Empirical Evidence of the Effects of Marriage on Male and Female Attendance at Sports and Arts*

Sarah S. Montgomery, *Mount Holyoke College*

Michael D. Robinson, *Mount Holyoke College*

Objectives. This article provides an examination of how men and women spend their recreational attendance time and how their behavior differs when they are single and married. The battle of the sexes model and the theory of artistic human capital acquisition from one's spouse both suggest that married individuals will have different patterns of attendance than singles. *Methods.* Using data from the Performing Arts Research Coalition, we estimate a number of models to examine the differences between male and female attendance at art, professional sports, and popular culture events for those single and married. *Results.* We find that single males prefer sports, while single females prefer the arts. As predicted by the battle of the sexes model, men are more likely and women less likely to attend art events after marriage. This increase in male attendance is also predicted by human capital models of attendance that argue that the choice of art events is based on acquired tastes that can be influenced by the human capital of one's spouse. The battle of the sexes model, however, also predicts a decline in male and an increase in female attendance at professional sports. We find a small increase in female, but also an increase in male, attendance. *Conclusions.* The behavior of married and single males and females tends to correspond to the predictions made by the battle of the sexes and human capital models of attendance.

How do men and women divide their recreational attendance among the arts, professional sports, and popular culture events? Do singles and those married make different choices? Is there some convergence in male and female behavior after marriage? One framework for considering these questions is the traditional battle of the sexes game. Here, spouses are assumed to prefer attending events together, but to have different tastes. Typically, men favor professional sports while women gain greater utility from the arts.[1] This can lead to a solution in which the couple alternates between activities.

---

[1] Luce and Raiffa (1957) is probably the first use of the battle of the sexes. In their version of the game, the spouses choose between a prize fight and ballet. In Watson (2008), the choice is between a movie and the opera and the gender of the players is not specified.

While often discussed, the game has not been extensively examined empirically. This lack of empirical investigation might be partially due to the fact that many economists may consider the game only a pedagogical device for teaching game theory. However, the existence of data on sport and art attendance means that we can empirically examine attendance at these events. Specifically, in this article we compare the behavior of single and married males and females to see to what extent the battle of the sexes can be used to describe their behavior. We believe our work contributes to the work of cultural economists who study attendance at art events and also should be of interest to teachers of game theory as we present evidence on one of the most commonly discussed examples in game theory textbooks.

A second approach is one that focuses on human capital. If males and females when single have acquired different amounts of human capital and then transfer it to their spouses (a man may learn to enjoy the ballet from his wife), then one's spouse's human capital may affect the other's attendance. Upright (2004) has shown that measures of wives' cultural education help to explain their husbands' arts attendance. Similarly, human capital in the appreciation of professional sports could be acquired by women from their husbands and lead to increased female attendance at sports.

A third consideration is the possibility that marriage might have a large negative impact on the utility of some types of activities. In this case, both married males and females would be less likely to attend. Clubs, for example, may have less appeal when individuals are no longer seeking a place to meet someone new or to have a romantic first date.

Using data from the 2004 Arts Participation Surveys of the Performing Arts Research Coalition (PARC), we identify gender and marriage effects on attendance at professional sports, art, and popular culture events. We confirm that professional sports are preferred by males and the arts preferred by females. We find that marriage makes a difference. Married males attend more art events then single men as the battle of the sexes model and human capital appreciation theory would predict. Married males and females have rates of attending the arts that are quite similar. However, in the case of sports, we do not find as clear a pattern. There is only limited evidence that married men attend fewer professional sports and married women more. Both married males and females go to fewer popular culture events than their single counterparts.

Literature Review

Marriage and Performing Arts Attendance

There has been much attention paid in the economics of arts literature to the factors related to attendance at art events. Seaman (2006) gives a detailed summary of many of the studies. Peterson, Hull, and Kern (2000), for

example, examine attendance at seven benchmark arts (ballet, classical music, opera, musicals, jazz, theater, and art museums). In regression studies, the independent variables usually include income, age, education, race, and gender. Findings of particular interest for the following discussion are that both overall education and specific arts training are positively associated with arts attendance and, in many cases, so is being female. Marital state has been treated as a control variable in only a few studies. These include Peterson, Hull, and Kern (2000), Lewis and Seaman (2004), and Book and Globerman (1977). In all three, marriage has a significant negative relationship to arts attendance. These investigations focus on arts participation by itself and do not examine attendance at professional sports or other nonart events.

