Leadership Skills and Wages Revisited: Is There a Causal Relation?

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Abstract

This paper examines the role of holding a leadership position in high school on adult earnings and assesses the sensitivity of the previously found positive association to non-random selection bias. Using a recently developed procedure, we show that a substantial part of this relation is causal. Moreover, our results indicate evidence in favor of the hypothesis that leadership skills are acquired during high school.

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1 Introduction

Researchers have traditionally focused on cognitive skills, measured by knowledge and aptitude tests, as the primary example of productive skills. However, viewing cognitive traits as the sole aspect of productive skills may be misleading because there is prominent otherwise evidence. For instance, Green et al. (1998) report the survey results from the British Employers Manpower and Skills Practices in which roughly one-third of the establishments respond positively to the skill shortage inquiry and identify the recruitment problem arising mainly from poor personality, motivation and attitude rather than the lack of cognitive skills. Similarly, in a 1998 survey conducted by the U.S. Census Bureau in collaboration with the Department of Education, employers, when considering the hiring process, rank non-cognitive skills as far more important than the years of schooling or academic performance. Moreover, the sociology and psychology literature have given the non-cognitive skills an equally predictive power for many labor market and social outcomes as they do to cognitive skills (see, for example, Barrick and Mount 1991, Hogan and Holland 2003). Given this evidence, it is surprising how little work has been devoted to understanding the role of non-cognitive skills on economic success.

To date, there have been only a limited number of studies pertaining to the impact of non-cognitive traits. Using the National Longitudinal Survey of Youth (NLSY), Goldsmith et al. (1997) find positive and significant effects of self-esteem on earnings. Bowles et al. (2001) with different data sets discuss the effects of personal traits such as self-esteem, optimism and aggression on earnings and schooling. Coleman and DeLeire (2003), using the National Educational Longitudinal Study (NELS) data, obtain a significant impact of locus of control on the expected earnings at age 30. Kuhn and Weinberger (2005) examine the association between leadership activities during high school, where they define these activities as a measure of noncognitive skills, and labor market outcomes of roughly a decade after graduation. Heckman et al. (2006) with the NLSY data demonstrate that non-cognitive ability as measured by locus

of control and self-esteem scales are important in explaining various aspects of social and economic life. Finally, in a special issue in 2008, several papers investigate the formation of noncognitive skills and their role on social and labor market outcomes. For instance, Cuhna and Heckman (2008) introduce a new model underlying the complementarity between cognitive and noncognitive traits and Borghans et al. (2008) and Krueger and Schkade (2008) present evidence pertaining the role of noncognitive skills on the occupational decision.

Of particular importance among the aforementioned studies for our current research is Kuhn and Weinberger (2005). In their innovative paper, Kuhn and Weinberger have meticulously examined the impact of leadership activities on adult earnings and have found statistically significant correlations. The authors' further exploration of the issue indicate that high school leadership does not act as a proxy for physical or psychological attributes and the significant correlation between high school activities and earnings persist even with the inclusion of control variables for these attributes.

The main scope of this paper is to examine whether the association between the leadership activities students engage in during high school and their adult earnings is a *causal* one.[1] Using the more recent National Education Longitudinal Survey (NELS) data, as well as the two data sets, National Longitudinal Survey 1972 (NLS72) and High School and Beyond (HSB), from Kuhn and Weinberger (2005), we investigate the sensitivity of the leadership effect to non-random selection by employing the econometric strategy developed in Altonji et al (2005). Specifically, this technique allows us to calculate how large the extent of selection on unobservables relative to selection on observables must be in order to fully explain the treatment effect (leadership in our case) estimated under the assumption of exogeneity. Furthermore, in the presence of a potential causal relation, a subtle and policy relevant question that remains relatively unexplored is whether the leaders are born or made. In other words, is it plausible to acquire leadership skills later in life or are individuals inherently endowed with these skills? We try to pursue this question

[1] It is important to note that Kuhn and Weinberger (2005) never claim the effect as being a causal one.

as well.

