

# GOTTA WORK FOR IT: HOW HIGH SCHOOL WORK EXPERIENCE IMPACTS COLLEGE GPA

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## Abstract

*The purpose of this paper is to assess the relationship between high school work experience and a student's GPA in college. Studies have found that holding a job while in high school has a positive effect on self-efficacy (Cunnier, MartinRogers & Mortimer, 2009) and on current academic performance (Mael, Morath & McLellan, 1997). This paper seeks to evaluate whether those positive benefits extend to academic achievement in college as well. The study was done by manipulating data collected in the National Education Longitudinal Study of 1988 (NELS:88), obtained from the National Center for Education Statistics. Initial research tends to show that, while holding more work responsibility contributes to a greater sense of self-efficacy and control, long work hours have a negative effect on GPA in high school and in college.*

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## Introduction

My mother frequently consoled herself about my brothers' lack of high school academic achievement by telling herself that they put considerable hours and initiative into the family business and were learning plenty of soft skills and business smarts that would serve them later for college. We still have doubts about whether my brothers will even attend college after two gap years, but my mother is confident that, if they do attend, their life experience will make up for lost academic preparation. How, precisely? Perhaps my brothers will be more responsible, have better time management, be less stressed and have a greater sense of perspective and control, and be able to apply the problem-solving skills they learned on the job to make up for their learning curve at college.

This is an opinion heard from student advisors as well as anxious mothers. There *is* something to it. Colleges often look for prior work experience on an individual's application as an indicator that that person will take a more mature and responsible attitude toward classes. Volunteer work is particularly indicative of a positive outlook on life, but part-time and full-time work can express the same as well. An individual's ability to hold a job for a long period of time, as opposed to hopping seasonally from one to the next, is also a good indicator of a strong work ethic. All of these qualities are valuable for getting one step ahead in college.

It is unlikely, as my mother hoped, that work ethic alone could make up for the years my brothers did not spend learning how to write papers. I imagine they would be behind any class of their peers who had gone through conventional high school. But if they were placed side-by-side with other students of a similar academic background, it is conceivable to imagine they would be able to apply themselves better to learning because they were accustomed to taking initiative for their own success.

This paper intends to explore the effects of high school work experience on college GPA, but it immediately faces some limitations. Soft skills are hard to measure, especially when measured at one point in time. It would help to take a longitudinal study, but unfortunately, longitudinal studies of youth that ask questions about soft skills are in short supply. Such studies tend to be more interested in collecting data on a broader and simpler level, such as counting the number of students who took four years of math classes or smoked marijuana. This paper uses one such study: the National Education Longitudinal Study of 1988 (NELS:88). Since NELS:88 does not ask questions about soft skills directly, I have to focus my research on a broader questions and measure proxies rather than my intended variables.

My original hypothesis might have been that high school work experience will have a positive effect on college GPA by helping students develop soft skills

that are beneficial in academic classes. These skills would include better time management, greater attention and focus in classes, increased sense of responsibility and initiative for one's own academic success, and more amiable relationships with one's professors. But since these are not available to assess directly, I have revised my attempt to examine a much simpler and more accessible hypothesis. At the very least, high school work experience should have a positive effect on college GPA, regardless of one's academic achievement in high school.

## Literature Review

Studies addressing the relationship between academic achievement and work experience tend to focus solely on the effects of high school work on high school GPA or college work on college GPA, but there seems to be a shortage of longitudinal studies addressing the effect of high school work experience on college GPA. A brief review of relevant literature also indicates that this will not be an easy question to answer, because studies often disagree and have nuanced results.

Most researchers tend to hypothesize that employment and academics are mutually exclusive activities, and that time spent on one will necessarily reduce time spent on the other. In essence, the common assumption is that balancing employment and academics is a zero-sum game in which one activity must always be neglected in favor of the other. This assumption seems to be borne out in most studies. Keister and Hall (2010) found that part-time jobs for high school students are beneficial so long as students work under 20 hours per week. Tyler (2010) also found that mean twelfth-grade math scores declined sharply as hours worked per week rose. Holding a job in high school had a nonsignificant effect on academic scores if the hours worked were under 10, but once a student began working over 10 hours, grades began to decline, and dropped off sharply at the 20-hour mark.

