups. These results suggest that both age and gender are especially relevant to explain higher rates of participation among the group of possible participants and less relevant to explain the odds of belonging to this group.

Being married has no significant effect on the rates of cultural participation. Having children younger than 12 has a negative effect (-0.38), which means that parents with young children participate in cultural activities less frequently. Employment also has a significant effect. People who work part time participate less than people who work full time (-0.18). People who are not working also show lower rates of participation than people who are employed full time, but this effect is only borderline significant at a p-level of 0.10. We must therefore conclude that having children functions as a constraint to cultural participation, while working full time actually increases the frequency of participation.

In subsequent models, interaction terms are included to detect gender differences in the effects of cultural participation of the parents, marriage, having children, and employment. The inclusion of an interaction effect between gender and arts participation by the parents in Model 2 leads to some remarkable results. We have already observed that the interaction effect between gender and arts participation by the parents has no effect in the zero-inflated part of the model. Therefore, arts participation by the parents does not lead to a stronger inclination to participate in cultural activities for girls. In the negative binomial part of the model, we observe a negative interaction effect that is borderline significant ($p < 0.10$). Thus, the effect of arts participation by the parents is actually less strong for women, while the main effect for men increases to 0.44. This finding contradicts the gendered-socialization hypothesis, because it suggests that compared with women, men will participate more often if their parents participated in arts and heritage activities. However, because the effect is not significant at the critical level of 0.05, it is deleted in subsequent models.

In Model 3, an interaction effect between gender and marriage is included. This effect is not significant in either part of the model, so the hypotheses regarding the positive effect of marriage on the frequency of male cultural participation is rejected.

In the fourth model, an interaction effect between gender and having children is included. We observe a negative interaction effect in the negative binomial part of the model, while the main effect is no

longer significant. This indicates that the frequency of engaging in cultural activities is lower for the mother when there is a child present in the household, but this does not hold true for the father.

In the last model, an additional interaction effect between employment situation and gender is included. This effect also proves to be significant in the negative binomial part of the model. The interaction effect between gender and working part time is negative, while the main effect for working part time is no longer significant. This suggests that working part time only leads to lower participation frequencies for women and not for men. The interaction effect between having children and gender also remains significant, which indicates that lower rates of participation for women working part time is not reducible to family obligations related to childcare. The main effect of gender increases to 0.36, so we can conclude that women in particular show higher rates of cultural participation when they have no children and when they work full time.

Discussion

In this article, we disentangle two processes related to cultural participation. The ZINB model allows us to distinguish "true" non-attendees from possible attendees, and simultaneously study the frequency of visits by the possible attendees. This enables us to provide a more detailed outline of how traditional explanatory mechanisms for cultural participation work. We expected that different types of capital (cultural, social, and economic) are required to cross the threshold for cultural participation and at the same time provide a motivation to engage in these activities more frequently once this threshold has been crossed. Other factors that potentially lead to time constraints (employment and childcare) were expected to have an additional impact on the frequency of engaging in these activities. Our model mainly supports these expectations, but there are small deviations that require some elucidation.

The first hypothesis 1.1., is fully confirmed by our model. All three forms of capital are related to the division between structural non-attendees and possible attendees of cultural activities. Hypothesis 2.1. states that all three forms of capital will also influence the frequency of engaging in cultural activities, but this is only confirmed for cultural and social capital, and not for economic capital. Thus, people who have more money available do not attend more cultural activities. However, a certain amount of economic capital does seem to be a necessity in order to start participating in these activities.

The role of accumulated capital is one traditional mechanism to explain cultural participation, but recently gender has also received increased attention as a crucial intermediating factor in this process (DiMaggio, 2004). Our model shows that gender is less relevant to differentiate between "true" non-attendees and possible attendees, but that it does have an effect on the frequency of participation: women participate more frequently in cultural activities than men. A number of authors point to gendered-socialization patterns to explain this gender difference, and the expectations that can be deduced from this are formulated in hypothesis 1.3. and hypothesis 2.5, which state that arts participation by the parents has a stronger influence on both the propensity to become a cultural participant and the frequency of attendances for women. However, both hypotheses are clearly rejected in our model. With regard to the propensity to become a possible attendee, there is no initial gender difference, and arts participation by the parents has no differential effect on men and women. We do find a gender difference in the frequency of participation, but contrary to the gendered-socialization hypothesis, we find that the effect of cultural socialization is actually stronger for men (although the effect is only borderline significant). This provides us with firm confirmation that

gendered-socialization patterns are not an adequate explanation for the higher participation patterns of women.

We also expected to find a gendered effect of being married on the frequency of participation (hypothesis 2.6.). The inclination of women to participate in cultural activities more frequently could have a positive influence on their male partners, because of bargaining processes over the allocation of leisure time among married couples. However, we do not find any effect of marriage for men or for women.

