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Youth Aptitude as a Predictor of Adulthood Income

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Abstract

I examine the relationship between youth aptitude and adulthood income. Using the National Longitudinal Survey of the Youth 1979 cohort and OLS regression analysis, I test the hypothesis that a higher 1981 Armed Forces Qualifications Test (AFQT) score is directly related to a higher income in 2010, ceteris paribus. First, a single regression equation is run for educational attainment subgroups at the time of taking the AFQT. Second, a regression equation including total lifetime educational attainment, and one that excludes it, are run to examine potential co-linearity between AFQT score and educational attainment. The results show that AFQT is significant and positively related to adulthood income.

Keywords

AFQT, labor economics, human capital, youth

I. Introduction

How important is youth aptitude in determining adulthood outcomes? This question has been a central focus of many disciplines, including cognitive science, psychology, and sociology (Knudsen, Heckman, Cameron, & Shonkoff, 2006). More recently, economists have taken an interest in answering this question, as much education and labor market policy has been based precisely on answers to it. One such example is the Head Start program, which is a federally funded comprehensive preschool education program provided to children of low-income parents (DHHS). The underlying premise of Head Start is that hefty educational investment during childhood will combat the effects of poor socioeconomic factors on children's economic future (DHHS). Although the efficacy of Head Start is contentious (Barnett & Belfield, 2006; Deming, 2009; Garces, Thomas, & Currie, 2002), similar programs such as the Abecedarian Project and the Perry Preschool Program have been shown to be quite successful (Nores, Belfield, C., Barnett, & Schweinhart, 2005; Barnett & Belfield, 2006; Heckman, 2008). Regardless, many economists have concluded that investment in youth education projects like these is necessary for garnering improved labor market outcomes in adulthood (Barnett & Belfield, 2006; Heckman, 2011; Heckman & Masterov, 2007; Knudsen et al., 2006). Some economists have gone so far as to argue that such investment is key to national economic growth (Heckman, 2011; Knudsen et al., 2006; MacEwan, 2013).

II. Theory

The framework underlying the content of this paper is the human capital theory, which states that certain investments in an individual (e.g. education, physical resources, parental resources, psychological support, etc.) should increase his productivity and, resultantly, his earnings (Rosen, 2008). In this paper, the cumulative human capital skills attainment at a point in time will be regarded as "aptitude." In context of "youth aptitude," human capital theory is highly attuned to the relationship between youth aptitude and adulthood outcomes, i.e. earnings.

For one, human capital is an economic resource that, like any other, is scarce—time, money, and the amount of skills an individual can learn and apply are all limited—and requires efficient allocation. Thus, the questions of how much and as well as what time human capital should be invested are germane to the theory (Rosen, 2008). Whether human capital should be invested early in childhood, in adulthood, or sometime in between is a central question in guiding many economic policies.

Additionally, human capital theory includes economic tools that provide a clear and precise groundwork for hypothesis formulation and testing. The age-earning profile is one such tool. The age-earning profile theoretically has an inverse "U" shape, whereas; as age increases, earnings rise until a point of peak earnings, after which earnings begin to decline. All things equal, higher human capital levels should garner a higher age-earning curve (Rosen, 2008). Consequently, if pre-market entry youth aptitude is higher for one individual than another, then all things being equal, the individual with a higher aptitude should be on a higher curve upon entry into the labor market. As such, higher earnings would be represented for the higher level of human capital attainment.

The theory also offers theoretical explanations of youth aptitude as it relates to adulthood income. Since youth aptitude is indicative of an individual's capacity to internalize human capital investment, a youth with a high aptitude will be able to acquire more human capital than a youth with a lesser aptitude in the same amount of time. Accordingly, the youth with a high aptitude should also see higher earnings given his greater level of human capital.

III. Literature Review

There are other components of human capital theory as it applies to the relationship between youth aptitude level and adulthood earnings. I will specifically examine three of these components in the following literature review, which will then lead me to a formal presentation of my hypothesis. The three components are as follows: 1) the factors which most determine youth aptitude, 2) the measures of aptitude, and 3) the relationship between youth aptitude, earnings, and labor market performance.