Our findings using the NELS are consonant with Kuhn and Weinberger (2005); the estimated leadership effect on earnings is around 18 percent. The inclusion of control variables for physical or psychological attributes do not largely alter the results and more importantly, our sensitivity checks indicate that one cannot rule out the causal relation between leadership activities and adult earnings. A substantial part of the estimated effect seems to be more than just an association. Finally, using a unique feature of the NELS, we show evidence in favor of the hypothesis that the individuals acquire the leadership skills during high school.

The remainder of the paper proceeds as follows. Next section contains a description of the data sets. Section 3 describes the econometric methodology. Section 4 examines the results and the final section concludes and discusses the important policy implications of our analysis.

2 Data

The primary data set for this study is drawn from National Education Longitudinal Survey (NELS). The NELS is a large longitudinal study of eighth grade students conducted by the National Center for Education Statistics in 1988. The stratified sample of NELS was chosen in two stages. In the first stage, a total of 1032 schools on the basis of school size were selected from a universe of approximately 40,000 schools. In the second stage, up to 26 students were selected from each of the sample schools based on race and gender. For subsample of respondents, follow-up surveys were administered in 1990 (first-follow up, tenth grade), 1992 (second-follow up, twelfth grade), 1994 (third-follow up) and 2000 (fourth-follow up).

To be consonant with Kuhn and Weinberger (2005) (KW, hereafter), we use the same sample restrictions and focus on only white men who graduated from high school and were employed in 2000.

Focusing on only white males precludes the possible contamination of the parameter of interest due to racial and gender discrimination in the labor market. The students of the NELS were asked a series of questionnaires pertaining to their sport/club participation and the responses to these questions from the second-follow up constitute our measure of leadership activity. The NELS also allows us to condition the same set of control variables (math test scores, parents' educational attainment and school fixed effects) used in KW. The dependent variable is the log hourly earnings obtained by dividing annual earnings by weeks worked times hours worked in a typical week. We exclude those whose hourly earnings are below $3.75 and above $48.8. This corresponds to the 1st and 99th percentile of the earning distribution. The effective sample excludes observations with missing data on hourly earnings, on the leadership activity measures, as well as on the math test score. Dummy variables are used to control for missing values of parents' educational attainment. The final sample contains 1,627 white males.

In addition to NELS, we supplement our analysis with two other data sets. KW, in their examination of the leadership premium, have relied on three different data sets covering a time span from 1960s to 1990s. The first one is Project TALENT where the students in this study were surveyed during high school in 1960 and were followed longitudinally for 11 years after high school. The second data set is National Longitudinal Study of the Class of 1972 (NLS72) that collected detailed personal, academic and behavioral information from 1972 high school seniors and followed them up until 1986. The final data set comes from the High School and Beyond (HSB), which surveyed 1980 high school sophomores and continued longitudinally up until 1992. Among these three data sets, we employ the NLS72 and HSB to have some benchmark estimates and more importantly, to test whether the leadership effects found in KW are causal.[2] Applying the same data restrictions, we end up with 3,109 and 2,435 observations for NLS72 and HSB, respectively.

[2]Due to a major restoration of the Project Talent, the American Institute of Research (the sole distributor) has suspended the access to the database. The full sample will be available to the researchers by the end of summer 2010 and therefore, we did not include the Project Talent data to our analysis.

We present the selected sample means for the variables of interest for all three data sets in Table 1. The first and third columns display the means for the KW's NLS72 and HSB samples while the second and fourth columns show the means for our respective samples. There are very slight differences between the KW's and our samples. However, as discussed in the subsequent section, this does not generate any significant discrepancy in our replication of the KW's results. Finally, the fifth column of Table 1 presents our sample means for the NELS. Slightly more than 11% of the students in the NELS occupied both a team captain and club president position in the senior year of high school. The similarity among the means of the covariates provides strong assurance that the three data sets are comparable.

3 Methodology

In order to measure the leadership effect, similar to KW, we estimate the following outcome equation:

$$W_i = \alpha Leader_i + X_i'\beta + \epsilon_i \tag{1}$$

where W is the hourly earnings for NLS72 and NELS (and annual earnings for HSB) of student i, X is the vector of control variables including the senior level math scores, highest level of parental educational attainment, indicators for occupying only a team captain or a club president position, indicators for team or club membership (and both), as well as the school fixed-effects and ϵ is the usual error term. $Leader$ is a dummy indicator that is equal to 1 if the student was both a team captain and club president in high school and zero otherwise. The OLS estimate of α yields the true leadership effect on adult earnings as long as $Cov(Leader, \epsilon) = 0$ is satisfied.

