Decoding the GED Signal: Labor Market Returns to Non-Cognitive Ability (Graduate Seminar Draft)

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1 Introduction

The General Equivalency Diploma (GED) certification was originally created to help veterans after World War II complete basic high school courses. However, many dropouts obtain this certification as an alternative to completing a high school diploma. The number of dropouts who certify through the GED testing program has increased substantially since it inception. About one million students have dropped out of high school each year from 1990 to 2003 and in 2003 alone 657,000 took the GED exam.

It is clear many high school dropouts still choose to obtain this certification even though some research has established that GED recipients are not treated the same as high school graduates in the labor market (Cameron and Heckman, 1993; Murname, Willet, and Tyler, 2000). Besides earning lower hourly wages, GED recipients have lower cognitive ability, work less in any year, and stay at jobs for shorter periods of time. Despite the fact that GED earnings do not match the level of graduates, many high school dropouts see the GED as a stepping stone to potentially higher earnings than having no credential. But what if obtaining the GED yields zero market returns?

In comparisons between GED recipients and permanent high school dropouts, GED recipients have higher cognitive abilities, hourly wages, and annual earnings (Cao, 1996 and Heckman and Rubinstein, 2001). So the initial evidence seems to suggest that there is some economic value to obtaining a GED. But it is not clear whether this positive return is due to the GED credential itself or due to the selection of smarter or more motivated high school dropouts. Conditional on measured cognitive ability, Heckman and Rubinstein (2001) find that white male GED recipients actually have lower annual income and earn lower hourly wages than regular high school dropouts.

Heckman, Hsee, and Rubinstein (2000) and Heckman and Rubinstein (2001) argue that GED's are smarter than the average high school dropout, but may have lower non-cognitive

ability. The GED is a mixed signal; it conveys relatively high cognitive ability, but low non-cognitive ability to the employer. Given the importance of non-cognitive ability [1], they believe that the puzzling insignificant returns to a GED (relative to a high school dropout) can be explained by relatively low non-cognitive ability. They present evidence that GED recipients are more likely than high school dropouts to self-report problems with theft, robbery, inability to hold jobs, and attendance in school. However, inadequate objective measures of non-cognitive ability limited their study from providing conclusive evidence that non-cognitive ability explain the wage and earnings gap between GED recipients and high school dropouts.

I am able to examine this question in more detail using objective pre-market measures of non-cognitive ability. I use the National Education Longitudinal Survey (NELS) data set, a nationally representative longitudinal study with detailed information on students, school environment, labor market outcomes, and notably objective pre-market measures of non-cognitive ability. Using these measures, I am able to directly assess whether the GED is truly a mixed signal of high cognitive ability and low non-cognitive ability. Furthermore, I examine whether the returns to the GED is more beneficial for certain subgroups that vary in their level of cognitive and non-cognitive abilities.

The paper is structured as follows; Section 2 provides a review of the literature; Section 3 describes the data; Section 4 describes the empirical specification; Section 5 presents the results; Section 6 presents alternative hypotheses; and Section 7 discusses the conclusion and implications.

[1] Bowles, Gintis, and Osborne(2001) and Heckman, Stixrud, and Urzua (2006) find that the returns to non-cognitive ability, such as motivation, perserverence, and communication skills are equally important in the labor market.

2 Literature Review

2.1 The GED Credential

In the United States and Canada, the General Educational Development (GED) is an exam a high school dropout can take to certify their equivalence with a high school graduate. It was introduced in 1942 as a way for veterans without a high school degree to obtain a secondary school credential. Since that time, the GED has evolved to become an alternative to a high school diploma and many dropouts choose this option.

The GED exam consists of five tests that cover writing, mathematics, social studies, science, and literature/arts that lasts about seven and a half hours (American Council on Education). The financial cost of obtaining a GED is relatively low and range from zero to a hundred dollars in some states. The time cost is also very low, as the median study time is about twenty hours for exam takers (Cameron and Heckman, 1993). Given the relatively low opportunity costs of obtaining the GED, employers may question the market value of obtaining the degree and choose to offer lower wages. In addition, on average GED recipients appear quite different than traditional high school graduates; they have different family backgrounds, different abilities, and are generally different types of people than regular high school graduates (Heckman and Rubinstein, 2001).

2.2 The Labor Market Returns to a GED

Even though the U.S. Census classifies dropouts who have acquired a GED as ordinary high school graduates, the market does not treat them equally. Several papers have shown that GED recipients are not the equivalents of traditional high school graduates. Cameron and Heckman (1993) find that among high school dropouts, graduates, and GED's, the wage differences are largely accounted for by their years of schooling (cognitive skill development) and work experience. So differences in earnings are not driven so much by the signal of the

credential, but by the level of human capital accumulated. In other words, they are state there is no cheap substitute for schooling.

