High School Extracurricular Activities and Future Success

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Abstract

In recent years, participation in high school extracurricular activities has become increasingly more popular. As I looked at this trend, I wondered if being actively engaged in these activities could truly improve how successful students were in their future lives and careers. Models run on data from the NELS survey showed significant relationships between future earnings and extracurricular participation across some levels, but not others. All levels of high school participation were found to be correlated with increased civic engagement. These trends show that there is likely a relationship between student participation in extracurricular activities, and success in their future lives.

Introduction

While success is not a word that can easily be defined, most people still spend their entire lives trying to achieve it. Financial affluence is considered success by some, while others consider only societal measures. However, most people will acknowledge that those that are successful in one area of their lives tend to be doing better than average in all aspects (Gardner et al., 2008). As adults, it may seem like success is assigned randomly to some individuals and withheld from others, but is it actually possible to predict who will and who will not be successful based on characteristics and activities during childhood? As I have thought about this idea, I have become especially interested in those that participate in extracurricular activities during high school, as it would seem reasonable to say that those who are willing to sacrifice their personal free time to develop skills outside of the classroom would also be those who are more likely to be successful later on in life.

Past studies have found that those who consistently participate in extracurricular activities during their high school years do in fact tend to be more successful adults than those that do not (Mahoney et al., 2003). The National Education Longitudinal Study is a multi-year, longitudinal study which includes data that will help me to answer the question of whether or not participation in high school extracurricular activities is related to future success. As I look to answer the question of whether or not there is a relationship between participation in extracurricular activities and adult success, I will run multiple models, one for each type of success defined in my study. I will run a log-linear model on average income with average hours of participation and demographic control variables as independent variables to see if there is any relation for that specific type of success. I will then run a logit model using the same independent variables on the binary outcome variable of civic engagement. I believe that splitting success into multiple categories will help reveal the differences in significance for each type of success (Gardner et al., 2008). I believe I will find that there is, in fact, a relationship between the participation levels of students in extracurricular activities and their future success. This hypothesis comes from the relationship that exists between students' choice to go above the requirements needed to simply graduate and their success while they are still in high school (Long et al., 2012). It is also important to note that the effects of extracurricular activity participation will likely be different for different demographic groups, and I will include variables to help control for this (Zaff et al., 2003).

Developing the skills needed to be successful early in life can be extremely beneficial. Throughout the course of my research, I hope to show that encouraging high school students to seek out activities that may be difficult or require extra work can help them to learn new things and better prepare them for their futures as successful adults. This study could potentially help illustrate to high school administrations the areas of focus that will most directly benefit their students. As I look at each type of success and contributing factors, I expect to find positive relationships between the number of hours a student spends in extracurricular activities and each respective type of success. While I will not be able to control for the intrinsic factors and motivations of a student which may also drive potential success (Schneider et al., 2003), I believe that outside actions are often good predictors of internal motivations.

By using an intensity variable for participation in extracurricular activities, my study goes beyond the research that has already been done on whether or not any level of participation in

high school can help an individual become more successful as an adult. By using two models, one log-linear model to examine relationships with adult income, and another linear probability model to examine relationships with adult community engagement, my study further supports past research showing that participation in after-school activities can lead to increased success as an adult. While my results show an increase in civic engagement across every level of participation in activities, only certain levels seem to have a correlation with increased financial success. Possible explanations for this trend could come from sampling sizes or systematic differences between students in each level of activity.

Data

Initial data used in my study was taken from a sample of 8th graders in the year 1988 in "regular" public and private schools in the 50 states and the District of Columbia, called the National Education Longitudinal Study. After the initial round of surveying, participating students were then asked to complete follow-up surveys in the years of 1990, 1992, 1994, and 2000. These responses help provide information not only about the students' high school characteristics, but also about their lives after graduation when they have legally become adults. In addition to responses from students, the study also includes responses from the parents and teachers of the students that were surveyed. I will use data from those students that completed all of the surveys in the NELS up through 2000, although I will use information like parental income and school location exclusively from the earliest survey as controls in my model. The population the survey was trying to gather data about was the population of all 8th graders in the United States at the time.

The National Education Longitudinal Study attempts to gather data about the population of all 8th graders in the United States starting in 1988. However, even though the data says that it is a representative of the average student population in the United States, not all 8th grade students had a chance of being selected for the study. In the first round of surveys, those that did not have a strong understanding of the English language or those that had mental handicaps that would have prevented them from completing the survey on their own were not included, along with those students that were home-schooled. So, the data is not entirely representative of the actual population of 8th graders in the United States. Later follow-up surveys included these students and helped to correct this mistake, although I will only be using information from those that answered all surveys since some important control variables such as initial household income are only included in the first survey. There is also some attrition in survey responses due to the fact that not all those that completed the first round chose to complete each of the follow-up studies as well.