However, assessing the validity of the zero conditional mean assumption and/or problems with coming up with a proper instrument precludes one to infer about causality regarding the leadership activities. Fortunately, given the binary nature of our parameter of interest, we can go one step further and evaluate

the potential role of non-random (positive) selection by applying the procedure developed in Altonji et al. (2005). Intuitively, the basic idea is to assess how much selection on unobservables there must be, relative to selection on observables, to fully account for the positive association between leadership effect and earnings. Given that the leadership variable takes only the values of 1 and 0, one can compute the (normalized) amount of selection on unobservables by the ratio

$$\frac{E[\epsilon|Leader=1]-E[\epsilon|Leader=0]}{Var(\epsilon)} \tag{2}$$

where ϵ is the error term from equation (1) and denotes the unobservables in the outcome equation. Similarly, the (normalized) amount of selection on observables can be written as the ratio

$$\frac{E[X^{'}\tilde{\beta}|Leader=1]-E[X^{'}\tilde{\beta}|Leader=0]}{Var(X^{'}\tilde{\beta})} \tag{3}$$

where X is the set of control variables from equation (1) and $\tilde{\beta}$ is the corresponding parameter vector. Using equations (2) and (3), one can, then, ask how large the selection on unobservables relative to selection on observables must be in order to explain the entire leadership effect α.

To begin with, we express the participation equation as

$$Leader_i = X_i^{'}\gamma + v_i \tag{4}$$

Substituting equation (4) into (1) gives

$$W_i = X_i^{'}(\beta+\alpha\gamma) + \alpha v_i + \epsilon_i \tag{5}$$

The probability limit of the OLS estimator of α is then given by

$$\begin{aligned} p\lim\ \tilde{\alpha} &= \alpha + \frac{Cov(v,\epsilon)}{Var(v)} \\ &= \alpha + \frac{Var(Leader)}{Var(v)} E[\epsilon|Leader=1] - E[\epsilon|Leader=0] \end{aligned} \tag{6}$$

Under the assumption that the degree of selection on observables is equal to the degree of selection on unobservables, the bias term in (6) turns out to be

$$\frac{Cov(v,\epsilon)}{Var(v)} = \frac{Var(Leader)}{Var(v)} \left\{ \frac{E[X'\tilde{\beta}|Leader=1] - E[X'\tilde{\beta}|Leader=0]}{Var(X'\tilde{\beta})} Var(\epsilon) \right\} \tag{7}$$

Setting α in equation (5) equal to zero, one can consistently estimate $\tilde{\beta}$ via OLS. The estimated value of $\tilde{\beta}$ and variance of the residual, along with sample values of $Var(Leader)$ and $Var(v)$ would provide an estimate of the asymptotic bias under equal degrees of selection on observables and unobservables. Dividing the unconstrained estimate of α from equation (1) by (7) yields a measure, which Altonji et al. (2005) call as the *implied ratio*. The implied ratio indicates how much larger the extent of selection on unobservables needs to be, relative to selection on observables, to entirely explain the treatment (leadership) effect. Small values of the implied ratio imply that the treatment effect is highly sensitive to selection on unobservables. As a rule of thumb, if the implied ratio is in the neighborhood of one or larger, then, one cannot rule out the possibility that the effect obtained from the outcome equation is causal.[3]

[3] As discussed in Altonji et al. (2005), this procedure yields reliable ratios under the following assumptions: the set of covariates are a random draw from all factors affecting the dependent variable (wages/earnings in our case) and no observable or unobservable factors play too large role in the determination of the dependent variable.

4 Results

4.1 Baseline Results

Table 2 presents the school fixed effect estimates. The KW's original estimates using NLS72 and HSB are given in columns 1 and 3, our replication of their results using the same data sets are given in columns 2 and 4 and finally, the results from NELS are presented in Column 5 of Table 2.[4] As the table implies, we were able to replicate the KW results to a great extent. With respect to the leadership premium, the estimates indicate an effect within the range of 0.127 to 0.241. That is, those holding a team captain and a club president position in high school earn 12.7% to 24.1% higher hourly or annual income relative to men who joined both teams and club but held no leadership position. For HSB and NELS data sets, we also observe that men who were either captain or president earn more than 12% compared to those who were only members of teams or clubs.