There are myriad human capital factors, both direct and indirect, that influence youth aptitude. Direct investments such as education play a critical role in the development of youth aptitude levels (Barnett & Belfield, 2006; Cascio & Lewis, 2006; Caspi, Wright, Moffitt, & Silva, 1998; Carvalho, 2012; Frederikkson & Öckert, 2005; Griliches & Mason, 1972; Hansen, Heckman, & Mullen, 2004; Hause, 1972; Heckman, 2008; Heckman, 2011; Heckman & Masterov, 2007; Knudsen et al., 2006; MacEwan, 2013). The innate ability of a child to internalize human investments may also directly influence aptitude levels. A child with higher innate ability is, theoretically, able to better convert human capital investments into greater returns than someone with a lesser innate ability to do so. Not surprisingly, IQ scores and general tests of cognitive levels and this innate ability have been shown to be indicative of productivity and thus earnings (Carvalho, 2012; Caspi et al., 1998; Heckman, 2008; Jones 2005; Jones, 2011). Similarly, Currie (2009) and Carvalho (2012) found that there was a strong positive link between a child's health and his adulthood education and income attainment.

Indirect human capital investments are those that either help or hinder an individual's attainment of human capital but are not investment in human capital *per se*. These include socioeconomic, geographic, and familial situations and many other factors. Family background variables, such as family poverty status, the educational attainment of a child's parents, the size and makeup of the family unit, among others, strongly determine aptitude levels (Caspi et al., 1998; Currie, 2009; Currie & Thomas, 1999; Heckman, 2011; Israel & Seeborg, 1998; Knudsen et al., 2006). Guo (1998) even argues that the time in which youth experience poverty plays a significant role in aptitude. These factors are entirely external, yet there is also significant evidence on the role of personal factors as well. Heckman, Stixrud, and Urzua (2006) found that non-cognitive factors (e.g. self-esteem, personal expectations) are strongly related to aptitude and labor market performance in that they strongly influence schooling, occupation, and behavioral decisions. Carvalho (2012) and Heckman (2008) seconded these findings in their own research, although Carvalho defined non-cognitive factors more broadly than Heckman. Congruently, Israel and Seeborg (1998) found that educational expectations are strongly related to actual educational attainment, and as such, aptitude. Caspi et al. (1998) also found that anti-social and other behavioral issues strongly correlated with decreased aptitude and labor market outcomes.

Evidently, there are myriad human capital factors, both direct and indirect, that most shape youth aptitude. For this reason, there is a large body of literature dedicated to the measurement of this aptitude. IQ and other modified IQ tests have become popular measures of human capital (Jones 20011; Jones 2005). Further, many of the same factors that influence aptitude also directly influence IQ, such as socioeconomic, environmental, and familial factors (Armor, 2003). However, there has been little focus given to how IQ, in turn, can be used to measure these factors. As far as the literature is concerned, IQ is only suitable for measuring cognitive skills strongly associated with human capital (Jones 2005). As such, the explanatory power of IQ as a measurement of human capital attainment as a whole, and therefore aptitude, is limited.

One other prominent measure of aptitude is the Armed Forced Qualifications Test (AFQT). The AFQT is a component of the Armed Services Vocational Aptitude Battery (ASVAB), which is used by the U.S. military to determine enlistment qualification. Unlike IQ, the AFQT has been thoroughly studied to determine exactly what aspects of aptitude it measures. Yet, the conclusions on this issue have varied significantly. Herrnstein and Murray (1994) notoriously posited that AFQT as a measure of innate and heritable intelligence in *The Bell Curve*. Conversely, many studies refute this claim and conclude that AFQT is more a measure of socioeconomic background than innate intelligence (Caspi et al., 1998; Currie, 2009; Currie & Thomas, 1999; Guzman, 2001; Israel & Seeborg, 1998). Other economists have instead concluded that AFQT is a function of educational attainment (Cascio & Lewis, 2006; Goldberger & Manski, 1995; Griliches & Mason, 1972; Guzman, 2001; Hansen, Heckman, & Mullen, 2003; Hause, 1972; Munday, 2001). Such a narrative bodes well with the human capital theory's emphasis on educational attainment as it relates to future earnings. Indeed, it is in these studies that the strongest relationship between AFQT scores and any other factor has been established. Johnson and Neal (1996) prominently published findings that AFQT accurately measures differences in human capital-based skills, although they do conclude that those differences can ultimately be traced back to youth socioeconomic differences. Heckman, Stixrud, & Urzua (2006) conclude that non-cognitive factors play a significant role in determining AFQT scores.

