Chapter 1

Achievement Tests and the Role of Character in American Life

— James Heckman and Tim Kautz

1.1 Introduction

Modern societies rely on written tests. Achievement tests—multiple-choice exams that attempt to measure acquired knowledge—have come to play an especially prominent role. They are used to sift and sort people, to evaluate schools, and to assess the performance of entire nations.[1] The No Child Left Behind Act requires that public schools administer achievement tests and that the test results influence local school policy.

Achievement tests were created in the mid-twentieth century. Their validity in predicting success in outcomes that matter is not well established. Achievement tests were developed as a way to measure "*general knowledge*" that would be useful inside and outside of the classroom. Their developers claimed to have designed pencil-and-paper tests that would predict success in the labor market, in education, and in many other aspects of life. Because achievement tests have been validated by testing experts, most people assume that the tests accomplish these goals. However, achievement tests are typically validated in a circular fashion using IQ tests and grades, and not in terms of their ability to predict important life outcomes. Some have recognized this circularity and have argued that achievement tests miss important skills. There is scant evidence on what skills these tests miss.

This book evaluates the predictive power of achievement tests for life outcomes by examining one widely used achievement test, the General Educational Development test (GED). The GED test is based on the first modern achievement test. The test is a seven-and-a-half hour exam that claims to measure the knowledge acquired in completing high school. It embodies the logic of achievement tests. The GED allows high school dropouts to certify high school equivalency to employers and colleges. Currently, the GED program

[1]The Programme for International Student Assessment (PISA) evaluates student performance in math, science, and reading across countries, and its results attract a lot of media attention and influence policy. Scores from the year 2000 PISA test led Germany to reevaluate its educational system and introduce a variety of reforms (Grek, 2009).

produces roughly 12% of all high school credentials issued in the United States every year.[2]

On the surface, the GED exam achieves its goal. As measured by scores on a variety of other achievement tests, GED recipients are as smart as high school graduates who do not attend college.[3] But passing a test does not, by itself, prove anything. How do GED recipients compare to high school graduates in terms of meaningful outcomes?

On outcomes that matter, *as a group*, GED recipients are *not* equivalent to high school graduates. High school graduates outperform GED recipients in terms of their earnings, employment, wages, labor market participation, self-reported health, and college completion. Graduates are less likely to use alcohol, commit crime, or go on welfare.

On average, GED recipients perform somewhat better than other dropouts on most outcomes. GED recipients, however, are smarter than other dropouts even before earning their GEDs. After accounting for their greater cognitive ability, as a group, GED recipients are equivalent to other dropouts on almost all outcomes. High school graduates who obtain their credentials through seat time and hard work outperform both GED recipients and uncertified dropouts.[4]

The GED might be a signal that indicates the greater cognitive ability of most recipients compared to dropouts. However, we establish that the GED certificate provides little signaling value in the market. GED recipients earn the same wages before and after they certify.

Our evaluation of the GED provides strong evidence about the predictive power of achievement tests for outcomes that matter. Cognitive ability—as measured by achievement tests—explains the average difference in outcomes between dropouts and GED recipients. Something not captured by achievement tests explains the difference between GED recipients and high school graduates. What is the "dark matter" that the test misses?

[2]See GED Testing Service Annual Statistical Reports (Various Years) and National Digest National Center for Education Statistics (Various Years). In the past the figure has been as high as 18%.

[3]See the evidence presented in Chapter 4 of this book.

[4]These findings are robust. We confirm these general findings using seven different data sets and a variety of statistical methods that account for many potential problems.

We show that achievement tests like the GED do not adequately capture character skills such as conscientiousness, perseverance, sociability, and curiosity, which are valued in the labor market, in school, and in many other domains. Until recently these skills have largely been ignored. However, in recent research economists and psychologists have constructed measures of these skills and provide evidence that they are stable across situations and predict meaningful life outcomes.[5]

As a group, GED recipients lack character skills compared to high school graduates.[6] In adolescence, these deficits lead to higher rates of drinking, drug use, violent crime, truancy, vandalism, early sexual activity, and smoking.