GED recipients earn lower wages, work less in any year and stay at jobs for shorter periods than high school graduates (Boesel, Alsalam and Smith, 1998). Subsequent research by Cao (1996) and Tyler, Murnane, and Willet (2000) have supported the original finding established by Cameron and Heckman (1993); GED's and high school diplomas are not equally rewarded in the labor market. However, a more meaningful comparison is between high school dropouts and GED recipients, because ultimately dropouts are the ones deciding whether the credential is worth obtaining. Cameron and Heckman (1993) is not definitive on this question of how GED recipients fare in relation to permanent high school dropouts. They find that male GED recipients have wages that are between 3 to 6 percent higher than permanent male dropouts, but this is not statistically significant.

Tyler, Murnane, and Willett (2000) explore the comparison between GED recipients and dropouts by examining the value of a GED for high school dropouts. They test the labor market signaling hypothesis for the GED credential using a difference-in-difference identification strategy. They exploit the variation in the GED status generated by differences in state GED passing standards to identify the signaling value of the GED, net of human capital effects. They find that the GED signal increases the earnings of white dropouts by 10 to 19 percent, but no effect for minority GED recipients.

Their results are consistent with findings by Cameron and Heckman (1993) because on average the returns to GED recipients are insignificantly different from high school dropouts. But they do identify a significant signaling effect of the GED for dropouts on the margin of passing the GED exams; for the least skilled GED holders. They believe that the significant positive returns may have to do with unobserved strengths that employers reward.

2.3 Is the GED a Mixed Signal?

In another study, Murname, Willet, and Tyler (2000) explore an unstated assumption in Cameron and Heckman(1993), that the labor market value of a the GED does not depend on the skills with which dropouts left school. They examine the heterogeneity in the rate of return for GED recipients that leave high school with different skill levels. They regress earnings on interactions of GED certification and math test score quartiles. When GED's are treated as a single group, their results confirm the findings of Cameron and Heckman (2003); male GED recipients do not earn as much as high-school graduates by age 27. However, they do find there are positive returns for males that leave high school with very low test scores. Perhaps for these students, the GED is used as a signal of their relatively higher non-cognitive skills, demonstrating their willingness to work hard. This study provides some indirect evidence that perhaps that there is some important mechanism driving the returns to the GED that has been ignored.

Heckman, Hsee, and Rubinstein (1999) and Heckman and Rubinstein (2001) also provide indirect evidence that non-cognitive ability is the mechanism driving the lower returns for GED's and reasons for the GED being a mixed signal for employers. They find that find that GED students have higher cognitive ability than regular high school dropouts and higher wages as well. However, after controlling for ability, GED students earn wages equal to or lower wages than high school dropouts. They conclude that there are some unmeasured characteristics that account for the lower wages and provide some indirect evidence that non-cognitive abilities account for this result.

Further research has provided more indirect and evidence that GED recipients are smarter than other dropouts but exhibit more behavior and self discipline problems and are less able to finish tasks. They turn over jobs at a faster rate and are more likely to fight at school and work, use pot, skip school and participate in robberies. In a theoretical paper, Araujo, Gottlieb, and Moriera (2004) argue that the GED conveys two pieces of information in one

signal. The student who acquires it is relatively bright, but may lack essential behavioral characteristics such as perseverance and self discipline. All of these studies acknowledge that there is some mechanism that non-cognitive ability affects how the GED is rewarded, but none of these studies provide of direct test of this mechanism.

The analysis in this paper is based on the National Educational Longitudinal Survey (NELS) data set, a panel data set that spans a period of twelve years, beginning when participants are in eighth grade. I test whether the returns to a GED in the labor market are driven by possessing higher cognitive ability despite having lower non-cognitive ability. I utilize an alternative proxy for specific types of non-cognitive abilities that may have a direct mapping to skills valued in the labor market (Segal, 2005 & Jacob, 2004). I focus on specific "behavioral characteristics", such as punctuality, discipline, and classroom behavior, in addition to general pre-market measures of non-cognitive ability.

3 Data

The data set used in the analysis is the National Educational Longitudinal Survey (NELS) conducted by the National Center for Education Statistics (NCES). The NELS is a nationally representative sample of eighth- graders who were first surveyed in 1988. A sub sample of the respondents was then re-surveyed through four follow-ups in 1990, 1992, 1994, and 2000. The study provides detailed family background information in addition to information about participants activities before, during, and after high school. The 1994 and the 2000 follow-ups contain detailed information on postsecondary education and high school graduation status. In addition, both follow-ups contain information about labor market outcomes. A test battery administered in the base year and the first two follow-ups complemented the study. Students teachers, parents, and school administrators were also surveyed. Teacher evaluations of student behavior were used to construct the behavioral variables.