Table 1: Student Income Descriptive Statistics

Income of student (1999)	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
	8,706	26,157.16	20,992.03	0	500,000

There will be two outcome variables, one for each of my models. The first one will be the natural log of average yearly income. Since the survey was completed in the United States, income will be measured in U.S dollars and will represent the average earnings of the respondent from the entire year before the survey was taken. This variable will be pulled from

the 2000 responses since this is the most recent information that we have from the students. A summary of the data showed that of the 8,706 respondents, the average salary was $26,157.16 with a standard deviation of $20,992.03. The biggest limitation to this variable will be the inclusion of those that choose not to participate in the labor force due to personal reasons, even though they would be capable of finding a successful job if they so choose.

Table 2: Community Engagement Summary

Has respondent participated in their community in the last 12 months? (1994)	Frequency	Percent	Cumulative
No	6,625	76.1	76.1
Yes	2,081	23.9	100
Total	8,706	100	

In my second model, civic engagement will be my outcome variable. It will be measured as a binary variable for whether or not the individual is engaged in their community. This response is self-reported and measured by whether or not they have taken part in any of a list of twelve activities that surveyors decided were good indicators of whether or not an individual was an active community member. I used civic engagement as an outcome variable in an attempt to measure across different definitions of success. The idea behind using this as an outcome variable is that some people may value relationships above financial success, and being an engaged and involved member of your community is a good way to measure if an individual is forming strong bonds with others around them. Since many activities that constitute civic engagement do not take a large commitment of time or money, such as voting in elections, I would expect that all those who want to find a way to participate would be able to, regardless of their financial or time constraints. An overview of the respondents found that 2,081, or about 23.9% of those surveyed responded that they had volunteered or supported their community in some way recently.

The most important independent variable in my study is if the student participated in extracurricular activities or not. I will use an intensity variable instead of a binary variable for this, which means that I will include different categorical dummy variables for each level of participation as opposed to just one indicating whether or not they participated at all. It is not surprising that the number of students in each level of participation decreases as the number of hours increases because this involves not only more involvement and time from the students, but also from the parents. This variable will not be assigned randomly because participation is a personal choice. Additionally, there may also be a cost element to most extracurricular activities, which could serve as a deterrent to participation. I would expect those that are more motivated and whose parents have more money will be more likely to participate in activities than those with lower motivation who come from poorer backgrounds. Another limitation to participation may also be location of the school, some smaller or rural schools may not have as many opportunities for extracurricular opportunities as those in urban areas. Motivational and other factors will cause selection bias in this variable because groups were not randomly assigned, students had to choose for themselves to participate or not, as well as how often they would participate.

Other important variables in my models will include demographic information to try and control for potential omitted variable bias which will exist between participation and adult income levels as well as civic engagement. For example, I would assume that gender is related to both of these things because I know at the very least it is correlated with earnings and boys tend to be encouraged to pursue athletics more than girls are. Race and employment status of the student's parents will also be important variables to include. Further, whether or not the student went to college will also be important because this can significantly impact lifetime earnings. College attendance may also be an indicator of student motivation in high school which could help reduce the amount of bias in the models that is due to intrinsic factors that are much more difficult to measure.

Method

Model 1: Adult Income with Controls

$$\ln(income\ in\ 1999)_i = \beta_0 + \beta_1(time\ spent\ doing\ extracurricular\ activities) + \beta_2(family\ income\ 1987) + \beta_3(income\ of\ spouse\ in\ 1999) + \beta'_4(parental\ characteristics) + +\beta'_5(student\ characteristics) + \beta'_6(school\ and\ community\ characteristics) + u$$

Model 2: Adult Civic Engagement with Controls

$$Civic\ engagement_i = \beta_0 + \beta_1(time\ spent\ doing\ extracurricular\ activities) + \beta_2(family\ income\ 1987) + \beta_3(income\ of\ spouse\ in\ 1999) + \beta'_4(parental\ characteristics) + +\beta'_5(student\ characteristics) + \beta'_6(school\ and\ community\ characteristics) + u$$

I have included two separate models in my study because the definition of success is extremely individual. In order to analyze multiple types of success, I have included a model for financial success as measured by the log income of a person, and another for social success as measured in whether or not a person is actively engaged in their community. All of the variables included in the study are measured at the individual level at a single point in time. The log of the income of each student observed will allow us to see percentage changes in the amount of money earned relative to each of the variables in the model, a positive coefficient would indicate an increase in the income of the individual while a negative coefficient would indicate a decrease. Likewise, since civic engagement is a dummy variable for whether or not the respondent spent time volunteering or participating in their community in other ways, coefficients on each of the independent variables will help us see if there is a positive or negative percentage point change in the likelihood that an individual actively participated in their community.