There are a few apparent exceptions to this rule. For some, the GED appears to offer benefits. As a group, women who drop out of high school due to pregnancy and who later GED certify have levels of character skills much more like those of high school graduates than other GED recipients. This group of GED recipients appears to perform moderately better than other dropouts in the labor market, although the differences come primarily from their greater labor force participation. The evidence of any causal effect of the GED for this group is ambiguous.[7] Many GED recipients earnestly seek to turn their lives around. For most, preparation for the GED exam does not compensate for the skills they lack.

Differences in character skills emerge early between GEDs and high school graduates. Even at age six eventual GED recipients tend to be relatively smart but exhibit behavioral problems. These findings suggest that many young children are destined to drop out of high school, a view shared by many social scientists.

[5]See the studies by Borghans, Duckworth, Heckman, and ter Weel (2008) and Almlund, Duckworth, Heckman, and Kautz (2011). The modern literature traces back to Bowles and Gintis (1976), and Bowles, Gintis, and Osborne (2001). An important study in sociology is the work of Peter Mueser reported in Jencks (1979). Work in psychology going back to Terman, Baldwin, Bronson, DeVoss, Fuller, Lee Kelley, Lima, Marshall, Moore, Raubenheimer, Ruch, Willoughby, Benson Wyman, and Hazeltine Yates (1925) shows that personality skills predict life outcomes (see also Murray, 1938; Terman, Oden, Bayley, Marshall, McNemar, and Sullivan, 1947; and the analysis in Gensowski, 2012).

[6]This evidence is developed in Chapter 4.

[7]See Chapter 5.

A prime example of a study claiming early life determinism is the influential and inflammatory book by psychologist Richard Herrnstein and political scientist Charles Murray, *The Bell Curve* (1994). Herrnstein and Murray made a major contribution to psychology and social policy by conducting one of the first studies to use meaningful life outcomes in assessing the predictive validity of an achievement test—in their case, the Armed Forces Qualification Test (AFQT). They find that AFQT scores weakly predict success in a variety of life outcomes. However, they do not stop there. They claim that the AFQT test measures the same dimensions of cognition as IQ and that IQ is highly heritable.[8] In their dystopic vision of American society, public policy cannot influence the skills that affect success in life. Like most people, Herrnstein and Murray overlook character as an important predictor of success and as an avenue for social progress, and also ignore the evidence on the malleability of IQ.

Investment and interventions can foster character. The Perry Preschool program is a telling example. Young (age 3–4) low-IQ African American children were given early stimulation. Participants were taught how to plan, execute, and review tasks. They learned to work with others when problems arose.[9] The program was evaluated by the method of random assignment, and participants and controls have been followed through age 40. The program had no long-term effect on IQ scores. By the Herrnstein and Murray criteria, it failed. Nevertheless, the program improved outcomes for both boys and girls, yielding a rate of return that outperforms the stock market in typical years.[10] Heckman, Pinto, and Savelyev (2013) show that the program worked by improving character.

Because both cognition and character can be shaped, and change over the life cycle, we refer to them as "skills" throughout this book. An older terminology refers to them as "traits," conveying a sense of immutability or permanence, possibly due to their heritable

[8] In Chapter 9 of this book, we show that IQ tests and achievement tests measure different skills.

[9] Sylva (1997) describes the Perry program as a Vygotskian program that fosters personality skills.

[10] See Heckman, Moon, Pinto, Savelyev, and Yavitz (2010). The return of 7%–10% per annum is on par with the post–World War II, pre-2008 meltdown stock market returns to equity in the United States labor market that are estimated to be 6.9% per annum. See DeLong and Magin (2009).

nature. The literature surveyed in Chapter 9 shows how these "traits" can be enhanced. Our distinction between skills and traits is not just a matter of semantics. It suggests new and productive avenues for public policy.[11]

Character training is not a new idea. Aristotle mentions it in the *Nichomachean Ethics*.[12] Prominent American educators since Horace Mann have noted that successful schools produce more than problem-solving skills and factual knowledge. Schools also mold character.