Several outcomes are examined in the analysis. These outcomes include educational attainments as of 2000, which is determined using data from the third and the fourth follow-ups; and labor market outcomes as of 1999, which are determined using data from the fourth follow-up. In addition, parental characteristics and 8th grade school characteristics taken from the parent survey and the school administrators survey are used as controls.

In the first follow-up (1990), the third follow-up (1994) and the forth follow-up (2000), the NELS sample design retained only a sub sample of students who participated in the previous wave. The selection criteria of the following subsamples where not determined at random. Instead, it was determined by his dropout status (thus students who dropped out of high school in some point in time, were retained in the sample with probability 1), the quality of his response to past questionnaires, ethnicity (the NELS design involved over-sampling of Hispanic and Pacific/Islanders, and those were retained in the sample with higher probabilities, black students were also retained in the sample with higher probability), and

social economic status (SES). Sample weights supplied with the data set are used throughout the analysis.

The NELS data set contains teacher evaluations of student behavior in the 8th, 10th and 12th grades. I utilize three proxies for non-cognitive ability and behavior and describe each one in detail below. In this analysis, 8th grade teacher evaluations will be used as measures of behavior. The 8th grade teacher evaluations consist of yes/no answers to whether the student:

1. Is frequently absent?
2. Is frequently tardy?
3. Is consistently inattentive in class?
4. Is frequently disruptive?
5. Rarely completes homework?

Students were evaluated by two of their teachers. The first taught math or science, the second taught English or social science. The behavioral measures were coded such that low values correspond to good behavior, and the higher values correspond to misbehavior. Each of the five behavior measures was coded as a dummy variable that takes the value '1' if at least one teacher indicated that the student misbehaved on the category.

These five behavior measures were utilized by Segal(2005) as her measures of non-cognitive ability and behavior in her analysis of classroom behavior and labor market outcomes. I utilize these same variables as my first proxy of pre-market non-cognitive ability measures.

The second measure of non-cognitive ability is based on the proxy utilized by Jacob(2004). He uses four measures as a proxy for non-cognitive ability: (1) middle school grades, (2)

number of hours spent on homework per week in the 8th grade, (3) a composite measure of "student" behavior based on the five teacher evaluations described above, and (4) an indicator of whether the student had ever been held back a grade.

Finally, the third measure of non-cognitive ability I use is the Rotter Locus of Control Index and the Rosenberg Self-Concept Indices, which has been utilized by Heckman, Stixrud, and Urzua (2006) as a general measure of non-cognitive ability and equivalent to "g" as a proxy for cognitive ability. The Rotter Locus of Control index is a survey composed of questions that is designed to measure generalized expectancies for internal versus external control of reinforcement. People with an internal locus of control believe that their own actions determine the rewards that they obtain, while those with an external locus of control believe that their own behavior doesn't matter much and that rewards in life are generally outside of their control. A low score indicates an internal control while a high score indicates external control. The Rosenberg Self-Concept is a measure of self-esteem and self-worth. The scale is a ten item Likert scale with items answered on a four point scale - from strongly agree to strongly disagree.

The tests consisted of four different subtests, developed for the survey and covered: reading comprehension, mathematics, science and history/citizenship/geography. In addition, the NELS data set contains a composite Mathematics/Reading test score. In general, the tests were designed to emphasize problem-solving skills and an understanding of concepts that students were supposed to know by the time the test was administered. In the analysis I use the 8th grade math test score as a measure of cognitive ability. Table (1) present

summary statistics of the key variables from the NELS.

4 Empirical Specification

To test the claim that non-cognitive abilities explain the relatively low returns to the GED, I run a series of wage regressions adding subsequent control variables. I first estimate a simple log hourly wage regression on schooling status without controlling for cognitive or non-cognitive ability. In the equation below Y_i are log hourly wages reported in 1999, GED_i is a dummy indicating whether the individual has obtained a GED by 2000, HSG_i is a dummy indicating whether the individual has obtained their high school diploma by 2000, and X_i are individual and parental controls including some human capital controls (work experience and years of schooling).

$$Y_i = \beta_0 + \beta_1(GED_i) + \beta_2(HSG_i) + \beta_3(X_i) + \epsilon_i \tag{1}$$

In the next regression, I control for cognitive ability (COG_i), which are measured by 8th grade math test scores. This human capital specification includes a measure of cognitive ability, along with years of schooling, and work experience.

$$Y_i = \beta_0 + \beta_1(GED_i) + \beta_2(HSG_i) + \beta_3(X_i) + \beta_4(COG_i) + \epsilon_i \tag{2}$$

In the final specification, I now control for both cognitive (COG_i) and non-cognitive ability ($NONCOG_i$). If these measures, in addition to experience and years of schooling, fully capture the human capital effects, then the returns to the GED may be interpreted as the signalling returns to the credential. However, this assumption probably does not hold for

several reasons.