Since families that have more money are more likely to be able to afford to put their children in sports and other similar activities, a variable for family income as measured at the start of the study is included to help eliminate this source of potential bias. Additionally, it would seem that those married to a spouse with a high income would be less likely to work in a high paying job because their personal income would not be needed to pay for necessities, which may free up more time for them to pursue other activities. It is not expected that any of the variables in the model are correlated with each other in such a way that we would not be able to hold one constant while changing another. The largest remaining source of bias in both models

will be found in motivational factors. These are extremely hard to measure, and there is not much data provided in the survey that can help us to control for these.

There would also seem to be a relationship between parental characteristics such as the education levels of a mother and father that would also be related to time spent in outside activities as well as the future income or civic engagement of a student. Parental characteristics will include control variables for the education level of both parents, and whether or not each parent is employed at the start of the study. Characteristics of the student can also have a major impact on other variables within the model, so student characteristics will be included to control for things such as the race of the student, the gender of the student, what their average high school GPA was, if they were ever sent to the principal's office for behavior issues, and how much education they had actually obtained by the end of the study. Using school and family characteristics will help limit omitted variable bias in the model by controlling for things such as the number of siblings a respondent has, and if the school they attended at the start of the survey was in a city or a rural area.

Results

Table 3: Regression Models for Success

VARIABLES	ln(Income in 1994)	Civic engagement
Amount of time spent on extracurriculars		
less than 1 hour per week	0.0443*	0.0593***
1-4 hours per week	0.0741***	0.111***
5-9 hours per week	0.0285	0.0911***
10-19 hours per week	0.104***	0.0878***
20+ hours per week	0.0164	0.145***
Controls		
male	0.367***	-0.0377***
behavior problems	-0.0190	0.0375*
average GPA	0.100***	0.0400***
Constant	9.176***	0.0413
Observations	8,261	8,706
R-squared	0.091	0.042

*** p<0.01, ** p<0.05, * p<0.1

In order to include a broader definition of what it means to be successful, I ran two models on my data, one to look at relationships with the adult income of a participant, and another to look at civic engagement. Both of these were measured in the fourth follow up study which was taken in 2000, twelve years after the initial survey of 8th graders. I began my analysis by cleaning the data to only include those that answered all of the surveys so that I would be able to run my regressions without errors. Additionally, since I was interested in the variables for income and civic engagement, I excluded those participants that did not answer the questions relating to these two variables, which left me with a total of 8,706 responses. I imputed values for those that did not answer the questions that were used as my controls because these non-responses accounted for a very small portion of the respondents, usually less than 2% of the total. I used a standard cutoff of $p<.05$ in all my analyses to determine if a coefficient was significant or not.

A logistic regression model was used in my analysis of financial success as I looked for relationships between success and time spent in extracurricular activities during the student's sophomore year of high school, which was measured in the second survey that students completed. I created multiple dummy variables for each level of participation in activities because I wanted to see if there were differences for the amount of time spent doing extracurricular activities each week, not just if there were differences for those that participated compared to those that didn't. Those that didn't participate in activities at all on average were used as the baseline for comparison. In order to make sure coefficients were based only on changes in activity participation and to minimize omitted variable bias in my model, I included controls for student characteristics, parental characteristics, and community characteristics.

When the model was run including the control variables and the levels of participation, I found that certain levels of participation had a significant positive impact on the future earnings of the student, but others had no significant impact. According to my model, students that participated in extracurricular activities for one to four hours per week had an average increase in earnings of 7.4% over those students that did not participate in any activities. Additionally, those students that were active outside of school for ten to nineteen hours a week had an estimated percent increase in future earnings of 10.4% over those that did not participate at all. Any increase in annual earnings that is significantly different from zero could significantly increase an individual's standard of living as well, it could be the difference between someone that lives in poverty and someone that does not. A 10% increase in income would mean that an individual that had previously been earning $50,000 would now be earning $55,000. It should be noted that while both of these values are significant at the $p<.01$ level, the coefficient for those that participated less than one hour a week was significant at the $p<.1$ level as well. Those that reported participating for five to nine hours, or more than twenty hours per week, had no significant changes in their future incomes compared to those that did not participate at all. Not only were the p-values for these two levels of participation not significant, but their coefficients were also very close to zero indicating that there may not be any difference in income for these groups compared to those that don't participate in activities at all. Past studies used dummy variables for whether or not a student participated in extracurricular activities instead of intensity variables and found that those that did participate had greater success than those that did not. Using an intensity variable shows that these benefits may only extend to certain groups instead of all participants as a whole.