Recently, many have come to view character education as the sole province of the family or the church. Families *are* important producers of both cognition and character.[13] However, the American family is under severe challenge.[14] Single-parent families—which provide fewer resources for development of character and necessary life skills—have become pervasive.[15] Even many intact families are stressed because of diminished resources.

This book shows that, as a group, GED recipients lack character skills in part owing to their relatively disadvantaged family backgrounds. Compared to high school graduates, GED recipients are more likely to come from broken families with low incomes and have parents who invest less in their character and cognitive development.

At a time when many families could use more support, character education has been phased out of schools and the ability of schools to enforce discipline has been weakened. In the nineteenth century, character education was prominent in American schools. They had strict disciplinary standards and taught character directly, often through religious texts. A Protestant vision of morality and character was incorporated into public education.

Five primary forces led to the decline of character education in public schools in the last century. First, the rise of cognitive psychology shifted the focus of American education

[11] In places in this book, we use "traits" because it represents the term used in the literature we cite.
[12] See Aristotle (1956).
[13] See Cunha, Heckman, Lochner, and Masterov (2006) and Ermisch, Jantti, and Smeeding (2012).
[14] See McLanahan (2004), Heckman (2008), and Putnam, Frederick, and Snellman (2012).
[15] OECD (2011).

toward cognitive training and measurement (Bruner, 1956). Second, growing support for the separation of church and state removed religious teaching from the classroom and any forms of moral education or character education that smacked of religious training. Third, the "legalization" of schools increased the rights of students but reduced the autonomy of teachers and the use of disciplinary measures that could be used to instill character (Arum, 2005). Fourth, cultural relativism became more widespread in society. The notion of a core set of character skills that was universally agreed upon fell out of favor. Those advocating a core set of values and evaluation of character were accused of seeking to impose their (middle-class) values on others.[16] Fifth, the research of Walter Mischel (1968) appeared to establish that there are no stable personality skills. If character was ephemeral, there was no point in measuring it or trying to foster it. These trends contributed to the demise of character education in schools, which in turn exacerbated the problems created by the emergence of single-parent families in shaping the character of youth.

Character education does not necessarily infringe on the liberties of students or families. Character education has moral components, which some conflate with religious values. Character skills are universally valued regardless of any religious orientation, although churches, temples, and mosques produce character. Removing religion from schools does not require removing character education from the curriculum or preventing evaluation of the character of students. Virtually all parents want their children to be hard-working, honest, persistent, creative, curious, self-controlled, and excited by learning. Curricula that teach these skills in conjunction with cognition are promising ways to foster successful lives while maintaining the sanctity of the family and preserving the separation of church and state.[17]

The curriculum in schools backed off from evaluating and fostering character to focus primarily on producing and measuring cognitive development. Belief in the predictive value of achievement tests became pervasive. It led many to view the GED certificate

[16]For a recent example, see the commentary of Lareau (2012).
[17]See the evidence presented in Chapter 9.

as equivalent to a high school degree. In some states, the GED is legally mandated to be equivalent to a high school degree for the purposes of employment and admission to postsecondary education.[18]

This book shows that this faith in tests deceives students and policy makers and conceals major social problems. The GED misleads students when they are making educational decisions. High school students as young as sixteen can take the GED. Adolescents are impressionable, and for many the GED seems like an attractive alternative to finishing school.[19] We show that having a GED option available induces students to drop out of high school.[20]

After the GED was introduced in California in 1974, the high school dropout rate increased by three percentage points. More recently, Oregon introduced the GED Option Program in high schools. These programs teach the GED and make it easier for students to GED certify. The Oregon program increased the state high school dropout rate in the districts where it was implemented by four percentage points.

The GED deceives its recipients into believing that they are prepared for college. About 40% of GED recipients attend college. About half drop out in the first year.[21] Far fewer complete any degree, but pay costly tuition and forego substantial earnings in quest of degrees that they do not obtain.