There has been some research that examines art and nonart attendance. Prieto-Rodriguez and Fernandez-Blanco (2000a, 2000b) and Montgomery and Robinson (2006) look at the tradeoffs between art and nonart attendance, but pay little attention to gender and marital status. The sociological literature includes studies that examine the effect on arts attendance of the cultural capital of each partner in a married couple. Upright (2004) studied the arts attendance patterns of married couples and found that both an individual's early exposure to the arts and his or her level of educational attainment affected spousal attendance. Employing data from the National Endowment for the Arts 1992 Survey of Public Participation in the Arts (SPPA), he identified 1,147 married couples. For each of six arts activities he computed separate regressions for the husbands and for the wives. The dependent variables are attendance either alone or as a couple at least once over the previous 12 months. The independent variables are demographic characteristics of income, age, education, race, and urban/rural location plus a measure of arts socialization based on early arts education.

To capture the effects of the married partner's cultural tastes, he adds to each equation first a measure of the spouse's arts socialization, and then, alternatively, a measure of his or her educational attainment. The spousal arts socialization measures are significant in several of the equations for husbands, including galleries/museums, dance, musicals, theater, and classical music. For the last three, however, they are significant only when the husband attended alone. For women, the spousal effects are smaller and are only significant when they visited museums with their partner, and attended musicals and theater alone.

The effects of a partner's education are stronger. For men, wives' education is significant for all but opera both when they attended alone or with their spouses. For women, husband's education is significant for joint attendance at all six arts, but for attendance alone only at musicals. Upright concludes that this evidence strongly supports his hypothesis that "arts participation . . . is profoundly social, a product not just of each person's experience and attributes but of his or her ongoing social relationships" (2004:13).

Using Dutch household data for 1979, 1983, and 1987, Van Berkel and Dirk de Graaf (1995) studied the effect of spousal education on men's and women's cultural participation. They found that both husbands' and wives' education had significant effects on their own participation and on that of their spouses. Employing Dutch family survey data for 1998, 2000, and 2003, van Gils, Kraaykamp, and Ultee (2007) investigated the effects on leisure time activities of family working patterns (e.g., both spouses with full-time jobs). In addition to controlling for standard demographic variables, they include spouses' years of education among their independent variables. These are significant for each of the three leisure activities examined: opera, ballet, or classical music; historical or art museums; and classical or popular theater. Upright, Van Berkel and De Graaf, and van Gils, Kraaykamp, and Ultee show that spouses' human capital helps explain partners' attendance at art events. They, however, only look at art attendance and do not consider nonart activities.

Battle of the Sexes

Ever since Luce and Raiffa (1957) presented a battle of the sexes model with prize fights and the ballet, there have been numerous examples of the battle of the sexes in game theory textbooks. However, there appear to be no empirical examinations of the attendance behavior of married as compared to single males and females. This may be because the game is thought of as a pedagogical device or perhaps because there is not a single solution to how the couple would resolve the game.

Theory

We believe there are two separate approaches that may help explain the effect of marriage on a person's attendance at art, sports, and popular events. The first of these is the battle of the sexes. To model the effect of marriage on attendance in a battle of the sexes framework, consider the following. A single male receives greater utility from attending sports than from attending arts events and vice versa for the female.[2] This implies that a single (unaccompanied) male would choose sports and a single female the ballet. The traditional battle of the sexes model assumes that married individuals only receive utility from doing activities with their spouse and they receive none when attending alone. The payoff matrix would look like Figure 1. Given these payoffs, the partners can receive a utility of 0 by pursuing their own

[2]We acknowledge that our consistent use of strict gender stereotypes does not seem politically correct. It is our contention that these stereotypes are generally supported by the data.

FIGURE 1

Traditional Battle of the Sexes

		Female	
		Ballet	Sports
Male	Ballet	1,2	0,0
	Sports	0,0	2,1

interests, or they can receive an average utility of 1.5 by taking turns, going together alternatively to sports and to the ballet.[3] In fact, if they are unable to reach the cooperative solution of taking turns they would still be better off attending the same event. Whatever means they use to arrive at their decision (deception, coercion), we would still expect the attendance of married males and females to be identical. Thus if the battle of sexes model accurately captures the decision making of married couples, we would expect that there would be less difference in their attendance patterns than for single males and females. Sticking with our art/sports example, this would mean that we would expect to find more married males attending ballet than single males and more married females attending sports than single females. In addition, we would expect to find lower art attendance for married than for single females and lower sports attendance for married than for single males.