The relationship between the two may seem intuitive, but it may not be due simply to a lack of time to allocate to one activity. Other studies have found that the adverse effect on academic achievement may be due more to psychological or environmental conditions. Schoenhals et al. (1998), using data from the NELS:88 longitudinal study, controlled for different variables that might have contributed to work choices and academic achievement, such as type of school and type of curriculum. They concluded that among tenth-grade students, the adverse effect of employment on achievement could almost always be attributed to preexisting differences among teenagers, and that the effect could be mitigated or exacerbated by controlling for a different kind of school or curriculum.

A more recent study by Staff et al. (2010) did find that teenagers who worked more than 20 hours a week performed worse in school than teenagers who

worked fewer hours. But surprisingly, teenagers who wanted to work but were not actually working had the same poor performance as those who actually held jobs. The psychological effect of wanting to work produced behavior similar to that of teenagers who were actually employed. These studies seem to indicate that *attitude* toward work is more important than the number of hours worked, which would fit with this paper's hypothesis that soft skills learned in high school employment positively affect academic achievement in college.

There are many different factors that could be measured to assess attitude, but the most significant is self-efficacy, or the sense that one is in control of one's outcomes in work and academics. Self-efficacy has also been defined as feelings of confidence in one's ability to reach a goal (Cunniën et al. 2009). Several studies have measured self-efficacy among working youth and the effect of self-efficacy on academic achievement. Finch et al. (1991) found that the quality of work was more important in determining self-efficacy than either work status (part-time or full-time) or work intensity. The study was conducted on the first and second waves of a four-year longitudinal study on ninth-graders enrolled in the St. Paul, Minnesota, School District. Finch et al. looked specifically at control orientation: whether students had an internal orientation toward control (feeling in control of their own plans and outcomes) or an external orientation (feeling subject to uncontrollable external conditions). Hours did not seem to make a difference. Finch et al. did not ask about academic achievement in relation to work.

Ross and Broh (2000) did take up the question of academic achievement and sense of personal control. They found that academic achievement boosts self-esteem and sense of personal control, but that self-esteem has a negligible effect on later achievement. Students could have high self-esteem, but if they also believed school results were out of their control, their grades would suffer. Personal control, rather, improved academic achievement the most. It also led to a positive feedback cycle that amplified over time, so that there was a greater effect observed in older students than in younger.

It seems that quality work contributes to feelings of self-efficacy and control and that those feelings should contribute to academic achievement. But the relationship may be more nuanced. Cunniën, MartinRogers, and Mortimer (2009) studied the relationship between high school work experiences and self-efficacy. They found that steady work over a longer period (at least a year) did have a significant positive effect on youth self-efficacy, but that occasional work (seasonal or temporary) had an opposite effect, actually lowering self-efficacy. Moreover, stresses and challenges in the workplace did not seem to have a regularly measurable effect on self-efficacy. The effect of stress depended on the worker's attitude: some youth reported feeling distressed and overwhelmed by challenges, while others reported developing more resilience and feelings of empowerment instead. But overall, Cunniën et al. found

that youth who had worked more by senior year were more confident about their futures than those who did not.

There are studies that find no relationship between employment and grades in academic courses, such as a study by Warren, LePore, and Mare (2000). Warren et al. do not investigate whether employment affects test achievement scores, but they do find that there is no apparent correlation between employment and academic courses.

All of these studies tend to focus solely on either high school students or college students, but the general trend seems to be that youth who already have feelings of confidence and self-efficacy and who also have a positive employment experience will increase their sense of self-efficacy, which is likely to improve their scores in academic settings.

## **Research Design**

Since my research is drawn primarily from the NELS:88 data, it follows that survey's methodology. The National Center for Education Statistics describes the NELS:88 survey:

The NELS:88, which began with an 8th grade cohort in 1988, provides trend data about critical transitions experienced by young people as they develop, attend school, and embark on their careers. Data were collected from students and their parents, teachers, and high school principals and from existing school records such as high school transcripts. Cognitive tests (math, science, reading, and history) were administered during the base year (1988), first follow up (1990), and second follow up (1992). Third follow up data were collected in 1994. All dropouts, who could be located, were retained in the study. A fourth follow-up was completed in 2000 (National Center for Educational Statistics, 1988).