In summation, it is inconclusive as to which exact human capital factors most determine aptitude as measured by the AFQT. What is conclusive from the literature is that AFQT is generally a measure of aptitude, although which factors contribute most to this measured aptitude is unclear and deserves to be the focus of future research. For the purposes of this paper, then, I will operate under the assumption that AFQT represents general youth aptitude. I will do so having given full consideration to the critics of this assumption, the AFQT, and human capital theory generally (Rogers III & Spriggs, 1996). Additionally, it is important to note that much of the literature concerning the AFQT has used the National Longitudinal Survey of Youth (NLSY) 1979 cohort (Cascio & Lewis, 2006; Currie & Thomas, 2009; Guzman, 2001; Hansen, Heckman, & Mullen, 2004; Heckman, Stixrud, and Urzua, 2006; Johnson & Neal, 1996; Munday, 2001).

The last part of my literature review will focus on the relationship between youth aptitude (as measured by AFQT), earnings, and labor market performance. Generally, there has been a positive link found between youth aptitude and adulthood earnings in the literature (Caspi et al. 1998; Heckman, 2008; Heckman & Masterov, 2007; Heckman, Stixrud, & Urzua, 2006; Johnson and Neal, 1998). This has been an inherent part of these past discussions given that youth aptitude, as measured by AFQT, represents human capital attainment and human capital attainment is, in theory, positively related to earnings and labor market performance. Interestingly, the evidence on whether youth AFQT scores are an accurate predictor of adulthood income is minimal. Little focus has been given to this relationship relative to the amount of literature examining the AFQT, and the evidence that does exist indicates that youth AFQT scores are not an accurate predictor of adulthood income (Griliches, 1972; Hause, 1972). Largely, this is a result of the AFQT and educational attainment being utilized as two distinct measures of aptitude within the same regression, despite the fact that the latter plays a large part in the former (Cascio & Lewis, 2006; Griliches & Mason, 1972; Hansen, Heckman, & Mullen, 2004; Hause 1972).

My research will be distinct from the existing literature in two ways. First, it will regard AFQT as a general measure or sum of aptitude, and not as a result of one or two overriding human capital factors such as education, socioeconomic background, or innate ability. Second, it will take a unique approach to isolating the effects of AFQT apart from educational attainment. Although there is expected co-linearity between the AFQT score and education, my empirical model will be structured so that this co-linearity can be both controlled for and identified.

IV. Hypothesis

The literature suggests that then there should be at least a marginally positive relationship between youth AFQT scores and adulthood income. Human capital theory suggests that higher youth AFQT scores should be strongly related to higher adulthood income. These relationships should be accurate under the assumptions that the AFQT is an overall measure of youth aptitude, and aptitude represents cumulative human capital accumulation measured at a point in time.

As such, the hypothesis I will test is: A higher 1981 AFQT composite score is directly related to a higher income in 2010, ceteris paribus.

V. Data

In accord with much of the prior literature, I will be using the National Longitudinal Survey of Youth (NLSY) to test my hypothesis that a higher 1981 AFQT composite score is directly related to a higher income in 2010, ceteris paribus. The NSLY is a panel dataset, which surveys a cohort of individuals over time. Specifically, I will be studying the 1979 cohort, which interviewed 12,686 individuals between the ages 14 to 22. Due to the specific variables I will be examining, as well as cohort dropouts, my sample size will be limited to 6,671 of the individuals in the cohort. Of this group, 48.3 percent are male, 50.3 percent are racial minorities, and in 2010 77.8 percent resided in urban areas. Additionally, 90.2 percent had completed between 9^{th} and 12^{th} grade of formal education by 1981, the time at which the AFQT was universally administered to the cohort. The survey of this cohort began in 1979, and re-interviewed the cohort nearly every year until 2010; the most recent year data is available.

The NLSY 1979 cohort offers distinct advantages. First, the fact that it is a panel data set makes it possible to chronicle and study the long-term effects of lifetime experiences. Second, it includes many of the necessary variables for this study, including AFQT score and income. Third, it surveyed youth, which make the NLSY sample perfect for studying *youth* aptitude as it relates to adulthood income. Fourth, the depth of variables included in the NSLY provides for related future research and comparative analysis of findings. One notable drawback of the dataset, however, is that it does not measure school quality, which is particularly challenging for human capital theory-based research problems. This can result in a potential skew in the data and results, as both years of schooling *and* school quality are important measures of human capital attainment.

VI. Empirical Model

Regression analysis will be the heart of my empirical model. In this section, I will first present my regression equation and describe its components. Second, I will identify and explain the two general capacities in which I will run this regression. The first way will involve running the regression for different subset samples. Subset samples will be distinguished by years of schooling at the time of taking the AFQT. The second way will involve running two regression equations for the whole sample. The first regression equation will include total years of schooling as an independent variable, and the second will exclude total years of schooling.