A second approach to understanding the effect of marriage on attendance behavior is the artistic human capital approach adopted by Upright (2004). In this view, to fully appreciate the performing arts requires some amount of human capital. Exposure and training in the arts during childhood and adolescence is one way to acquire this human capital. If single females have acquired more human capital for ballet attendance than single males, we would expect to see higher ballet attendance among single females. After marriage, males could acquire some of this human capital from their partners. For example, their wives might share their knowledge of and enthusiasm for ballet with their husbands and therefore men with this new human capital would begin to attend more ballet. Hence for any event that requires human capital for its full appreciation, we would expect to see the attendance of married males and females begin to converge as their human capital becomes more similar. Upright shows that spouses' human capital does explain partners' attendance for art events, though he does not compare

[3]Or by choosing on the basis of a coin toss.

single and married males and females. It seems possible that sports appreciation also requires a form of human capital so we would expect to see more sports attendance among married females.[4] One possible variation in the human capital framework is learning by doing. If arts are an acquired taste, then after the couple begins to alternate attendance in a battle of the sexes solution, the husband would learn to enjoy the ballet (or the wife, sports) as a consequence of his exposure to the arts.

The two models presented above predict that the attendance patterns of married males and females will converge compared to that of singles. There are some important further considerations that must be made as we move from the fairly simple world of these two activity models to the real data. First, in these simple models of behavior, single males and females only choose sports or ballet. However, in real annual attendance data, males and females will attend both sports and ballet (perhaps because of diminishing marginal utility, which is omitted in the models above), with males attending sports more often while females choose the arts more frequently. In the pure battle of the sexes model, convergence would be toward the average of single male and female levels of attendance. If additionally we assume large human capital components to the appreciation of one activity, then male and female behavior for this activity would tend to converge toward the higher of the single levels.

Neither approach discussed above has allowed for the possibility that marriage itself changes preferences. Some activities, like attending singles bars, have much greater utility for single than for married individuals. If this is the case, then we would expect both male and female participation in such events to decline after marriage. (Or both increase for events where marriage increased utility.) As a result, married behavior could still converge, but with both males and females attending some events more often after marriage and others less frequently. We explore this further when we turn to the results below.

Data and Methodology

Our data are from the Arts Participation Surveys completed in 2004 by the Performing Arts Research Coalition (PARC). Approximately 8,000 respondents in 10 cities (Austin, Washington, DC, Boston, Minneapolis/St. Paul, Sarasota, Alaska (urban areas), Cincinnati, Denver, Pittsburgh, and Seattle) were asked about their attendance not only at arts events, but also at professional and amateur sports, and at movies, live rock, live comedy, and clubs. These surveys also obtained information on a variety of demographic and background characteristics, including race, income, education, age,

---

[4]Note the difficulty soccer has had in establishing a fan base in the United States.

TABLE 1

Variable Means

Variable	Mean	Variable	Mean
Annual art attendance	7	Graduate school	16.70%
Annual professional sports attendance	3.3	College	26.90%
Annual popular events attendance	14.8	Some college	27.00%
		Income under $25,000	15.70%
Demographic Variables		Income $25,000 to under $50,000	28.30%
Age under 25	10.80%	Income $50,000 to under $100,000	36.00%
Age 25 to 34	19.40%	Income $100,000 to under $150,000	13.30%
Age 35 to 44	22.40%	Income $150,000 and over	6.60%
Age 45 to 54	20.60%	Per-capita household income	$40,470
Age 55 to 64	12.60%	Have children in household under 5	20.80%
Age 65 and over	12.90%	Have children in household 5 to 12	31.30%
Black	7.40%	Have children in household 13 to 17	21.50%
Asian	2.50%	Married	62.90%
Other race	4.70%	Male	46.00%

number of children, and marital state. Table 1 shows the means of the variables used in our study.

Some cautions should be mentioned regarding the data. Since the sample is not designed to be representative of the United States, care should be taken with applying the results beyond the 10 cities. The data on attendance are self-reported and the respondents determine the classification of the events they have attended. Thus we cannot distinguish between what one might consider "low-brow" and "high-brow" activities within a given category (e.g., attending your daughter's dancing school performance and attending a performance by a professional ballet company both might be considered attending dance). Our results apply to the general categories of events as defined by the respondents. For a more detailed discussion of survey methodology and design, see Kopczynski and Hager (2003, 2004), who provide substantial details.[5]