The deception runs deep. All GED recipients are not alike. Some are hardworking and acquire skills by preparing for the exam. Despite their hard work and high character skills, these GED recipients are lumped into the same category as the relatively smart but unmotivated students who pass the exam. Employers and colleges might overlook the true achievers among the mass of GED test takers because the GED exam does not

[18]See, for example, Commonwealth of Pennsylvania (1955). See Web Appendix Section W1.1.15 for a summary of these laws. The Web Appendix mentioned in this note and subsequent notes is found at `http://jenni.uchicago.edu/Studies_of_GED/`.

[19]See National Center for Education Statistics (2006) for evidence that many GED recipients certify because it is easier than completing high school.

[20]See the studies presented in Chapter 7.

[21]See the evidence in Zhang, Guison-Dowdy, Patterson, and Song (2011).

discriminate between the motivated and the accomplished and those who just pass its minimal standards.

The GED distorts social statistics and masks inequality. Many social statistics classify GED recipients as high school graduates. This misclassification conceals black–white gaps in educational attainment.[22] If GED recipients are counted as high school graduates, the black–white gap in high school graduation rates has closed substantially. If GED recipients are counted as dropouts, there has been no progress in the black–white high school graduation rate in the last 50 years. Many black GED recipients earn their certificate through remediation programs in jail.[23]

Based on the belief that the GED is equivalent to a high school degree, government programs have channeled substantial resources into producing GED certificates. These resources could have been spent on more effective policies.[24,25] The success of many adolescent intervention programs such as the Job Corps is judged by the number of GED recipients they produce. This practice distorts funding choices.[26] Government support also helps to explain why the GED program has become so prevalent even though it offers few benefits to most recipients. The cheap fix has become the byword of American public policy. While the direct costs of the GED program are low, it fixes few problems for most GED recipients and creates a host of new ones.

To address problems with the test, the GED testing service is planning to increase its passing standards. This proposal ignores the fundamental problems with the GED, which will not be solved by raising its passing standards. The GED program is a symptom of the deeper problem that American society is failing to produce essential character skills.

[22]Heckman and LaFontaine (2010).

[23]See Heckman and LaFontaine (2010).

[24]See the evidence in Chapters 2 and 3.

[25]In addition, faith in tests and their acceptance as proof of college readiness promoted a boom in GED certification as dropouts perceived the benefits of higher education and used the GED to certify for admission to colleges and technical institutes at a time when the returns to higher education were increasing. See, for example, Autor, Katz, and Kearney (2008) on time trends in the economic returns to education.

[26]See, for example, Schochet, Burghardt, and Glazerman (2001) and Bloom, Gardenhire-Crooks, and Mandsager (2009).

It is possible to tackle this problem, but not simply by raising standards on achievement tests.

1.2 The Origins of Achievement Testing

The confluence of four cultural and intellectual currents produced the GED testing program and America's heavy reliance on achievement tests. First, technological developments made it cheap to implement multiple choice tests on a large scale. Second, cognitive psychology fostered the belief that cognition is the primary skill required for success in life. Third, for reasons discussed in the previous section, character education and the evaluation of character skills were slowly phased out of schools, partly accelerated by the federal government's entry into public education. Fourth, the accountability movement in government mimicked the logic of private market cost-benefit analysis by using test scores to evaluate and assess a myriad of government programs designed to enhance skills. We now elaborate on these points.

The modern thrust for accountability in schools arose in the nineteenth-century educational reform movements. In the early nineteenth century, Horace Mann introduced the first standardized test used in American schools.[27] The test was an early attempt to evaluate schools by their output—the knowledge they produced—rather than by their inputs. The instrument he devised was very crude. As noted in the Preface to this book, Mann saw the limitations of his primitive achievement test (Mann, 1838). However, Mann's test was not widely implemented because grading it was laborious and time intensive. It would be another century before his ideas for standardized testing became prevalent.[28,29]

In the absence of reliable output-based measures, nineteenth-century educators largely evaluated schools using input-based measures (e.g., standardized curricula). The input-

[27] See Cremin (1988).
[28] An exception was the New York Regents exam introduced in the 1870s.
[29] See Cremin (1988).

based system was criticized. Teaching was often rote-based. Many critics commented unfavorably on the rigid disciplinary environments in these schools, which were intended, in part, to instill valued character skills in students.[30,31]

In the early twentieth century, Progressives like John Dewey sought to free up the curriculum, to engage a wider swath of society than the elites who attended the nineteenth-century high schools,[32] and to produce the whole person—the skills that Mann believed schools should emphasize.[33] The Progressives aimed to make schools the training ground for the life skills of the multitude and to lay the foundations for an informed democracy. They sought to foster a wide array of character skills that gave agency to students to lead flourishing lives.