Taking the rate of return to education estimate of 10%, based on the recent survey by Card (1999), as our benchmark, the magnitude of leadership effects are substantially large and thus may have an impact on policy discussions about what to change in high school curriculums to improve future economic success of students. If high school leadership skills are as vital on future economic success as these numbers indicate and if these skills can be acquired then, perhaps changes in high school curriculums to encourage involvement in those type of activities is warranted.

In order to see the sensitivity of the leadership premium to the implicit assumption of exogeneity, we calculate the implied ratios in Table 3. The first row of Table 3 presents the fixed-effect estimates of α from Table 2, the estimated asymptotic bias is given in row 2 and the last row displays the estimated ratios. For NLS72, the implied ratio is 0.82; that is if the (normalized) amount of selection on unobservables is 82 percent the amount of selection on observables, the positive effect of holding a leadership

[4] The coefficients on other control variables are suppressed for the ease of presentation.

position in high school on adult earnings is fully explained. The evidence for leadership premium from the NLS72 is not strong enough to completely rule out the possibility that much of the positive effect is due to selection bias. The estimated ratio for HSB (1.5), on the other hand, is well above the threshold value of one and that most of the leadership premium on earnings is probably real. Finally, the implied ratio from the NELS show that the selection on unobservables have to be 4.7 times as strong as selection on observables to explain away the entire positive impact of leadership activities. This is a very large value, suggesting that the substantial part of the estimated leadership effect on earnings for NELS is real.[5]

Overall, the results for HSB and NELS from Table 3 provides strong evidence pertaining to a causal relation between occupied leadership positions in high school and adult earnings. Moreover, the estimated ratios show a monotonically increasing pattern across the data sets, which may indicate a rise in the market price of leadership skills over time.

4.2 Do Leadership Skills Act as a Proxy for Some Other Attributes?

In addition to finding out a strong correlation between leadership activities and adult earnings, KW have also examined whether leadership skills are acting as a proxy for physical or psychological attributes. Several different specifications such as including measures for physical attractiveness (for example, body mass index) and psychological characteristics (for example, self-esteem index) leaves the leadership coefficient almost identical.

Analogous to KW, in this section, we augment several different variables in order to examine the

[5] Even though we can replicate the leadership effect found in KW to a larger extent by including the students' educational attainment in the regressions (0.116 for NLS72 and 0.227 for HSB), we choose not to do so for primarily two reasons. First, we have to have the same set of X variables in the participation and the outcome equation and the educational attainment does not belong to the participation equation. Second, as indicated in KW, the educational attainment is endogenous in the current context. Nevertheless, estimation of the implied ratios with educational controls does not alter our findings and these results are available upon request.

robustness of the leader coefficient, as well as the estimated implied ratios from the NELS. To account for physical attractiveness, we utilize the self-reported questionnaires from the second-follow up for whether the student identifies him or herself as being athletic and popular. The responses for each question are divided into three categories: very, somewhat and not at all. The first column of Table 4 reports the results from this specification. The crude measures for attractiveness are jointly significant at 6% level. However, the leadership coefficient remains intact and furthermore, there is still strong evidence for a causal relation (implied ratio=3.2).

To investigate if the leadership effect proxies for some observable psychological attributes, we add the following measures from the second-follow up to our baseline specification: self reported questionnaire for whether the student identifies him or herself as being social (very, somewhat and not at all) and an average of the composite Rosenberg self-esteem and Rotter locus of control scales. The Rosenberg Scale refers to the perceptions of self-esteem based on 7 statements such as "I feel I am a person of worth, the equal of other" and "On the whole, I am satisfied with myself" (Rosenberg 1965). The Rotter Scale, on the other hand, refers to the extent to which individuals believe that they can control outcomes that affect them based on 6 statements such as "I do not have enough control over the direction my life is taking" and "Chance and luck are very important for what happens in my life" (Rotter 1966). A larger value of the average of the composite index implies higher noncognitive skills. The results shown in the second column of Table 4 indicate that observable psychological characteristics affect the adult earnings, but the leadership effect is not simply capturing these traits. Moreover, the selection on unobservables have to be 3.3 times as strong as selection on observables to explain away the entire positive impact of leadership activities. Therefore, even in the presence of different measures of psychological features, a substantial part of the estimated leadership effect on adult earnings is real.