Using these data, we compare the attendance of married and single males and females at professional sports, art, and popular events. Art events include dance, theatre, opera, orchestras, and museums. Popular events are movies, live rock, live comedy, and clubs. We first analyze the raw attendance data to determine the preference of males and females and then to look for a pattern of convergence among married individuals. Of course, simply examining the raw data is problematic as there might be a difference

[5]See ⟨http://www.operaamerica.org/parc/⟩.

in the demographic characteristics across gender or marital status that contributes to the patterns of attendance that we observe. To ensure that we do not mistake the effects of demographic attributes that are correlated with marriage for marriage effects, we estimate models of sports and art attendance to control for a variety of demographic variables thought to impact attendance. We estimate Tobit models because of the large number of nonattendees in each category. Using the results of our models, we conduct likelihood ratio tests to see if attendance is different across gender and marital status. Following Oaxaca (1973) and Blinder (1973), we use the estimated coefficients from married males and females to construct the expected attendance of single males and females (and vice versa). These predictions indicate how marriage is associated with attendance behavior taking out the effects of the other demographic variables while allowing the estimated married and single coefficients to be different.

Results

There is evidence that on average men and women choose to spend their recreational attendance time differently. But are there differences between single and married males and females? After first confirming the gender differences in attendance in our data, we investigate how being married is related to overall attendance and the nature of the relationship for males and females. We are especially interested in whether there is evidence that being married results in some convergence of male and female behavior. Do the data suggest that some truces are called between the sexes when those married choose a night out?

To confirm the basic gender differences and identify male and female activities in our sample, Table 2 shows female attendance relative to that of males at each activity for all individuals and by marital status (married and single). As expected, female art attendance is higher than that of males, with females attending 7.5 percent more events than males. Professional sports are heavily male, with females attending 44.2 percent fewer professional sports events. They also attend 18.8 percent fewer popular events. These data show that the gender effects are more pronounced for single individuals. Single women attend 21.4 percent more art performances than single men. On the other hand, married men attend slightly more art events than married women. The difference between single and married is much smaller for professional sports, where married women attend 40.4 percent fewer events than married men, while single women attend 48.1 percent fewer events than single men. The note to Table 2 reports the *t* statistics for the difference in means between the males and females. While there is a significant difference in the art attendance for single males and females, there is not for married males and females, which is exactly what we would expect from the models above. Males in both categories attend significantly more

TABLE 2

Relative Female Attendance at Art, Professional Sports, and Popular Events

	Total			Single			Married		
	Female Mean	Male Mean	Relative Female	Female Mean	Male Mean	Relative Female	Female Mean	Male Mean	Relative Female
Professional sports	2.4	4.3	−44.2%	2.3	4.4	−48.1%	2.5	4.2	−40.4%
Arts	7.2	6.7	7.5%	7.6	6.2	21.4%	6.9	7	−1.0%
Popular events	13.4	16.4	−18.8%	14.8	21.6	−31.6%	12.4	13.7	−9.1%

Relative female is female attendance/male attendance minus one.

t tests for difference of means:

Art: Single Female/Single Male (3.16), Married Female/Married Male (−0.20).

Professional Sports: Single Female/Single Male (−7.75), Married Female/Married Male (−7.99).

Other Activities: Single Female/Single Male (−7.68), Married Female/Married Male (−2.44).

professional sports than do females. Married females attend fewer popular events than their male counterparts, but the relative gender differences fall from 31.6 percent for singles to 9.1 percent for those married.

Table 3 reports the relative attendance of married to single males and females using the raw attendance data from Table 2. Married females attend 9.7 percent more professional sports than singles, while married males attend 4.3 percent fewer. As for art, married males attend 12.2 percent more often and married females attend 8.5 percent less. All these changes are in the directions predicted by the models. The differences for art attendance are significant at the 10 percent level, while those for professional sports are not significant. Married men went to 36.7 percent fewer popular events than singles and married female attendance declined by 15.9 percent.

Our simple examination of the raw attendance data supports our expectations about the preferences of males and females for attending events and the impact of marriage on their attendance. Of course, it is possible that simply examining the raw attendance is picking up the effects of other demographic characteristics and confusing them for gender or marital status. An alternate estimate of the way marriage affects male and female attendance that eliminates these effects comes from examining separate regressions by gender and marriage. Because of the large number of respondents who do not attend any events, a Tobit model is preferable to OLS. Table 4 gives the coefficients from a Tobit model where the dependent variable is art attendance and the independent variables control for age, race, education, income, number of children, and urban area. Tables 5 and 6 report similar estimates with professional sports and popular event attendance as the dependent variables. The results in Table 4 look much like the previous research findings on art attendance. Moreover, the tables for sports and popular events show a number of similar patterns. Income is significantly correlated with higher attendance not only at art events but also at sports and popular events for all four groups (single and married, females and males). Education is important for attendance at all three types of events.