A further exploration of the gender difference in the frequency of participation does seem to be possible through closer examination of the effects of childcare and employment. According to the individual-decision model, both factors produce time constraints that can lead to lower frequencies of participation (hypothesis 2.2 and hypothesis 2.3). The results show that this is the case for childcare, but not for employment. It appears that people who work part time (and theoretically have more time available), actually participate less in cultural activities than people who work full time. Furthermore, when we take gender into account, the negative effect of having children and working part time is stronger for women. This implies that the gender difference in the frequency of cultural participation is actually greatest among men and women who work full time and do not have children, because women tend to show lower rates of participation when they have children and when they work part time. One possible explanation for this is that women who choose to invest more in the household and family life (through childcare and household work), might invest more time and capital in home-based activities, which could explain their lower rates of participation in public cultural activities. On the other hand, women who work full time could have a stronger incentive to participate in public cultural activities, because female occupations generally require a stronger identification with "front stage" personality traits and formal culture (Collins, 1992, 2004; Lizardo, 2006). These findings suggest that further research on gender differences in cultural participation would benefit from a stronger focus on how cultural participation functions as a form of cultural capital in gendered occupational settings.

Conclusion

This empirical study offers some insights into the mechanisms that influence the choice to participate in cultural activities. First of all, "true" non-attendees need to be distinguished from people who do show some inclination to engage in cultural activities. People who do not have the necessary cultural, social, or economic capital have difficulties in crossing the threshold to become cultural participants, while practical and time constraints only appear to influence the frequency of visits by people who have already crossed this initial threshold. It is difficult for cultural institutions or cultural policymakers to downplay the importance of prior cultural and social capital with regard to starting to engage in cultural activities. There are possibilities to combat the constraints related to economic capital for structural non-attendees, through lowering prices. However, this could still produce limited effects, because it seems plausible that the interplay between the three forms of capital causes the social positioning of individuals as "true" non-attendees. Targeting economic constraints in isolation by lowering entry prices would not alter these social positions. Furthermore, the demand for cultural activities proves to be relatively non-dependent on price, which means that the tendency to participate in these activities does not seem to be very responsive to changes in ticket prices (Seaman, 2005). Our results also show that economic capital has no further influence on the decision to participate in cultural activities to a greater or lesser extent.

The models also give a more detailed assessment of the gender difference in cultural participation patterns. This gender difference is not present in the propensity of whether or not to engage in cultural activities. Women do tend to participate more often when they have the necessary cultural, social, and economic capital, especially if they work in full-time jobs and are not restricted by obligations related to childcare. This difference cannot be explained by gendered cultural socialization patterns, because we do not find any indication that parental participation in the arts has a stronger influence on the frequencies of visits by women.

These findings also suggest a reassessment of the gendered functioning of cultural capital in family life and employment settings is needed. The original cultural capital model does not pay sufficient attention to gender. In the works of Bourdieu, women are too often described as "capital bearing objects" instead of "capital accumulating subjects" (Lovell, 2000; Silva, 2005). From this viewpoint, the amount of women's cultural capital is described as a status symbol in a patriarchal family that can be used for cultural reproduction purposes. Our results contradict this view, because women who are involved in cultural reproduction processes (through childcare) actually participate less and they also do not enhance cultural participation by their partner. The fact that women who work full time do participate more often, suggests that women tend to invest more cultural capital in capital accumulation strategies than in cultural reproduction processes within the family. In order to fully comprehend the role of gender and cultural participation in the cultural capital paradigm, it is necessary to take these accumulation strategies into account.

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Appendix A

Model selection

In order to decide whether the ZINB model or the normal negative binomial model provided the best fit for our data, we calculated the Vuong statistic and the Clarke statistic. These are test statistics for non-nested count models that compare the predicted probabilities of counts for two different models. This V statistic can be used to test whether two models are equally close to the true model (H0), or one model is closer to the true model (Ha). We have to reject H0 (both models are equally close to the true model) and the ZINB model is preferred over the negative binomial model.

Table 1. Vuong and Clarke statistic for comparison of the NB and the ZINB model

Vuong Statistic	**Z**	**Pr>|Z|**	**Preferred Model**
Unadjusted	32.56	0.001	zinb
Akaike Adjusted	32.56	0.001	zinb
Schwarz Adjusted	32.56	0.001	zinb

Clarke Statistic	**M**	**Pr>=|M|**	**Preferred Model**
Unadjusted	2.04	<.0001	zinb
Akaike Adjusted	2.04	<.0001	zinb
Schwarz Adjusted	2.04	<.0001	zinb

We selected the ZINB model over the zero-inflated Poisson regression model because we expected dispersion in our dependent variable. These are two nested models, so we can compare the AIC statistics of both models to select the best one with the smallest AIC Value. The ZINB model is clearly the preferred model (difference in AIC = 3750.87).

Table 1. AIC for comparison of the ZI Poisson and the ZINB model

	AIC
Zero-inflated Poisson	12925.44
Zero-inflated NB	9174.57