In the course of this study, civic engagement was not defined as an intensity variable like participation in extracurricular activities was, but instead as a binary variable for whether or not

the respondent had done any activities to support their community and neighborhood within the past few months. Since the outcome variable in this model is binary, a linear probability model was used to examine relations. The same controls that were used in the model for income were also used in this model since I would expect similar factors to contribute to an individual's success in all aspects of their life.

Once again, a significance level of $p<.01$ was used to determine significance of the coefficients. Participation in extracurricular activities continued to be measured on an intensity level to see if there were differences for different levels of participation. After running this model, I found that participation in extracurricular activities has a significant, positive correlation with the probability that the student will be civically engaged in their future across all levels of participation. Compared to those students that did not participate in after school activities, all students that did participate, no matter the amount of time they spent each week, were more likely to have active roles in their communities as adults. Those that participated for twenty hours of more per week had the largest coefficient at 14.5% meaning that those who spent this much time in out-of-school activities each week increase their probability of being civically engaged by 14.5%. Even the group with the smallest difference, those that spent less than one hour per week in activities, had a coefficient of 5.93%, meaning they still have a fairly large increase in the probability that they will be engaged in their communities when compared to those that did not do any activities at all.

From the combination of the analyses of both these models I found that while participation in extracurricular activities is significant across the board in whether or not a student will be successful in the terms of their community service, this distinction is less clear when it comes to the future earnings of the student. Although it appears that certain levels of participation do in fact have fairly large positive impacts of the future earnings of an individual, other levels seem to have no impact or may possibly even have a negative impact on earnings.

Discussion

As I have tried to answer the question of whether or not there is a relationship of any type between student participation in extracurricular activities and adult success, past research and my own study have shown that there is in fact a positive relationship between these two variables. However, in using an intensity variable for participation instead of a single binary variable, I found that while all levels of participation are related to an increase in civic engagement and social success, only certain levels have a significant positive relationship with adult earnings. While these findings support those of past studies, they also further the discussion about this topic by looking at the significance across multiple different levels.

In order to further this research, it would be helpful to focus more on the relationship between motivational and intrinsic factors and future success. Since I was not able to gather much information about the motivation a student had for their future beyond if they were sent to the principal's office, I was not able to look very closely at the relationship between what students wanted out of their lives versus what they were actually able to achieve. This information would be quite difficult to gather and may even require psychological evaluations for each student, therefore limiting the contexts in which results of any analysis of the data could be used.

Another limitation I found while I was completing my study was the amount of data that was available for me to use. While more accurate estimations of financial and social success could have been found if I had used more years of data, I did not have access to responses that

were gathered after the year 2000. The NELS study has continued past this date, but further studies have not yet been released to the public. As more data is eventually released, it will be possible to get a better overall picture of the students' success throughout their life. This will be especially important since the only year I have to measure financial and social success is gathered 6 years after the students' high school graduation. Since many people will not graduate college within the first six years of graduating high school, those that are still in the process of completing a bachelor's or graduate degree when the survey is completed likely have lower earnings five years after high school than those that will not obtain any postsecondary education, although this trend is likely to reverse over time. Since we know that those that graduate from college tend to have higher earnings on average than those that do not, this could be a potential problem with my current study. The earnings of an individual at this single point in time may also not reflect the potential lifetime earnings since it generally takes longer than six years for an individual to reach their average career earnings which imposes another limitation to my study. Although the current measures that I have for individual earnings and civic engagement are fairly useful in measuring future success, additional years of data would be helpful in creating a more accurate model.

One fascinating trend that I found through my model was the alternating pattern that exists in the significance of levels of participation in extracurricular activities in relation to individual earnings. There could be many possible explanations for these findings. One of such could be that different levels of participation correspond with different levels of commitment to the activity. For example, it may be that those that only spend one to four hours per week in the activity participate in academic clubs which tend to involve less time than most sports. These students then have more time to spend studying and doing homework which may have a positive correlation with future success. It could also be the case that typical high school sports actually take a commitment of ten to nineteen hours per week, and those that spend only five to nine hours participating each week are those that skip practices or competitions regularly. Additionally, since a time commitment of twenty hours per week adds up to about 3 hours of practice per day, it would seem to make sense that those at this participation level would not have as much time to study, and may not have any greater success in the future than those that do not participate in activities at all due to lower grades. Another possible explanation for these alternating patterns of increased success could just be due to lower numbers of respondents in each of those groups than in the others. Even though there may in fact be a difference in the percent changes in income of these groups, the sample sizes may not be large enough to show that these differences are statistically significant.

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