The Progressives appreciated and fostered individuality among students. They sought a device to filter and track students to tailor programs to individual needs. The recently developed IQ test appeared to serve these purposes well. The tests satisfied the norms of bureaucratic fairness and, at the same time, were perceived to be effective screening tools, although the evidence on their effectiveness was largely anecdotal.[34] The first IQ test was designed to screen out misfits in school (Binet and Simon, 1916). The use of the test was broadened to sort students within schools—the origins of tracking.

Just as Mann was skeptical about the early achievement tests, one of the creators of the modern IQ test, Alfred Binet, realized its limitations:

> [Success in school]...admits of other things than intelligence; to succeed in his studies, one must have qualities which depend on attention, will, and character; for example a certain docility, a regularity of habits, and especially continuity of effort. A child, even if intelligent, will learn little in class if he never listens, if he spends his time in playing tricks, in giggling, in playing truant. — Binet (1916, 254)

[30] See Cremin (1988), Reese (1995), and Ravitch (2010).

[31] Bowles and Gintis (1976) characterize the American education system as producing docile, compliant, and reliable workers for the capitalist economy; that is, for producing character skills useful for industry.

[32] See Cremin (1988) and Rothstein, Jacobsen, and Wilder (2008).

[33] See Cremin (1988).

[34] See Resnick (1982), Reed (1987), Ackerman (1988), and Jensen (1998).

Charles Spearman wrote to similar effect. He is best known for his work on "*g*"—a unitary factor that he claimed captured the structure of intelligence. However, along with his student, Edward Webb, he undertook studies of "character" because of "the urgency of its practical application to all the business of life" (Webb, 1915, 1). Spearman and Webb concluded that many positive aspects of character shared a relation to what modern personality psychologists term "Conscientiousness."[35]

Throughout the century, many scholars expressed concerns about the skills missed by IQ tests. Arthur Jensen, the intellectual heir of Spearman and an ardent proponent of the power of *g* writing about the determinants of success in life, says:

> What are the chief personality traits which, interacting with *g*, relate to individual differences in achievement and vocational success? The most universal personality trait is conscientiousness, that is, being responsible, dependable, caring, organized and persistent. — Jensen (1998, 575)

The achievement test was developed in the wake of the success of the IQ test. Interest in testing was fueled by American obsession with measurement, accountability, and efficiency. In the late nineteenth century, Frederick Taylor began applying "scientific management" to the workplace. In order to increase efficiency in factories, he created incentive schemes for workers and monitored workflow by measuring the time it took to complete tasks.[36] Chapter 2 discusses the role of Taylorism ("scientific management") in the testing movement.[37]

Charles Bobbitt, a professor of education at the University of Chicago in the early twentieth century, applied Taylor's vision to schools. He thought of schools like Taylor thought of factories:

> Education is a shaping process as much as the manufacture of steel rails; the personality is to be shaped and fashioned into desirable forms. It is a shaping of

[35]Chapter 9 defines this and other psychological skills. See also Borghans, Duckworth, Heckman, and ter Weel (2008) and Almlund, Duckworth, Heckman, and Kautz (2011).

[36]See Lazear (1995) for a recent discussion of incentives in the workplace.

[37]See Taylor (1911).

> more delicate matters, more immaterial things, certainly; yet a shaping process none the less. — Bobbitt (1913, 12–13)[38]

While Taylor could readily measure the output of factories, Bobbitt lacked the tools to measure the output of schools. Like Mann, he viewed character as one of the most important products of schooling.[39] The perceived success of IQ testing coupled with a demand for "objective outputs of schools" motivated the creation of the modern achievement test.