### *Key Concepts*

The key concepts here are high school work experience and college GPA, with the dependent variable being college GPA. The independent variable is high school work experience, measured by how many hours a student worked on average per week during the year. While NELS:88 provides the number of different jobs a student worked during the school year, it does not provide comprehensive data on each of those jobs; therefore, only the variable measuring average work hours per week for each year is used.

*Key Variables*

**High school work experience.** Measured in terms of average hours per week worked per year on the job held longest during that year. NELS:88 asks respondents about the jobs they held longest in 1992, 1993, and 1994.

**College GPA.** College GPA was measured in 7 categories rather than on a 4-point scale.

The survey asked respondents, “When you attended (name of school) as an undergraduate, what were your grades (or cumulative GPA)?” The survey provided 7 answers to choose from:

1 = MOSTLY A'S (GPA 3.75 AND ABOVE ON 4.0 SCALE)

2 = A'S AND B'S (3.25 - 3.74)

3 = MOSTLY B'S (2.75 - 3.24)

4 = B'S AND C'S (2.25 - 2.74)

5 = MOSTLY C'S (1.75 - 2.24)

6 = C'S AND D'S (1.25 - 1.74)

7 = MOSTLY D'S OR BELOW (LESS THAN 1.25)

These scores were recorded in reverse order for the purposes of analysis so that lower scores would fall near the origin of the axis rather than the extremity. For example, a score of 5.5 would mean that the respondent earned mostly B's, not mostly C's. It would also mean that the respondent's average GPA fell near 3.00 on a 4-point scale.

The wide range of possible GPAs that could be covered by a response of “5” on the survey means that all the results of this study have to be taken with caution. The important element in this study will be variables' values relative to each other rather than their absolute values. It will also be crucial to see whether changes produced by the independent variable are statistically significant. This study will not, however, be able to predict with two-decimal accuracy where a respondent's GPA is likely to fall. The most this study will be able to predict is where a respondent's GPA is likely to fall within half a letter grade, the same accuracy that the NELS:88 originally asked for.

**High school grades.** High school grades are measured as a composite of a respondent's English, math, science, and history grades. They are also given in 7 categories identical to those provided for college GPA.

**Sense of control.** While NELS:88 does not measure “self-efficacy” as such, it does include a composite variable that measured the respondent's locus of control during the base year (1988). Respondents were asked six questions about how they felt luck and hard work affected their plans. Options that indicated an external control orientation (feeling subjected to outside forces over which the respondent has no control) were scored -2. Options for internal control orientation (feeling in control of one's plans and outcomes) were scored +2. The survey responses were compiled and sorted into a continuous range reaching from -2.67 to 1.52, with a

mean of .0425. These responses were binned into quartiles for use in the following analyses. Quartiles were labeled Strong External, Mild External, Mild Internal, and Strong Internal.

The relationship between high school grades and college GPA can be tested while controlling for a student's sense of control. Additionally, sense of control should be compared against number of hours worked and high school grades to determine whether there is any causal connection that will have a bearing on college GPA.

## Research

**College GPA vs. High school work.** First, I compared the college GPAs of those who did not hold a job in high school to those who did. Out of a sample size  $N = 7966$ , those who worked had a slightly higher mean GPA score (5.3125) than those who did not (5.2787). It is unlikely that this is significant. Chi-square had a result of 11.334 with a p-value of .079. An independent samples test with equal variances assumed and a 90% confidence interval included 0 as a possible value. Both statistical results strongly suggest confirming a null hypothesis.

College GPA (7-pt scale)

Held job	Mean	N
Did not work	5.2787	1812
Worked	5.3125	6154
<i>Total</i>	<i>5.3048</i>	<i>7966</i>

However, I went ahead and analyzed other variables for respondents who did hold a job to see if any of the other variables suggested by the literature review (hours worked, position of responsibility, and sense of control) had an effect on college GPA. It may be that on a macro level, merely working during high school does not affect college GPA, but a more nuanced analysis will show effects from different aspects of work experience.