A. The Regression Equation

My regression equation, and the subsequent description of its components (in Table 1), is as follows:

$$\text{LnWage} = \alpha_1 + \beta_1(\text{AFQT1981}) + \beta_2(\text{YearsEduc2010}) + \beta_3(\text{Urban}) + \beta_4(\text{Age2010}) + \beta_5(\text{Male}) + \beta_6(\text{Minority}) + \varepsilon_i.$$

Table 1: The Variables of The Regression Equation

Variable	Description	Expected Sign
LnWage	Independent variable; the natural log of 2010 wages; continuous	N/A
AFQT1981	AFQT composite score; Continuous	Positive
YearsEduc2010	Years of formal schooling by 2010; Continuous	Positive
Urban	Correspondent's geographic setting in 2010; Urban = 1, Rural = 0	Positive
Age2010	Correspondent's age in 2010; Continuous	Positive
Male	Gender of correspondent; Male = 1, Female = 0	Positive
Minority	Minority if African American or Hispanic, non-minority if white;	Negative

	Minority = 1; Non-minority = 0	

This regression equation is set up to measure the effects of AFQT1981 on LnWage, the main independent variable and the dependent variable, respectively. Specifically, I will be focused on the sign and magnitude of β_1, which is the coefficient of AFQT1981. A positive sign for β_1 indicates that each additional score higher for AFQT1981 increases LnWage. The magnitude of β_1 indicates how much this increase is. As such, a positive and large β_1 should indicate that each additional score higher for AFQT1981 should result in large increase in LnWage. Of less concern are my human capital control variables, including YearsEduc2010, Urban, Age2010, Male, and Minority. YearsEduc2010 is intended to control for total educational attainment, which human capital theory suggests should be positively related to LnWage. Another weakness of NLSY is that it does not measure neighborhood effects on income. Albeit, those that live in urban areas tend to have higher incomes and more resources available to them, as compared to rural areas. As such, Urban is included to control for socioeconomic surroundings to an extent. Age2010 is included to control for the age of the cohorts, as age is positively related to income in human capital theory. Male and Minority are included as controls for gender and race-based wage differentials, respectively.

B. Regression Analysis for Years of Schooling Subsets

The first way in which I will run the regression equation identified in section IV.A will involve separate regression analysis for different subset samples. Subset samples will be distinguished by years of formal schooling at the time of taking the AFQT (YearsEduc1981). YearsEduc1981 is continuous and ranges between 1st grade and an 8th year of college. Whereas, YearsEduc1981 = 8 represents the completion of 8th grade as the highest level of formal schooling at the time of taking the AFQT. As shown in Table 2, I will be running separate regressions only for YearsEduc1981 = 9, 10, 11, 12, 13, and 14. Subsets YearsEduc1981 = 9, 13, and 14 have much smaller sample sizes and are unlikely to include any statistically significant variables.

Table 2: 1981 Years of Schooling Subset Sample Sizes

	YearsEduc1981					
	9	10	11	12	13	14
Sample Size	514	1055	1002	2491	562	389

The rationale for running separate regressions for each subset is to control for educational attainment level in the resultant AFQT scores. An additional year of education is strongly related to a higher AFQT score (Cascio & Lewis, 2006; Goldberger & Manski, 1995; Griliches & Mason, 1972; Guzman, 2001; Hansen, Heckman, & Mullen, 2003; Hause, 1972; Munday, 2001). Thus, running separate regressions for differentiated YearsEduc1981 helps to provide a more accurate representation of the relationship between youth aptitude, as measured by AFQT scores, and adulthood income. Further, it is well established in the human capital literature that education plays a large roll income level (Card, 1998). In short, these sample subsets are a unique control for educational attainment. The downside to this approach is that it further limits the size of my samples, and thus makes the attainment of statistically significant variables more challenging. This concern, however, will be addressed with the first regression in Section IV.C, which will not be restricted to any specific YearsEduc1981 subgroup.

Despite the use of separate regressions for each subgroup, the purpose of each regression remains the same, i.e. to measure the effects of AFQT1981 on LnWage. The sign, magnitude, and statistical significance of β_1, the coefficient of AFQT1981, will still be my main focus in the analysis portion of this paper. Because I am controlling for YearsEduc1981, each regression should theoretically yield similar results.