4.3 Are Leadership Skills Acquired During High School?

Thus far, we have provided evidence for positive and causal impact of leadership skills on adult earnings. A relatively unexplored and crucial question for policy implication that is still missing is whether the leadership skills are acquired in high school or are individuals endowed with them before even reaching to high school. KW use school-level leadership opportunities available to students during high school to shed some light on this issue. Specifically, the authors show that students with an inclination to leadership who attend high schools with more leadership opportunities earn significantly more compared to otherwise similar students attending schools with less leadership opportunities. This finding implies a kind of complementarity between acquired and endowed components of leadership skill.

In this section, using a unique feature of the NELS, we take this analysis one step further. Our contribution over KW is twofold. First, we have a direct measure of leadership activities held before the high school entry, which enables us to condition and examine the impact of pre-high school leadership skills. We would expect an impact of eighth grade variables on earnings under the endowed skill hypothesis. Similar to senior year in high school, the students were asked a series of questionnaires pertaining to their sport/club participation in eighth grade. The responses are divided into three categories: did not participate, participate as a member and participated as an officer. Depending on the nature of participation activity, we define the eighth grade officers as team captain or club president (or both) and eighth grade membership is defined similarly. Second, unlike KW, we can still control for the school fixed effects since our examination of the endowed versus acquired skills is based on individual level data.

To get a grasp of team/club participation across the grades, we first present the distribution of the leadership positions held in eighth and twelfth grades separately (Panel A of Table 5). In our effective sample (1,410 observations once we drop the missing observations for eighth grade team/club participation), 14% of all eighth graders were either a club official or a team official (or both), while the

corresponding fraction for twelfth graders was around 40%. Next, in Panel B of Table 5, we display a matrix of leadership involvement. More than 8% of the students held some type of leadership positions in both eighth and twelfth grades. Among the twelfth graders who were team captains and club president, 25% were also either a team or a club officer (or both) in eighth grade.

In the first column of Table 6, we first present our baseline specification by replacing the twelfth grade leader and membership indicators with those from eighth grade to distinguish between acquired versus endowed skills. The club officer, team officer and club and team officer coefficients are all imprecisely estimated, which indicates that holding a leadership position in the eighth grade has no effect on adult earnings. This finding raises concerns regarding the endowed skill hypothesis. To further explore this, we incorporate the twelfth grade leadership variables and their interaction terms with eighth grade leadership measures. Before presenting these results, however, it is important to recall that out of 152 leaders, 38 held leadership positions in eighth grade as well. Splitting the 38 observations into three different groups as we have done for the first column of Table 6 would give us a very few number of observations to precisely estimate the possible additional effect of holding an officer position in the eighth grade. To this end, we utilize only two eighth grade indicators (one for holding an officer position and one for membership) without distinguishing the type and conduct our analysis with these new variables. The third column of Table 6 presents the corresponding estimates from Table 2 for 1,410 observations. Although the leadership coefficient falls around 4 percentage points (from 0.178 to 0.134 with the implied ratio of 2.15), it is still highly significant. In the next column, we add the eighth grade officer and membership variables. The leadership coefficient estimate remains almost intact and the eighth grade officer estimate is very small in magnitude and is not different from zero. Finally, to separate the leadership premium for those who held the leadership positions in both grades from those who held these positions in only twelfth grade, we interact the twelfth grade leadership indicator with the one from eighth grade (officer) and include it in the last column of Table 6. The leadership coefficient is slightly below 13%

and significant, while the interaction term, as well as the officer coefficient are small in magnitude and imprecisely estimated.