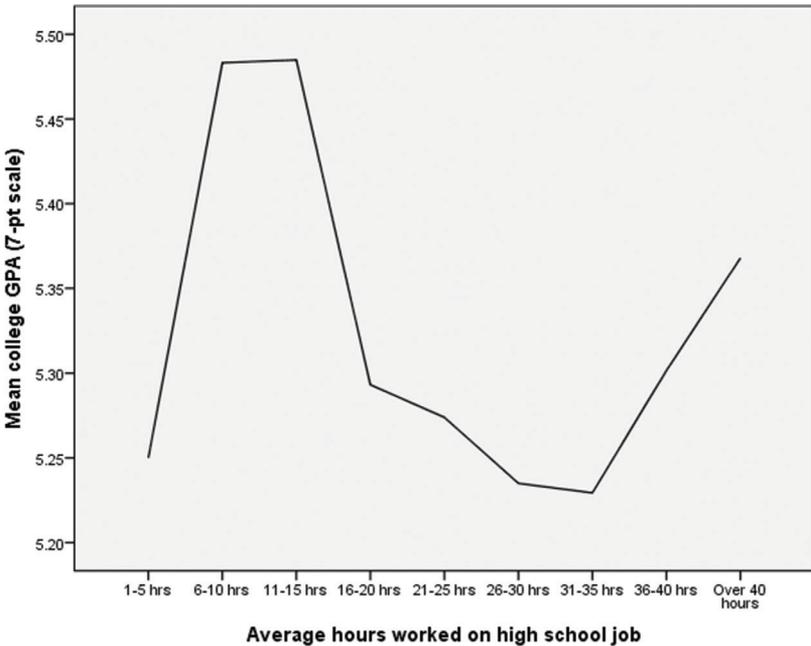
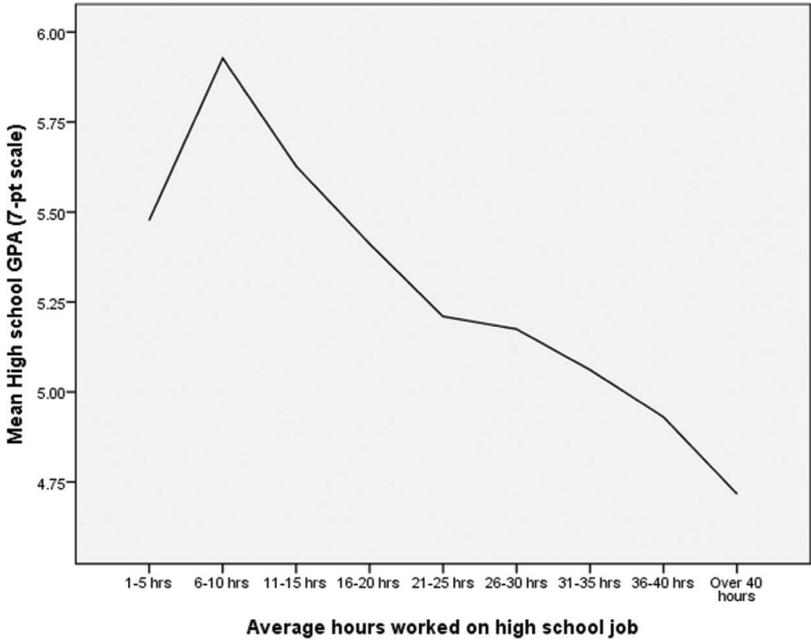
**College GPA vs. High school job hours.** I compared the mean college GPA scores of those who worked different numbers of hours, with work hours sorted into 5-hour blocks. Out of a survey sample size of 12144, 5990 data points were excluded due to missing responses or not attending college, leaving a sample size  $N = 6154$ .

At first glance, results seem to show that GPA is highest in the 6-15 hour range, with a decline in mean GPA as hours rise. It is important to keep in mind that this cannot be assumed to be the result of a work-study time tradeoff, since this table correlates high school job hours with college GPA. Oddly, GPA rises for those who worked 36-40 hours during high school, and even more for those who worked over 40 hours. The sample size is large enough for those categories that these cannot be statistical outliers.

There is also a drop in GPA at the 16-hour mark rather than the 20-hour mark as suggested by the literature review, but that may be due to a difference in data set or the binning of the variable. Mean GPA for those working between 16 and 35 hours is definitely lower than GPA for those working less than 16.