$$Y_i = \beta_0 + \beta_1(GED_i) + \beta_2(HSG_i) + \beta_3(X_i) + \beta_4(COG_i) + \beta_5(NONCOG_i) + \epsilon_i \quad (3)$$

Finally, in the last model specification, I allow the relationships between educational credentials and subsequent earnings to differ by levels of cognitive ability. As with the first model, I first estimate the same model specification as Murnane, Willet, and Tyler (2000), without controls for non-cognitive ability. The equation below depicts the basic model:

$$\begin{aligned} Y_i &= \beta_0 + \beta_1(GED_i) + \beta_2(HSG_i) + \beta_3(X_i) + \beta_4(COG_i) + \beta_5(GED_i * COG_i) \\ &= +\beta_6(HSG_i * COG_i) + \epsilon_i \end{aligned}$$

In this model, COG_i is now a vector of three dummy variables indicating whether the individual was in math quartile 2, 3, or 4 (where 1 is the lowest and the omitted category); $GED_i * COG_i$ is a three element vector where GED is interacted with the three math quartile dummy variables; and $HSG_i * COG_i$ is also a three element vector where HSG is interacted with three math quartile dummy variables. In the next specification, I include non-cognitive ability to see how the returns to the GED varies over levels of cognitive ability, controlling for non-cognitive ability.

$$\begin{aligned} Y_i &= \beta_0 + \beta_1(GED_i) + \beta_2(HSG_i) + \beta_3(X_i) + \beta_4(COG_i) + \beta_5(GED_i * COG_i) \\ &= +\beta_6(HSG_i * COG_i) + \beta_7(NONCOG_i) + \epsilon_i \end{aligned}$$

5 Results

As Heckman and Rubinstein (2001) also find, in raw comparisons of annual earnings and hourly wages between GED, HSD, and HSG, we see that GED recipients earn higher hourly wages and annual salaries than permanent high school dropouts, but less than traditional high school graduates (Table 2). Figures (1) and (2) show that the distribution of earnings for GED recipients lie in between graduates and dropouts. In general, GED recipients are a relatively more advantaged group compared with permanent dropouts. On average, they complete more years of schooling before dropping out, have higher levels of cognitive skills, and have parents with more education. Figure (3) also shows that the distribution of cognitive ability of GED recipients are higher than permanent high school dropouts. Even after controlling for these relative advantages, there are reasons to believe that GED recipients may fare better in the labor market than dropouts. However, it is clear from Table (4) that GED recipients have behavioral problems more similar to permanent high school dropouts than regular high school graduates. In some cases, the level of behavioral problems of GED recipients are very close to high school dropouts and in some GED's have more behavioral problems. Table (5) presents further evidence that GED recipients have general non-cognitive abilities very similar to high school dropouts and much lower than high school graduates.

Column 1 of Table (5) first shows the effect of a GED on the log hourly wages without any ability controls, then with cognitive ability controls in column 2, and finally with both cognitive and non-cognitive ability controls in column 3. In column 1, the returns to a GED

lead to 5.2% increase in hourly wages when only years of schooling and work experience is controlled. In column 2, we see that cognitive ability adjustments weaken the effect of the GED credential substantially. After controlling for cognitive ability, the returns to a GED are slightly negative, but still insignificantly different from permanent high school dropouts. These results are consistent with Heckman and Rubinstein (2001) and Murnmame, Willet, and Tyler (2000); conditional on cognitive ability, GED recipients earn about the same or less than permanent high school dropouts.

Heckman and Rubinstein (2001) believe that the lower returns associated with obtaining a GED is attributed to GED recipients having more behavioral problems and lower non-cognitive ability in general. The unanswered question here is whether relatively low non-cognitive ability is the reason that GED's appear to have lower returns in the labor market. In column 3, by controlling for both cognitive and non-cognitive abilities, we see that the GED now leads to a 3.3% increase in hourly wages. The increase in wages is not statistically significantly different than for high school dropouts. However, once non-cognitive abilities of GED recipients are included in the model, the returns to a GED changes by 5.2%.

Table (6) presents the log wage regressions with interactions of GED status and cognitive ability. In the first column, we see that GED recipients with the lowest level of cognitive ability have a significant returns to a GED. Murnane, Willet, and Tyler(2000) obtain similar estimates, but their values are much closer to 30%[2]. They argue that the estimates may be biased upwards because these GED recipients may have higher levels of motivation and

[2]They examine the effect of the GED interacted with math test scores on annual earnings, not hourly wages. In addition, they utilize a different dataset.

other unobserved characteristics that are rewarded in the labor market. Column 2 controls for non-cognitive ability, but the returns to a GED still remain statistically significant for recipients with the lowest level of cognitive ability.