C. Regression Analysis With and Without Control for YearsEduc2010

This will include two regression equations, both of which will be run for the entire sample. The first regression equation will be the same as the one used in IV.A and B. This will provide an overall picture of the relationship between AFQT1981 and LnWage. The second regression will be modified to exclude the control for YearsEduc2010. As such, this second regression will be as follows:

$$\text{LnWage} = \alpha_1 + \beta_1(\text{AFQT1981}) + \beta_2(\text{Urban}) + \beta_3(\text{Age2010}) + \beta_4(\text{Male}) + \beta_5(\text{Minority}) + \varepsilon_i.$$

The expectation is that the second equation will yield a significantly higher positive coefficient for AFQT1981 when not controlling for YearsEduc2010. The rationale for using this second equation is to examine the co-linearity between these two variables. If AFQT1981 is truly a measure of aptitude, i.e. accumulated human capital attainment at the time of the test, then a higher AFQT score for an individual is also likely to be predictive of higher future educational attainment. In turn, YearsEduc2010 includes the years of education that contributed to AFQT1981. Thus, if β_1 rises by a large magnitude, then the data suggests that the co-linearity between the two variables is quite large. This would further support the choice to use human capital theory as the primary framework for analysis in this paper.

VII. Results

A. Descriptive Statistics

Descriptive statistics for the sample give a general indication of the regression results. The most important of which is the mean score of the AFQT1981. The mean score of AFQT1981 was 40.72%. The AFQT test assigns a percentile score to an individual based on an initial composite score that is relative to the other participants who took the AFQT at the same time. As such, the mean score should hypothetically be 50%. The fact that the mean score of AFQT1981 is at 40% indicates that the sample is comprised of, on average, lower AFQT performers. The extent to which the sample is representative may be challenged on these grounds. However, a below average AFQT1981 for the sample is unlikely to change the regression results.

B. Regression Analysis Results for YearsEduc1981 Subgroups

The regression analysis results for the YearsEduc1981 subgroups largely supports my hypothesis that a higher 1981 AFQT composite score is directly related to a higher income in 2010, ceteris paribus. My hypothesis explicitly stipulates that β_1 will be positive and that AFQ1981 is a significant predictor of LnWage. Both stipulations are confirmed by my results in this section, which are displayed in Table 4. β_1 remains positive for each YearsEduc1981 subgroup. This indicates that there is a positive relationship between AFQT composite score and 2010 income. Moreover, AFQT1981 remains statistically significant for all YearsEduc1981 subgroups. For YearsEduc1981 = 9 and 11, AFQT1981 is significant at the .05 level. For YearsEduc1981 = 10, 12, 13, and 14, AFQT1981 is significant at the .01 level. In context of these subgroups, my hypothesis can be accepted with little chance of error. Regression analysis results for the whole of the sample will follow in VII.C.

The magnitude of β1 deserves some attention as well. β1 is consistently very small for each subgroup. This was somewhat expected given the biases discussed in section VII.A. However, it is hard to discern the exact meaning of the small magnitude because it is relative to LnWage, as opposed to unadjusted income. Future research should focus on determining the precise magnitude of $\beta_{1.}$

Interestingly, YearsEduc2010 is also largely significant across the subgroups. With the exception of YearsEduc2010 = 9, the variable is significant at the .05 or .01 level in all of the subgroups. β_2, the coefficient of YearsEduc2010, is positive across all subgroups. These results support the use and applicability of the human capital theory in this paper, especially true in regard to my prior discussion of childhood education's role in aptitude and income.

Table 4: Regression Analysis Results for YearsEduc1981 Subgroups

	YearsEduc1981 Subgroups					
Variable Name	9	10	11	12	13	14
Constant	10.007*** (5.864)	10.217*** (9.259)	10.578*** (8.627)	8.056*** (11.353)	10.81*** (6.503)	8.664*** (3.508)
AFQT1981	7.628E-006** (2.151)	5.389E-006*** (3.218)	4.317E-006** (2.476)	5.515E-006*** (5.223)	8.512E-006*** (4.054)	7.052E-006*** (2.59)
YearsEduc2010	.042 (1.159)	.12*** (6.447)	.119*** (6.384)	.097*** (7.164)	.066*** (2.668)	.074** (2.286)
Urban	-.096 (-.606)	.22*** (2.674)	.032 (.362)	.107** (2.046)	-.133 (-1.15)	.098 (.714)
Age2010	-.014 (-.45)	-.045** (-2.038)	-.047* (-1.947)	.012 (.888)	-.035 (-1.165)	.002 (.034)
Male	.298** (2.332)	.478*** (6.998)	.454*** (6.45)	.397*** (9.029)	.401*** (4.545)	.503*** (4.754)
Minority	-.226 (-1.503)	-.077 (-.96)	-.067 (-.817)	-.067 (-1.304)	.121 (1.136)	.118 (.853)
Adjusted R-Square	.064	.219	.187	.113	.135	.121
Sample Size	514	1055	1002	2491	562	389

Numbers in parentheses are t-statistics.
*Significance at .10 level.
**Significance at 05 level.
***Significance at .01 level.