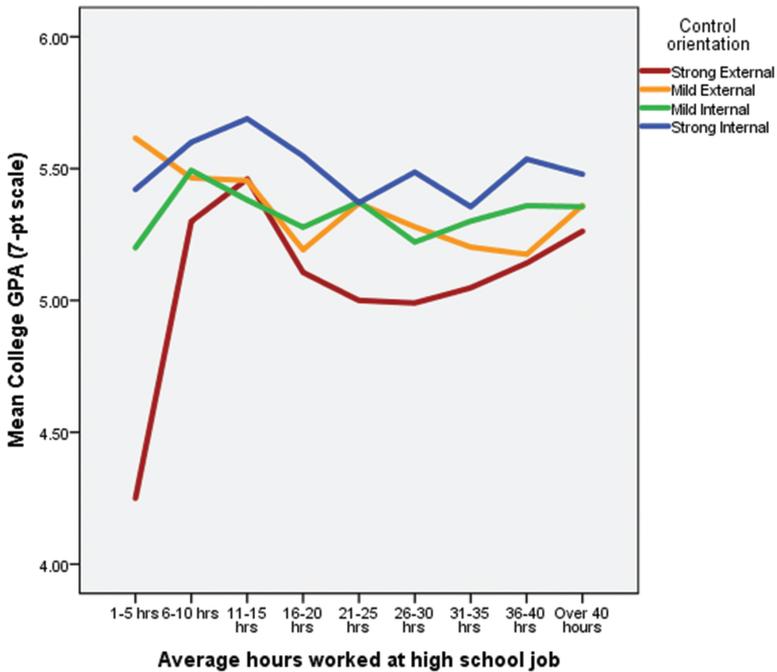
Average hours worked at high school job	Mean	N
1-5 hrs	5.2500	56
6-10 hrs	5.4831	325
11-15 hrs	5.4847	524
16-20 hrs	5.2931	1027
21-25 hrs	5.2739	723
26-30 hrs	5.2350	919
31-35 hrs	5.2294	497
36-40 hrs	5.3015	1466
Over 40 hours	5.3679	617
<i>Total</i>	<i>5.3125</i>	<i>6154</i>

For comparison, the effect of hours worked on high school GPA has a similar but stronger correlation. Work hours are beneficial as long as they are under 10, with GPA declining rapidly thereafter. The range of possible GPA is also much greater in this relationship than for college GPA, showing a stronger correlation (4.75 – 6.00 as opposed to 5.20 – 5.50). N = 8337.



**College GPA vs. Sense of control.** I cross-tabulated high school sense of control with college GPA. There was a strong correlation between having a sense of control in high school and having a higher GPA in college. Of respondents who reported a GPA between 1.75 and 2.25 in college, 32.0% had had a strong external orientation in high school, while only 18.3% had had a strong internal orientation. Of respondents that had a 3.75 GPA or better in college, the numbers are 17.3% and 30.0%, respectively—nearly opposite. Chi-square was 143.687 with a p-value of .000. This agrees with Finch et al. (1991) and Ross and Broh (2000), who found that a sense of personal self-efficacy contributes to academic achievement.

**College GPA vs. High school job hours, controlling for sense of control.** Since students' sense of control had such a strong effect on their academic achievement, I analyzed the relationship between job hours worked and college GPA while controlling for control orientation. The results show that students who feel in control of their lives do better overall than students who do not, yet GPA seems to decline at the 16-hour mark regardless of orientation. Sample size was N = 7931.