Overall, the stability of the twelfth grade leadership coefficient to the inclusion of eighth grade variables along with the absence of any significant effect of the latter may bolster the hypothesis that the leadership skills are acquired by holding leadership positions in high school.[6]

5 Conclusion

In recent years, noncognitive skills in explaining social and labor outcomes have received considerable attention. Among many different aspects, this paper examines one strand of noncognitive skills, namely, the leadership skills. Using the NELS and following Kuhn and Weinberger (2005), we revisit the association between the leadership activities students engage in during high school and their adult earnings. Viewing the complete set of results, we have three empirical findings.

First, there is a strong positive association between high school leadership activities and adult earnings and this association is not a by-product of non random (positive) selection into these activities. In contrast, a substantial part of the estimated leadership effect on adult earnings is *causal*. Second, leadership skills do not act a proxy for physical or psychological attributes in the sense that controlling for them do not overturn the (causal) estimates of leadership effect. Third, in an attempt to make a distinction between endowed versus acquired leadership skills, we find evidence in favor of the hypothesis that these skills are acquired in high school, perhaps as a result of occupying a leadership position during that period.

It is widely recognized that cognitive skills are fairly set by age eight, while there is strong evidence for the malleability of noncognitive skills at later ages (see, for example, Carneiro and Heckman

[6]Of course, we do not rule out the notion that part of the leadership skills are endowed. The family environment, as well as the genetic factors can be very important in gaining these skills.

2003, Cunha et al. 2006). Indeed, early intervention programs such as the Perry Preschool, which emphasized participants' intellectual and social development, was much more successful in changing the noncognitive skills compared to the cognitive skills. That being said, given the quantitative importance and potentially acquired nature of leadership skills, the educational/social policy interventions during high school aiming to encourage involvement in leadership activities rather than targeting to improve cognitive skills may be more effective for labor market success.

Finally, our analysis show that the research in noncognitive skills may utilize this econometric procedure, which is already available in the treatment effects literature, to evaluate the results from causality standpoint even in the absence of proper instrument.

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Table1:Sample Means of Various Data Sources

	NLS72-KW	NLS72	HSB-KW	HSB	NELS
Earnings:					
Hourly Earnings	12.600	12.954			14.762
Annual Earnings			26,100	26,884	
Leadership:					
Both Captain and President	0.065	0.060	0.121	0.114	0.116
Captain Only	0.102	0.099	0.133	0.145	0.101
President Only	0.156	0.174	0.222	0.230	0.195
Membership:					
Both on Team Member and in Club	0.427	0.451	0.490	0.508	0.465
On Team Only	0.163	0.160	0.111	0.125	0.058
In Club Only	0.237	0.234	0.267	0.252	0.304
Math Score (percentile/100)	0.465	0.604	0.538	0.463	0.566
Parents' Education:					
High School	0.554	0.553	0.601	0.628	0.591
College or Higher	0.312	0.275	0.326	0.290	0.328
Number of Schools	824	833	699	703	684
Sample Size	3,083	3,109	2,383	2,435	1,627

Table 2: The Effects of Leadership Activities, Various Data Sources

	NLS72-KW	NLS72	HSB-KW	HSB	NELS
			Coefficient (Standard Error)		
Leadership:					
Both Captain and President	0.122*	0.127**	0.231**	0.241**	0.178**
	(0.054)	(0.045)	(0.056)	(0.045)	(0.045)
Captain Only	0.042	0.057	0.111*	0.136**	0.087
	(0.040)	(0.034)	(0.048)	(0.037)	(0.046)
President Only	-0.005	0.017	0.167**	0.138**	0.125**
	(0.032)	(0.029)	(0.038)	(0.032)	(0.035)
Membership:					
Both on Team and in Club	0.094**	0.093**	0.017	0.026	-0.032
	(0.036)	(0.031)	(0.051)	(0.043)	(0.041)
On Team Only	0.056	0.054	0.065	0.089	-0.075
	(0.039)	(0.035)	(0.064)	(0.051)	(0.065)
In Club Only	0.069	0.068*	-0.073	-0.063	-0.054
	(0.036)	(0.032)	(0.053)	(0.045)	(0.042)

NOTES: Regressions control for senior level math test scores, highest level of parental educational attainment and school fixed effects.