C. Regression Analysis Results With and Without Control for YearsEduc2010

Both regression equations used in this sample include the entire sample. The first regression equation is the same as the one used in VII.A and B, and it controls for YearsEduc2010. The second does not include a control for YearsEduc2010. As is evident in Table 5, the first regression equation yields very similar results to those found for the subgroups. Considering that the subgroups comprised a vast majority of the sample, this is expected. Therefore, it can also be concluded that the analysis of the YearsEduc1981 subgroup regression results is equally applicable to this first regression. AFQT1981 remains a significant predictor of

LnWage in 2010. Despite the similarities between the two results, there is one exceptional change worth noting. That is, AFQT1981 is more significant, and has nearly double the magnitude, when YearsEduc2010 is removed from the regression equation. This brings me to the main focus of this section, which is to examine whether there is observable co-linearity between AFQT1981 and YearsEduc2010.

As stipulated in section VI.C, there is likely to be observable co-linearity between the two variables. The regression analysis results for the second regression demonstrate just that. The best evidence for this claim is that β_1 nearly doubles. It appears that AFQT1981 is, in part, subsuming the income contributing effect of YearsEduc2010. This does not appear to be the case for the other variables, as Minority's coefficient becomes positive, Male's coefficient falls, and Age2010's coefficient increases only slightly. Thus, it is arguable that AFQT scores indirectly influence higher levels of educational attainment, which then results in higher wages. These results coincide with those of Cascio & Lewis (2006). More focused and in-depth research on the co-linearity of these two variables would be required to draw a substantial conclusion on this issue. Ultimately, two things can be concluded from this second regression. First, there is an observable co-linearity between the AFQT1981 and YearsEduc2010. Second, AFQT981 remains significant, and β_1's remains positive. Resultantly, my hypothesis holds for this second regression, as well as the first.

Table 5: Regression Analysis With and Without Control for YearsEduc2010

Variable Name	With YearsEduc2010	Without YearsEduc2010
Constant	8.106*** (26.355)	9.073*** (29.633)
AFQT1981	8.807E-006*** (10.373)	1.208E-005*** (21.835)
YearsEduc2010	.078*** (14.259)	N/A
Urban	.078** (2.311)	.115*** (3.358)
Age2010	.009 (1.550)	.011* (1.695)
Male	.424*** (15.499)	.378*** (13.643)
Minority	-.039 (-1.206)	.021 (.641)
Adjusted R-Square	.179	.145
Sample Size	6671	6671

Numbers in parentheses are t-statistics.
*Significance at .10 level.
**Significance at 05 level.
***Significance at .01 level.

VIII. Conclusions

The major statistical conclusion of this study is that a higher 1981 AFQT score is directly linked to a higher 2010 income, ceteris paribus. This remains the case when controlling for different levels of educational attainment at the time of taking the AFQT. It also holds true regardless of whether total educational attainment is controlled for. If my assumptions that the AFQT1981 is an overall measure of aptitude and aptitude represents cumulative human capital accumulation are true, then some important implications can be derived.

For one, youth aptitude is an important factor in determining adulthood economic outcomes. As such, there is good reason to invest in youth aptitude development from an economic perspective, as has been suggested Heckman in his various studies, as well as Caspi et al. (1998) and Fredrikkson, & Öckert (2005). Such investment presumably pays high dividends as productivity and income rise with increased levels of aptitude. This conclusion bodes well with those of Education policy focused as youth aptitude development, such as Head Start and the Abecedarian Project, could prove critical tools in shaping the future outcomes of disadvantaged youth.

Future research should, however, should test whether the assumption that AFQT measures overall aptitude is a valid one. Since youth AFQT score is a significant predictor of adulthood income, there is greater impetus to elucidate the factors that most contribute to AFQT score. Such research would help to determine what factors most contribute to the skills measured by AFQT that garner the biggest gains in adulthood income. These results could greatly direct and enhance the efficacy of policy directed toward improving youth aptitude and resultant adulthood outcomes.

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