6 Alternative Explanations

6.1 GED Recipients Failed in Labor Market After Initial Dropout

It is possible that GED recipients are high school dropouts that tested the labor market, but failed and have returned to obtain their GED. As a result, the GED may signal initial failure in the labor market.

6.2 More Criminals/Inmates Receive GED's from Prison

If a large proportion of prison inmates choose to obtain a GED, then this has the potential to bias the returns to a GED. The lower subsequent earnings may be attributed to the worker being an ex-convict than having a GED, net of abilities. This suggests that the returns to a GED may be lower than estimated if the sample of prison inmates bias the sample.

6.3 The Military

If the percentage of GED's that enroll in the military are substantially higher than normal high school dropouts then the returns to a GED may actually be lower

6.4 Measurement Error in the Proxies for Behavior

If the teacher evaluations that capture whether students are truly misbehaving are measured with error, then investigating whether the returns to a GED are due to non-cognitive factors will be biased.

6.5 Endogeneity of Behavior in the Wage Equation

Personality is shaped by success or failure in the labor market, so that coefficients of non-cognitive ability and behavior used in the wages regression to be overstated because of the positive covariance between behavior and the labor market. This problem can be avoided in two ways: (1) by regressing wages on pre-market behavior variables, which are measured prior to any labor market experience and educational experience in high school or (2) creating an instrument that is independent of wages yet highly correlated with 8th grade behaviors. The analysis incorporates case (1) because the measures of behavior are all pre-market variables.

6.6 Lower End of Wage Distribution Effects

Perhaps Annualized Earnings is a better measure of how well GED's do in the labor market. In addition, hours worked tells us something as well. Perhaps GED's are the smart wise-guys, the problem is perhaps they just don't get enough work even though they may have ok hourly wages.

6.7 Job Selection by GED

The skills valued by employers of low-skilled jobs value other skills that GED may not possess. Since most GED's apply for more blue-collar type jobs, these employers actually value other traits such as reliability (lower quit rates) and dependibility (absenteism), and not productivity so much (Klein, Spady, and Weiss, 1991).

7 Conclusions

This paper presents some more evidence that the GED may be a mixed signal. GED recipients are shown to be smarter than other high school dropouts in terms of measured test scores in the 8th grade. However, at the same time, GED recipients exhibit non-cognitive abilities that match very closely with permanent high school dropouts. Because the labor market rewards both cognitive and non-cognitive abilities, a potential explanation for the GED puzzle is low non-cognitive ability. When wages are adjusted for cognitive ability, GED recipients earn wages that are indistinguishable from permanent high school dropouts. However, like high school dropouts GED recipients appear to have more behavioral problems and lower non-cognitive abilities relative to high school graduates. So when adjusting for both cognitive and non-cognitive abilities, the returns to a GED are higher, which suggests that low non-cognitive ability is an important factor.

Based on this analysis, there is enough evidence to suggest that controlling for non-cognitive abilities explains the insignificant returns for a GED. Heckman and Rubinstein (2001) suggest that the lower returns are because the GED represents a mixed signal. Assuming that the measures of cognitive ability and non-cognitive ability I utilize in my analysis represents the human capital returns to a GED, the remaining returns can cautiously be interpreted as the signalling returns to a GED. This is consistent with the findings made by Tyler, Murnane, and Willet(2000) who find that there is 10 to 19 percent signalling returns to a GED for white recipients. It also supports the conjecture made by Heckman and Rubinstein(2001) because adjusting for non-cognitive ability significantly weakens the GED as

a signal of higher productivity.