TABLE 3

Relative Attendance of Married Compared to Single Males and Females

	Female	Male
Professional sports	9.7%	− 4.3%
Arts	− 8.5%	12.2%
Popular events	− 15.9%	− 36.7%

t tests for difference of means:

Art Attendance: Married Male/Single Male (− 1.83), Married Female/Single Female (1.87).

Professional Sports Attendance: Married Male/Single Male (− 0.62), Married Female/Single Female (− 1.08).

Other Activities: Married Male/Single Male (− 10.03), Married Female/Single Female (− 4.07).

TABLE 4

Art Attendance Equations: Tobit Model of Art Attendance

	Single Female		Single Male		Married Female		Married Male	
	Coef.	T Stat	Coef.	T Stat	Coef.	T Stat	Coef.	T Stat
Age under 25	3.81**	2.69	2.56**	1.96	3.05**	2.73	3.83**	2.36
Age 35 to 44	−2.53*	1.85	−2.65**	1.96	1.05	1.46	−0.38	0.40
Age 45 to 54	−1.32	0.99	−2.37	1.63	1.90**	2.44	−0.09	0.09
Age 55 to 64	−0.04	0.03	−2.07	1.07	3.96**	4.20	0.38	0.33
Age 65 and over	−1.13	0.79	−2.35	1.30	1.40	1.18	4.19**	3.49
Black	−3.47**	2.48	0.03	0.02	−1.52	1.39	−0.60	0.46
Asian	−4.43	1.57	−2.59	0.94	−1.47	1.02	−5.98**	2.53
Other race	−1.07	0.50	2.09	1.17	−0.10	0.08	0.12	0.08
Grad school	13.02**	9.53	9.40**	6.11	9.91**	12.14	10.26**	10.20
College	8.58**	7.23	7.50**	5.92	5.79**	8.42	5.84**	6.50
Some college	7.34**	6.96	2.66**	2.30	3.67**	5.55	3.97**	4.40
Per-capita h inc	1.62**	3.14	1.32**	2.58	2.17**	5.80	3.07**	6.39
Children <5	−0.43	0.29	−0.51	0.35	−0.52	1.25	0.56	1.01
Children 5 to 12	−0.09	0.11	0.00	0.00	0.43	1.38	0.18	0.37
Children 13 to 17	−1.26	1.32	0.29	0.30	1.10**	2.78	−0.04	0.07
Intercept	−3.24	1.33	−4.94**	1.98	−8.29**	5.20	−6.51**	2.97
Log-likelihood	−4094		−3243		−6580		−6487	
N	1,246		1,035		2,036		1,944	
Chi-square 2(24)	220.42		100.75		352.36		294.92	
Pseudo R^2	2.6%		1.5%		2.6%		2.2%	

**Significant at the 5 percent level; *significant at 10 percent level.

Note: Model controls for city of residence.

TABLE 5

Professional Sports Attendance Regressions: Tobit Model of Sports Attendance

	Single Female		Single Male		Married Female		Married Male	
	Coef.	T Stat	Coef.	T Stat	Coef.	T Stat	Coef.	T Stat
Age under 25	2.04*	1.64	2.99**	2.49	0.34	0.30	3.01**	2.11
Age 35 to 44	-1.84	-1.51	0.09	0.07	-0.26	-0.37	-3.52***	-4.19
Age 45 to 54	-3.78**	-3.15	-5.86**	-4.17	-1.17	-1.50	-3.37***	-3.70
Age 55 to 64	-6.45**	-4.83	-6.24**	-3.35	-2.93**	-3.05	-3.32***	-3.18
Age 65 and over	-9.22**	-6.50	-6.33**	-3.67	-1.74	-1.46	-4.20**	-3.83
Black	-1.97	-1.51	1.51	1.06	-2.23*	-1.92	2.21*	1.88
Asian	1.38	0.58	-5.68**	-2.11	-4.55**	-2.85	-2.32	-1.10
Other race	-1.33	-0.70	-1.16	-0.69	0.22	0.18	-2.38*	-1.67
Grad school	1.78	1.41	1.71	1.17	-0.50	-0.60	0.71	0.78
College	2.13**	1.96	1.24	1.06	1.27*	1.85	2.50**	3.13
Some college	1.46	1.47	0.66	0.62	0.23	0.35	1.71**	2.12
Per-capita h inc	1.87**	3.89	2.58**	5.42	2.13**	5.60	2.48***	5.71
Children <5	-0.33	-0.25	0.00	0.00	-0.66	-1.60	0.81*	1.65
Children 5 to 12	-0.78	-1.01	0.02	0.02	-0.83**	-2.63	0.62	1.47
Children 13 to 17	0.61	0.75	0.33	0.35	0.69*	1.75	0.83	1.56
Intercept	-10.71**	-4.57	-10.96**	-4.63	-9.25**	-5.70	-8.20**	-4.14
Log-likelihood	-2535.		-2796		-4630		-5465	
N	1,307		1,080		2,106		2,011	
Chi-square 2(24)	172.75		112.79		113.40		159.18	
Pseudo R^2	3.3%		2.0%		1.2%		1.4%	