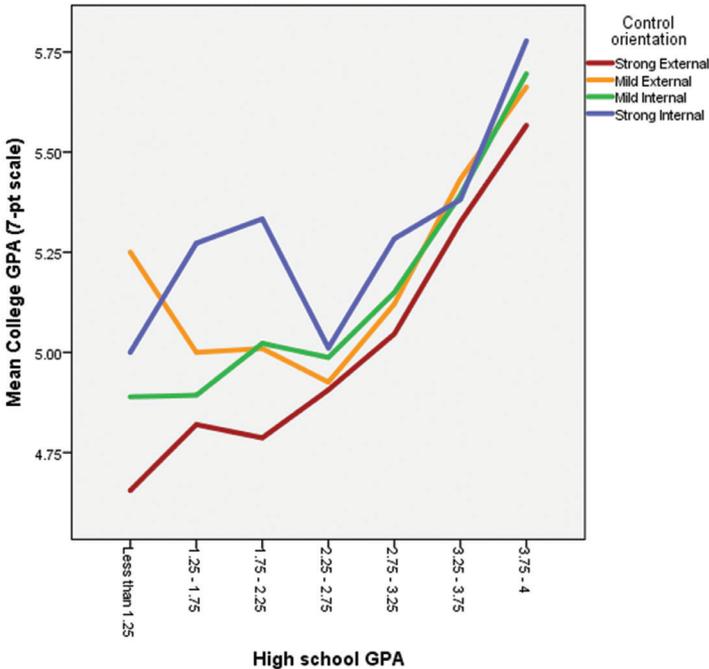


**College GPA vs. High school GPA, controlling for sense of control.** Finally, I analyzed the relationship between high school GPA and college GPA to test the hypothesis that smarter students are smarter regardless of whether or not they worked.

I analyzed a few relationships beforehand to verify a baseline. I compared high school GPA and college GPA: there is a clear and obvious correlation. I also compared both while controlling for whether or not a student worked, but found as before that merely working makes no difference.

I then compared high school and college GPA while controlling for control orientation. Having a sense of control, as opposed to holding a job, makes a difference on college GPA. The effect is more pronounced for students who had lower rather than higher grades in high school.

In this graph, college GPA and high school GPA are not directly comparable, since college GPA is given in terms of means and high school GPA remained binned into 7 categories. The general trend is clear, at least. For students who had less than a 2.25 GPA in high school, their sense of control made a great deal of difference later on their college GPA. For students who had GPAs over 2.25 in high school, however, their sense of control made little difference: they seemed to do well in the college classes regardless.



This graph may be somewhat exaggerated because the number of students who had high GPAs in high school is much greater. There are only 44 students, for instance, that scored high school GPAs less than 1.25, but 2728 who fell into the 2.75 – 3.25 category. Despite the possible exaggeration of differences at low GPA levels, chi-square test results confirm the general trend. The chi-square value is 638.709 with a p-value of .000.

The result for those with a strong internal orientation seemed unusually interactive, so I ran a brief further analysis to control for number of hours worked. I looked at students who had scored GPAs of 1.75 – 2.25 in high school and had strong internal orientations. For such a specific request, the sample size was only 34 students. Of the group, individuals tended to work close to full-time rather than part-time, and the full-time students tended to have higher GPAs. The sample is unrepresentative and cannot be used to generalize, but does not seem to support the idea that higher-scoring students were simply those with fewer hours to work.

## Conclusion

The original hypothesis of this paper—that holding a job in high school will have positive effects on college GPA—is confirmed, with certain caveats. Merely holding a job in high school has no statistically significant effect on college GPA. Rather, the effect is based on the number of hours worked. Working a few hours in high school does help raise GPA, while working over 16 (or 20) has a negative effect on GPA in high school, with ripple effects that extend to college.

Job hours have a similar effect on college GPA as they did on high school GPA, with declining GPA as hours increase. In both relationships, students benefitted more academically if they had worked between 5 and 16 hours. GPAs began to decline at the 16-hour mark, with the lower average GPA lasting from high school into college. This may be because students who had less time to study in high school were not as able to prepare for rigorous college activity. It may also be that students who were not as smart in high school tended to have the same results in college.

The relationships differ at the 36-hour mark. Students who worked full-time during high school have predictably low GPAs, the lowest among their high school peers. However, in college, these same students have higher GPAs than peers who had worked 36 hours or less. It could be that full-time high school workers did indeed have a stronger work ethic which enabled them to earn higher GPAs in their college classes. It could also be that these students entered colleges with lower entry-level requirements and had easier classes than higher-achieving high school students who entered more rigorous colleges.

The corollary hypothesis of this paper—that working gives a student soft skills that benefit him or her later in college—cannot be directly confirmed or

denied because it was not directly investigated. However, some proxy variables were analyzed that can give some insight, such as control orientation.

A student's control orientation during high school (called self-efficacy in other studies) had a much greater effect on college GPA than number of job hours. For students who worked the same number of hours, those who had strong internal orientations had higher GPAs than those who had strong external orientations. This finding agrees with the studies mentioned in the literature review. It is also favorable to the supposition that maturity and responsibility will have positive effects on GPA, though it does not directly include that hypothesis. The 16-hour effect still comes into play; a strong internal orientation does not necessarily insulate a student from the pressures of having worked longer hours in high school.