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8 Figures and Tables

Figure 1: Distribution of Hourly Wages

Figure 2: Distribution of Annual Income

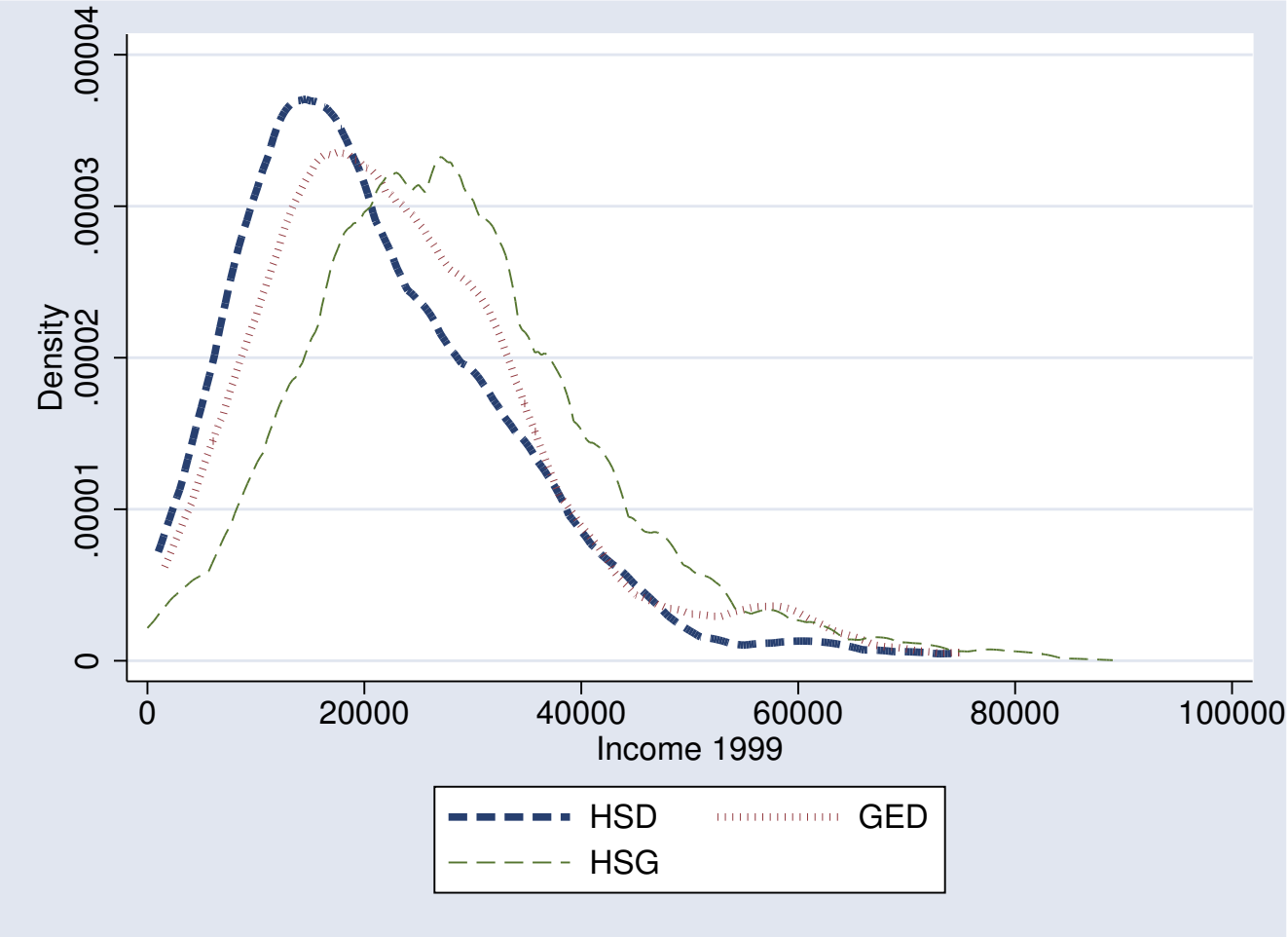

Figure 3: Distribution of Cognitive Ability

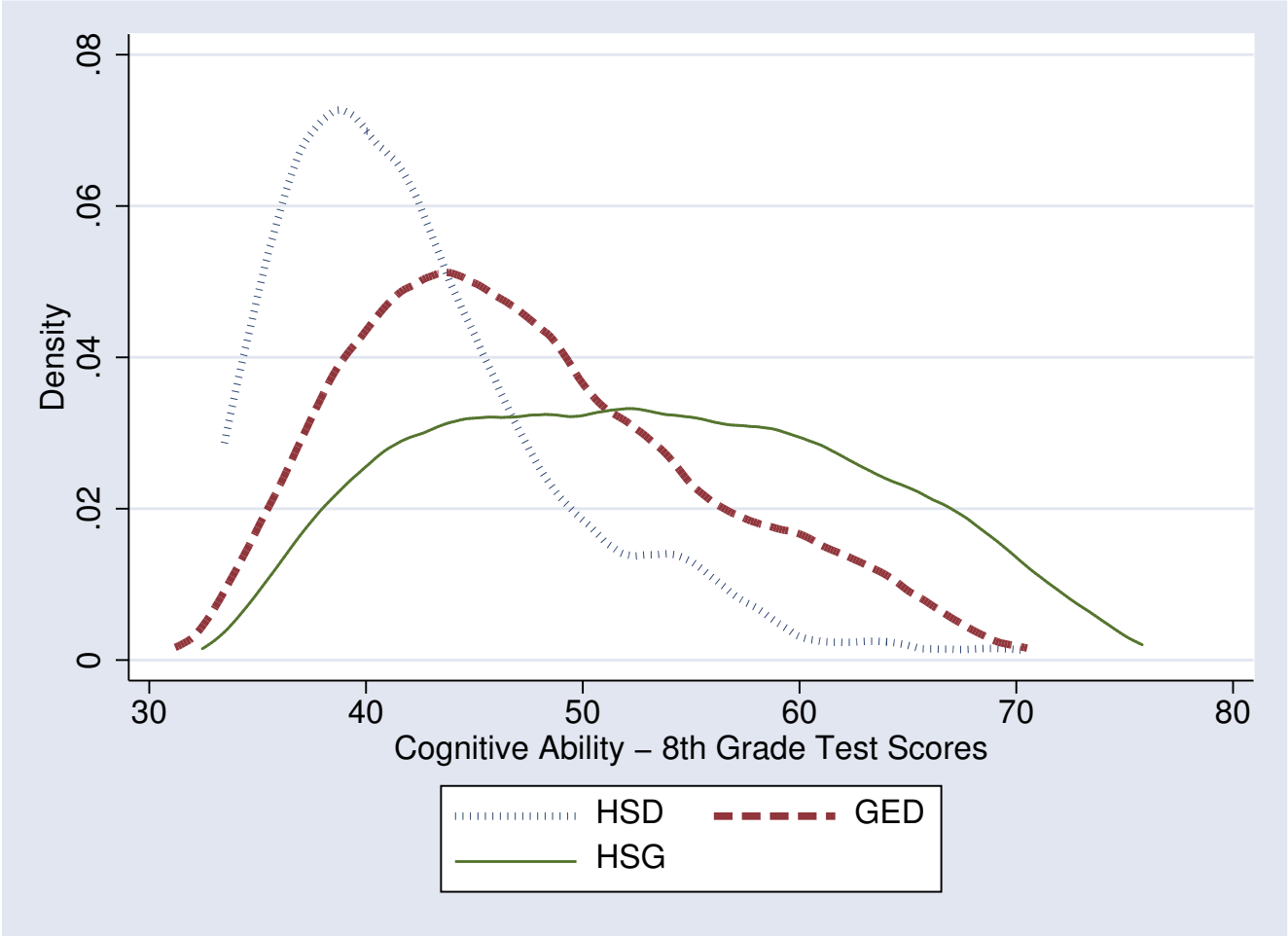

Table 1: Summary Statistics for Males

Variable	Mean	Std. Dev.	N
Male	1	0	2950
Black	0.06	0.238	2950
White	0.756	0.43	2950
Asian	0.059	0.236	2950
Hispanic	0.11	0.313	2950
Age	26.407	0.59	2950
Parents' HGC (No HS)	0.085	0.279	2950
Parents' HGC (HS Grad)	0.199	0.4	2950
Parents' HGC (Bachelors)	0.156	0.363	2950
Annual HH Income < $10k	0.074	0.262	2950
Annual HH Income < $25k	0.24	0.427	2950
Annual HH Income < $35k	0.181	0.385	2950
Annual HH Income < $50k	0.214	0.41	2950
Annual HH Income < $75k	0.138	0.345	2950
Annual HH Income > $75k	0.225	0.417	2950
Parent's Married	0.795	0.404	2950
Parent's Divorced	0.088	0.283	2950
Family Size	4.583	1.329	2950
Day Care as Child	0.167	0.373	2950
Pre-School as Child	0.422	0.494	2950
HeadStart as Child	0.075	0.264	2950
Kindergarten as Child	0.814	0.389	2950
Absenteeism a Problem (8th Grade Teacher Eval)	0.059	0.236	2950
Tardiness a Problem (8th Grade Teacher Eval)	0.036	0.186	2950
Inattentiveness a Problem (8th Grade Teacher Eval)	0.186	0.39	2950
Classroom Disruption a Problem (8th Grade Teacher Eval)	0.134	0.341	2950