**Significant at the 5 percent level; *significant at 10 percent level.
NOTE: Model controls for city of residence.

TABLE 6

Popular Cultural Attendance Regressions: Tobit Model of Popular Attendance

	Single Female		Single Male		Married Female		Married Male	
	Coef.	T Stat	Coef.	T Stat	Coef.	T Stat	Coef.	T Stat
Age under 25	5.41**	2.56	12.03**	4.72	6.95**	3.77	10.76**	4.68
Age 35 to 44	−7.87***	3.88	−9.95***	3.79	−6.07***	5.10	−9.49***	7.10
Age 45 to 54	−11.42***	5.76	−16.84***	5.91	−10.65***	8.27	−11.71***	8.03
Age 55 to 64	−17.72***	8.24	−21.30***	5.63	−11.80***	7.47	−14.84***	8.91
Age 65 and over	−19.17***	8.92	−27.31***	7.51	−13.64***	6.83	−17.44***	9.95
Black	−7.04***	3.40	−2.12	0.71	−1.01	0.55	4.91**	2.61
Asian	−6.11	1.45	−9.90*	1.82	−4.66*	1.88	−0.97	0.29
Other race	−7.40***	2.32	5.07	1.46	1.22	0.60	1.34	0.61
Grad school	6.07***	2.97	5.32**	1.74	2.25*	1.65	2.26	1.56
College	7.59***	4.33	7.43***	3.01	1.59	1.40	3.25**	2.55
Some college	7.19***	4.62	6.06***	2.71	2.14**	1.97	2.48*	1.95
Per-capita h inc	1.66**	2.14	5.35**	5.37	2.07***	3.34	3.05***	4.47
Children <5	−1.45	0.68	3.01	1.12	−5.20***	7.62	−2.53**	3.22
Children 5 to 12	0.58	0.48	0.60	0.27	−1.41**	2.75	−0.30	0.45
Children 13 to 17	−0.32	0.23	0.42	0.22	0.75	1.14	−0.34	0.40
Intercept	15.24**	4.19	2.84	0.59	10.35**	3.72	6.90**	2.21
Log-likelihood	−4856		−4335		−8096		−7803	
N	1,230		1,018		2,019		1,930	
Chi-square 2(24)	314.6		235.28		187.33		266.97	
Pseudo R^2	3.1%		2.6%		1.1%		1.7%	

**Significant at the 5 percent level; *significant at 10 percent level.
NOTE: Model controls for city of residence.

However, having a graduate degree has the largest impact of any educational level for art attendance, while it is not significant for professional sports. Having a college degree has the largest impact on professional sports attendance. One interesting result is that having children in the household 13 to 17 years of age significantly increases married female attendance at both the arts and professional sports. Children under five decrease popular event attendance for both married men and women. Five- to twelve-year-olds have a negative impact on popular event and sports attendance by married women.

We are especially interested in determining what the coefficients can tell us about the effect of marital status and gender on attendance. We conducted log-likelihood ratio tests to determine whether the coefficients were different between males and females (both single and married) and between married and singles (both males and females). Table 7 reports these results. In every case we can reject the null hypothesis that the coefficients are the same (though in the case of single and married males for art only at the 10 percent level).