** Significant at 1%, *Significant at 5%

Table 3: Implied Ratios for Baseline Specifications

	NLS72	HSB	NELS
α	0.127	0.241	0.178
$(Cov(v,\varepsilon))/(Var(v))$	0.154	0.160	0.038
Implied Ratio	0.824	1.506	4.684
R^2	0.38	0.36	0.46

NOTES: Implied Ratio is the first row divided by the second row. See text for further details.

Table 4: Introducing Physical and Psychological Traits into Leadership Earnings Regression

	(1)	(2)
Leadership:		
Both Captain and President	0.181**	0.165**
	(0.048)	(0.048)
Captain Only	0.086	0.068
	(0.049)	(0.048)
President Only	0.124**	0.116**
	(0.037)	(0.037)
Membership:		
Both on Team and in Club	-0.055	-0.052
	(0.045)	(0.043)
On Team Only	-0.117	-0.107
	(0.075)	(0.068)
In Club Only	-0.050	-0.058
	(0.043)	(0.043)
Physical Attractiveness:		
Somewhat Athletic	0.025	…..
	(0.035)	
Not Athletic At All	-0.048	…..
	(0.048)	
Somewhat Popular	-0.079	…..
	(0.042)	
Not Popular At All	-0.092	…..
	(0.057)	
NonCognitive Skills:		
Somewhat Social	…..	0.010
		(0.033)
Not Social At All	…..	-0.079
		(0.045)
Self-Esteem and Locus of Control	…..	0.043*
		(0.021)
Implied Ratio	3.171	3.302
R^2	0.48	0.47

NOTES: Regressions control for senior level math test scores, highest level of parental educational attainment and school fixed effects.
** Significant at 1%, *Significant at 5%

Table 5:Descriptive Statistics for the 8th and 12th Grade Leadership Activities

Panel A:				
	8th Grade		12th Grade	
Any Leadership Position	199		569	
No Leadership Position	1211		841	
Panel B:				
8th Grade	12th Grade			
	Both Captain and President	Captain Only	President Only	None
Both Team and Club Officer	7	2	4	16
Team Officer Only	9	14	6	24
Club Officer Only	22	15	39	42
None	114	108	229	760

NOTES: The eighth and twelfth grade leadership activities are available for 1,410 white males.

Table 6: Introducing the 8th Grade Activities into Leadership Earnings Regression

	(1)	(2)	(3)	(4)
8th Grade Leadership:				
Both Team and Club Officer	0.054	…..	…..	…..
	(0.095)			
Team Officer Only	-0.104	…..	…..	…..
	(0.075)			
Club Officer Only	0.079	…..	…..	…..
	(0.053)			
8th Grade Membership:				
Both on Team and in Club	0.181**	…..	…..	…..
	(0.048)			
On Team Only	0.108*	……	…..	…..
	(0.054)			
In Club Only	0.124*	……	…..	…..
	(0.053)			
12th Grade Leadership:				
Both Captain and President	…..	0.134**	0.123*	0.125*
		(0.050)	(0.050)	(0.055)
Captain Only	…..	0.072	0.064	0.064
		(0.051)	(0.051)	(0.051)
President Only	…..	0.116**	0.104**	0.104**
		(0.038)	(0.038)	(0.038)
12th Grade Membership:				
Both on Team and in Club	…..	-0.014	-0.023	-0.023
		(0.044)	(0.044)	(0.044)
On Team Only	…..	-0.094	-0.098	-0.098
		(0.073)	(0.073)	(0.073)
In Club Only	…..	-0.060	-0.061	-0.061
		(0.044)	(0.044)	(0.044)
8th Grade Officer	…..	…..	0.013	0.015
			(0.041)	(0.044)
8th Grade Member	…..	…..	0.132**	0.132**
			(0.046)	(0.046)
Both Captain and President*8th Grade Officer	…..	…..	…..	-0.012
				(0.106)
Implied Ratio	…..	2.151	1.625	…..
R^2	0.50	0.49	0.50	0.50

NOTES: Regressions control for senior level math test scores, highest level of parental educational attainment and school fixed effects. We do not report the implied ratio for the last column since the interaction term is also potentially endogenous.

** Significant at 1%, *Significant at 5%