HW Completion a Problem (8th Grade Teacher Eval)	0.167	0.373	2950
Composite of Math/Reading Test Scores (8th Grade)	51.772	9.968	2950
Reading Test Scores (8th Grade)	50.803	9.878	2950
Math Test Scores (8th Grade)	52.442	10.205	2950
HGC 12th Grade	0.925	0.263	2950
HGC 11th Grade	0.048	0.215	2950
HGC 10th Grade	0.019	0.135	2950
HGC 9th Grade	0.007	0.086	2950
HS Dropout (No PSE)	0.041	0.198	2950
GED Recipient (No PSE)	0.049	0.216	2950
HS Graduate (No PSE)	0.91	0.286	2950
Rotter Locus of Control (8th Grade B)	0.019	0.726	2950
Rosenberg Self-Esteem (8th Grade B)	0.078	0.739	2950
Work Experience (Weeks)	196.792	54.195	2950

Table 2: Labor Market Outcomes and Pre-Market Cognitive Ability

Status	**Annual Income**	**Hourly Wage**	**8th Grade Math**	**8th Grade Reading**
HSD	$16,230	$4.51	41.20	42.00
GED	$21,815	$9.36	44.64	45.39
HSG	$23,058	$9.76	45.79	45.95

Table 3: Frequency of 8th Grade Classroom Behavioral Problems by Group

Status	**Absent**	**Tardy**	**Inattentive**	**Disruptive**	**HW Problems**
HSD	.246	.126	.343	.164	.355
GED	.234	.087	.329	.182	.367
HSG	.084	.044	.205	.110	.185

Table 4: Rotter Locus of Control and Rosenberg Self-Esteem Scale

Status	**Rotter Self-Concept**	**Rosenberg Self-Esteem**
HSD	-.333	-.174
GED	-.285	-.189
HSG	-.167	-.121

* Note: Standardized Scores.