Given that the coefficients are different we, following Oaxaca (1973) and Blinder (1973), apply the coefficients from both the single female models and the married female models to the single females. Since the models are Tobit models, we compute the expected attendance for single females using both single female and married female coefficients. This gives us predictions for the attendance of single females as they actually behaved and how they would have behaved as married women. Since their demographic characteristics are held constant, the resulting difference in these predictions is due to the variation in behavior/coefficients between married and single individuals. We repeat this using the married female characteristics and then for both single and married males for art, sports, and popular events. The results of these decompositions are shown in Table 8. We also report the explained differentials (those portions of the differential based on differences in the

TABLE 7

-2 Log-Likelihood for Testing Model Coefficient Differences: Chi-Square (*p* Values)

	Art Events	Professional Sports	Popular Events
Single male/single female	45.56	53.22	170.07
	(0.50%)	(0.05%)	(0.00%)
Married male/married female	133.34	168.58	76.06
	(0.00%)	(0.00%)	(0.00%)
Single male/married male	34.62	44.30	123.42
	(7.42%)	(0.00%)	(0.00%)
Single female/married female	122.28	59.50	57.98
	(0.00%)	(0.00%)	(0.01%)

TABLE 8

Decomposition Results of the Difference in Attendance Between Married and Single Females (Males)

	Art Attendance	Professional Sports Attendance	Popular Event Attendance
Single Female/Married Female			
Unexplained differential (single)	−16.7%	0.0%	−9.7%
Unexplained differential (married)	−11.2%	3.7%	−19.0%
Single Male/Married Male			
Unexplained differential (single)	2.6%	6.0%	−15.0%
Unexplained differential (married)	12.0%	10.3%	−22.9%
Explained Differential			
Explained differential (single)	−1.1%	6.5%	4.5%
Explained differential (married)	5.3%	9.7%	−6.3%
Single Male/Married Male			
Explained differential (single)	−2.6%	−9.4%	−14.6%
Explained differential (married)	6.3%	−5.4%	−22.5%

The unexplained difference in the first row is the difference in expected attendance for single females at each event type between using the single female and married female Tobit model coefficients. [E(Y*|Xsf,Bmf) E(Y*|Xsf,Bsf)]/E(Y*|Xsf,Bsf), where Y* = 0 if XsfBsf < = 0, and Y* = XsfBsf otherwise. (Similarly for the other unexplained differentials.) The explained differentials use the coefficients of the group indicated in the row label and the difference in expected attendance between the characteristics of the single and married individuals.

characteristics of the groups). Here, we see that with marriage, female art attendance decreases between 11 and 17 percent. This estimate is higher than that from Table 2. We also find that marriage increases the attendance of males at art events between 3 and 12 percent depending on whether we use the demographic characteristics of married or single males. This confirms our result that we do see a convergence in the art attendance of males and females after marriage, as would be predicted by the battle of the sexes model or human capital appreciation theory.

The decomposition results for professional sports do not conform as well to the predictions. The estimated marriage effect for females is small but positive, between 0 and 4 percent. However, the estimated effect for males is that marriage increases male attendance at professional sports between 6 and 10 percent. The female effect is consistent with our basic model. However, the result for males is not consistent with either theoretical model or with the effects reported in Table 3. A more complex pattern emerges when we

recognize that arts and sports do not exhaust the possible choices open to those single and married. Table 8 shows that the marriage effect is negative for both women's and men's attendance at popular events, but even larger for males, for whom the decline is from 15 to 23 percent, while that for females is 10 to 19 percent. This makes it possible for married men to increase both their art and sports attendance.

These sports decomposition results show that married males increase their professional sports attendance after marriage more than do females. This suggests that married males are not attending all these sporting events with their wives. This might be explained in part by the existence of an alternate activity, doing nothing, which is generally omitted from the basic battle of the sexes model. It might be the case (if not overly stereotypical) that the payoff for the wife from doing nothing while her husband goes to the professional sporting event is positive and higher than if she went with him.

The evidence presented so far indicates that males and females have different patterns of event attendance, with females having stronger preferences for art events and males for sports. In addition, married males and females have more similar art attendance behavior than single males and females, and married women attend sports more than singles. These results are predicted by both a battle of the sexes model and by a human capital appreciation model. However, the support for the battle of the sexes model is somewhat weakened by the decomposition results that show marriage increasing male attendance at professional sports. Married males do not appear to be trading off sports for arts, but attending more art instead of popular events.

Looking for marriage effects by a cross-sectional comparison of males and females raises some interesting difficulties. We have no way of identifying in our data the partners of our married individuals, what events they attend, or their human capital. There might be a great deal of selection involved in the marriage process. While women do seem to prefer the arts, sports fans of both genders might prefer to marry other sports fans, and likewise for those with high levels of human capital for art. This might mean the effects we are looking for would be much more pronounced for couples that fit the basic battle of the sexes stereotype. They marry for other reasons but are mismatched in their preferences for events to attend. When we find that the art attendance of married men increases, we cannot tell if they are attending these art events with their wives because we have no data on the spouse's patterns of attendance. Clearly, future research could examine some of these questions and perhaps provide us with more satisfactory answers.