The effect of control orientation is also visible when only considering a student's historical GPA and ignoring job hours. When comparing high school GPA to college GPA, it becomes clear that control orientation has a significant effect on lower-scoring students. Students who had high school GPAs over 2.25 seem to perform similarly in college regardless of control orientation. But for students who had high school GPAs under 2.25, the effect is much more interesting. If they had a mild or strong external orientation, their GPAs remain the same or lower than their peers in college. If they had a strong internal orientation—that is, a great sense of self-efficacy—they had much higher GPAs in college than they did in high school, as well as higher GPAs than their peers who had better high school GPAs. For example, the group of students who tended to get C's and D's in high school, yet still had a strong sense of self-efficacy, tended to get B's in college. They had higher GPAs on average than high school peers who had gotten mixed B's and C's, and comparable GPAs to high school peers who had gotten mixed A's and B's. This finding may be evidence that students can indeed raise their average academic achievement through a “can do” attitude.

These results are not significantly different from the results discussed in the literature review. What this paper finds in addition to those results is that students who have lower high school grades, in particular, may earn higher scores in college if they have a strong sense of self-efficacy. This may be somewhat of a comfort to my mother—although it may never be confirmed for her personally if my brothers never attend college—and should motivate high school teachers to continue encouraging lower-achieving students to take control of their own education; it's never too late.

## Reference List

- Cunnien, Keith A.; MartinRogers, Nicole; and Mortimer, Jeylan T (2009). Adolescent work experience and self-efficacy. *International Journal of Sociology and Social Policy*, 29(3/4), 164-175
- Dadgar, Mina (2012). The Academic Consequences of Employment for Students Enrolled in Community College (CCRC Working Paper No. 46). Retrieved from Community College Research Center website: <http://ccrc.tc.columbia.edu/media/k2/attachments/academic-consequences-employment.pdf>
- Finch, Michael D.; Shanahan, Michael J.; Mortimer, Jeylan T.; and Seongryeol, Ryu (1991). Work Experience and Control Orientation in Adolescence. *American Sociological Review*, 56(5), 597-611
- Grabowski, Lorie J. Schabo; Call, Kathleen Thiede; Mortimer, Jeylan T. (2001). Global and Economic Self-Efficacy in the Educational Attainment Process. *Social Psychology Quarterly*, 64(2), 164-179
- Keister, Mary, and Hall, Joshua (2010). High School Employment and Academic Achievement: A Note for Educators. *Contemporary Issues In Education Research*, 3(1), 77-81
- Mael, F. A., Morath, R. A., & McLellan, J. A. (1997). Dimensions of adolescent employment. *The Career Development Quarterly*, 45(4), 351-368
- National Center for Education Statistics, U.S. Department of Education. *National Education Longitudinal Study of 1988 (NELS:88)* [Data File]. Retrieved from <https://nces.ed.gov/surveys/NELS:88/>
- Perozzi, Brett; Rainey, Amanda; and Wahlquist, Zack (2003). A review of the effects of student employment on academic achievement. *The Bulletin*, 71(5). Retrieved from Association of College Unions International website: [https://www.acui.org/content.aspx?menu\\_id=122&id=2170](https://www.acui.org/content.aspx?menu_id=122&id=2170)
- Ross, Catherine E., and Broh, Beckett A (2000). The Roles of Self-Esteem and the Sense of Personal Control in the Academic Achievement Process. *American Sociological Association*, 73(4), 270-84

- Schoenhals, Mark; Tienda, Marta; and Schneider, Barbara (1998). The Educational and Personal Consequences of Adolescent Employment. *Social Forces*, 77, 723-62
- Staff, Jeremy; Schulenberg, John E.; and Bachman, Jerald G. (2010). Adolescent Work Intensity, School Performance, and Academic Engagement. *Sociology of Education*, 83(3), 183-200
- Tyler, John H. (2003). Using State Child Labor Laws to Identify the Effect of School-Year Work on High School Achievement. *Journal of Labor Economics*, 21(2), 381-408
- Warren, John Robert; LePore, Paul; and Mare, Robert D (2000). Employment during High School: Consequences for Students' Grades in Academic Courses. *American Educational Research Journal*, 37, 943-69