Table 5: OLS Log Hourly Wage Regressions for Males

	[1]	[2]	[3]
Black	-0.063	-0.036	-0.041
	[1.41]	[0.79]	[0.91]
Asian	0.14	0.121	0.128
	[3.14]**	[2.72]**	[2.88]**
Hispanic	-0.04	-0.032	-0.021
	[1.13]	[0.89]	[0.59]
Work Experience (Weeks)	0.002	0.002	0.002
	[10.83]**	[11.87]**	[11.42]**
HGC 12th Grade	0.03	0.14	0.009
	[0.23]	[1.15]	[0.07]
HGC 11th Grade	-0.056	0	-0.052
	[0.43]	[0.00]	[0.40]
HGC 10th Grade	-0.104	-0.079	-0.1
	[0.73]	[0.56]	[0.70]
GED Recipient (No College)	0.052	-0.019	0.033
	[0.74]	[0.27]	[0.46]
HS Graduate (No College)	0.134	0.125	0.093
	[2.06]*	[4.21]**	[1.43]
Math Test Scores (8th Grade)		0.004	0.004
		[3.72]**	[3.68]**
Absenteeism a Problem			-0.006
			[0.12]
Classroom Disruption a Problem			0.038
			[1.12]
HW Completion a Problem			0.004
			[0.13]
Inattentiveness a Problem			-0.029
			[0.84]
Tardiness a Problem			-0.048
			[0.81]
Rosenberg Self-Esteem			0.023
			[1.56]
Rotter Locus of Control			0.037
			[2.40]*
Constant	1.875	1.644	1.682
	[13.63]**	[11.25]**	[11.10]**
Observations	2950	2950	2950
R-squared	0.06	0.07	0.07
H_0: Pr. p > F			0.8113

Absolute value of t-statistics in brackets
* significant at 5
Individual, parent controls excluded from table.
High school dropout (HSD) is the excluded group.
Null #1: 5 Behavior Variables(Tardy, Absent,
HW, Disruption, Attention) Jointly Sign.

Table 6: The Effect of the GED on Log Wages Which Vary Across Math Score Quartiles

	[1]	[2]
Black	-0.031	-0.023
	[0.87]	[0.62]
Asian	0.099	0.102
	[2.61]**	[2.58]**
Hispanic	-0.017	-0.011
	[0.58]	[0.33]
HGC 12th Grade	-0.065	-0.096
	[1.41]	[1.88]
HGC 11th Grade	-0.091	-0.098
	[1.57]	[1.48]
HGC 10th Grade	-0.085	-0.179
	[1.10]	[1.95]
GED Recipient (no PSE)	0.232	0.205
	[2.79]**	[2.36]*
HS Graduate (No PSE)	0.204	0.207
	[3.15]**	[2.81]**
Math Test Scores (2nd Quartile)	0.061	0.091
	[0.62]	[0.81]
Math Test Scores (3rd Quartile)	-0.088	-0.023
	[0.63]	[0.14]
Math Test Scores (4th Quartile)	-0.45	-0.479
	[1.58]	[1.51]
GED * Math(Q2)	-0.201	-0.211
	[1.51]	[1.38]
GED * Math(Q3)	-0.099	-0.226
	[0.57]	[1.16]
GED * Math(Q4)	-0.468	-0.392
	[1.52]	[1.13]
HS Graduate * Math(Q2)	-0.01	-0.058
	[0.10]	[0.49]
HS Graduate * Math(Q2)	-0.156	-0.05
	[1.08]	[0.30]
HS Graduate * Math(Q2)	-0.587	-0.577
	[2.05]*	[1.81]
Work Experience (Weeks)	0.003	0.003
	[20.65]**	[19.48]**
Absenteeism a Problem		-0.036
		[0.83]
Classroom Disruption a Problem		0.013
		[0.40]
HW Completion a Problem		-0.038
		[1.22]
Inattentiveness a Problem		-0.016
		[0.50]
Tardiness a Problem		0.003
		[0.04]
Rosenberg Self-Esteem		0.024
		[1.73]
Rotter Locus of Control		0.03
		[2.08]*
Constant	1.582	1.629
	[19.40]**	[17.46]**
Observations	2950	2950
R-squared	0.1	0.1

Absolute value of t-statistics in brackets
* significant at 5
Individual, parent controls excluded from table.
High school dropout (HSD) is the excluded group.