Conclusions

This article has examined the role that gender and marriage play in attendance at art, sports, and popular cultural events. We find that women

generally prefer the arts and that males prefer sports and popular events, which supports common stereotypes. This is especially true for single males and females. To explore the effect of marriage on attendance, we estimate Tobit models of attendance for all three event types by gender and marital status. Using these results, we estimate the difference in attendance between the groups that is due to differences in coefficients rather than differences in group characteristics. After marriage, as predicted by both the battle of the sexes and human capital art appreciation models, men attend more art events and women fewer art events. At least partially because there are more than two event types, our other results less closely follow the predictions of the models. Here, we find that both males and females attend fewer popular events and more sporting events. So while women do attend more sporting events to go with their decline in art attendance, males attend more sports and art events presumably because their attendance at popular events drops so greatly. Further research using data on matched couples might be able to answer questions about this behavior that would more fully explain these attendance behaviors as well as answer questions about how the choice of partner is related to artistic human capital and attendance.

REFERENCES

Blinder, A. S. 1973. "Wage Discrimination: Reduced Form and Structural Estimates." *Journal of Human Resources* 8(4):436–55.

Book, S. H., and S. Globerman. 1977. "Consumption Efficiency and Spectator Attendance." *Journal of Cultural Economics* 1(1):15–34.

Kopczynski, M., and M. Hager. 2003. *The Value of the Performing Arts in Five Communities: A Comparison of 2002 Household Survey Data*. Urban Institute and Performing Arts Research Coalition. Available at ⟨http://www.operaamerica.org/parc/⟩.

———. 2004. *The Value of the Performing Arts in Five Communities 2: A Comparison of 2002 Household Survey Data*. Urban Institute and Performing Arts Research Coalition. Available at ⟨http://www.operaamerica.org/parc/⟩.

Lewis, G. B., and B. A. Seaman. 2004. "Sexual Orientation and Demand for the Arts." *Social Science Quarterly* 85(3):523–38.

Luce, R. D., and H. Raiffa. 1957. *Games and Decisions: Introduction and Critical Survey*. New York: John Wiley.

Montgomery, S. S., and M. D. Robinson. 2006. "Take Me Out to the Opera: Are Sports and Arts Complements? Evidence from the Performing Arts Research Coalition Data." *International Journal of Arts Management* 8(2):24–37.

Oaxaca, R. L. 1973. "Male-Female Wage Differentials in Urban Labor Markets." *International Economics Review* 14(3):693–709.

Performing Arts Research Coalition. 2004. *The Value of the Performing Arts in Ten Communities: A Summary Report*. Performing Arts Research Coalition. Available at ⟨http://www.operaamerica.org/parc⟩.

Peterson, R. A., P. C. Hull, and R. M. Kern. 2000. *Age and Arts Participation 1982–1997*. Santa Ana, CA: Seven Locks Press.

Prieto-Rodriguez, J., and V. Fernandez-Blanco. 2000a. ''Are Popular and Classical Music Listeners the Same People?'' *Journal of Cultural Economics* 24(2):147–64.

———. 2000b. ''Are Live Sports Substitutes of Culture Consumption? Some Evidence for the Spanish Case.'' Paper presented at the 11th International Biennial ACEI Conference. Minneapolis, MN.

Seaman, B. A. 2006. ''Empirical Studies of Demand for the Performing Arts.'' Pp. 415–72 in V. A. Ginsburgh and D. Thorsby, eds., *Handbook of the Economics of Art and Culture*. Amsterdam: North Holland.

Upright, C. B. 2004. ''Social Capital and Cultural Participation: Spousal Influences at Arts Events.'' *Poetics* 32(2):129–43.

Van Berkel, M., and N. D. de Graaf. 1995. ''Husband's and Wife's Culture Participation and Their Levels of Education: A Case of Male Dominance?'' *Acta Sociologica.* 38(2):131–49.

van Gils, W., G. Kraaykamp, and W. Ultee. 2007. ''Cultural Couples: Differentiation in Arts Attendance from a Couple Perspective.'' Paper prepared for Spring Meeting RC28. Nijmegen, The Netherlands.

Watson, J. 2008. *Strategy: An Introduction to Game Theory*. New York: W. W. Norton and Co.