Ralph Tyler at the University of Chicago and Edward Lindquist at the University of Iowa invented the achievement test as a way to measure "*general knowledge.*" While IQ tests were created to measure the capacity to learn, achievement tests were designed to measure the capacity to use what is learned—sometimes called *functional knowledge*—not the knowledge taught in any particular course.[40] Functional knowledge was not thought to be a trait like IQ. It was perceived to be an acquired skill.

Tyler was asked to evaluate the performance of the free-form Progressive schools developed under the influence of John Dewey and others.[41] The curricula across schools were not standardized, so input-based measures of evaluation were inappropriate. Instead, he developed output-based measures. Developed in 1942, the Iowa Test of Educational Development (ITED) was the first concrete framework designed to capture general knowledge—what schools "should teach" rather than the specific content of any course. The GED exam is based on this test.

Unlike Mann a century earlier, these pioneers developed the technology to implement the achievement test on a mass scale. Lindquist developed an optical scanner that read punch cards. This innovation made grading the exam fast and efficient, dramatically

[38] See Chapter 2 in this volume.

[39] His philosophy of education is summarized in the following quote:

> The social point of view . . . demands that training be as wide as life itself. It looks at the human activities of every type: religious activities; civic activities; the duties of one's calling; one's family duties; one's recreations; one's reading and meditation; and the rest of the things that are done by the complete man or woman. — Bobbitt (1915, 20)

[40] Lindquist (1951).

[41] See Tyler (1989), Lindquist, Van Dyke, and Yale (1948), Peterson (1983), Quinn (2002), and Chapter 2.

reducing the costs of evaluation. The modern Iowa tests, ACT, GED, National Assessment of Educational Progress (NAEP), and tests used under the No Child Left Behind Act are all achievement tests that trace their origins back to the ITED.[42] The tests gave instant feedback to educational evaluators, who often say they "cannot wait 20 years to learn what is going on in schools."[43]

One developer of the Iowa Test readily admitted the shortcomings of his creation but was pessimistic about measuring the aspects of human performance that the tests missed:

> In general, satisfactory tests have thus far been developed only for objectives concerned with the student's *intellectual* development, or with his purely *rational* behavior. Objectives concerned with his nonrational behavior, or with his emotional behavior, or objectives concerned with such things as artistic abilities, artistic and aesthetic values and tastes, moral values, attitudes toward social institutions and practices, habits relating to personal hygiene and physical fitness, managerial or executive ability, etc., have been seriously neglected in educational measurement . . . attainment of these objectives is so difficult to measure, or that so little is known about how to measure them, just as so little is known about how to teach them effectively.
> — Lindquist (1951, 137–138)

His co-developer, Ralph Tyler, was more optimistic about measuring the important skills that achievement tests missed:

> We lean heavily on written examinations, on a few types of objective tests, and on the subjective impressions of teachers. Many other appraisal devices could be used, such as records of activities in which pupils participate, questionnaires, check lists, anecdotal records and observational records, interviews, reports made by parents, products made by the pupils, and records made by instruments (motion pictures, eye-movement records, sound recordings, and the like). — Tyler (1940, 27)

This theme is repeated in his later writings (Tyler, 1949, 1989). We discuss evidence on the predictive value of such criteria in Chapter 9.

Tyler wrote to similar effect about the NAEP, which he created in the 1960s and is still

[42] See Chapter 2, Lindquist, Van Dyke, and Yale (1948), and ACT, Inc. (2009).
[43] See, for example, Koretz (2008).

used today to monitor the progress of American students.[44] But time and again the cost effectiveness of the standard achievement test and belief in the primacy of cognitive skills won out, and the apparently more costly evaluation of character was neglected.[45]

As discussed in Chapter 2, the GED originated from a test used to reintegrate World War II veterans back into society. These veterans had the character skills that were required to serve in the military: obedience, self-control, perseverance, and the like. The character skills of veterans were assumed to be substantial by virtue of their successful service in the military. Veterans also acquired knowledge through course work (at armed forces institutes) and through life experiences. The GED test was later applied to civilian populations as a way to solve the dropout problem and give American youth a second chance. The general population to which the GED was applied was far more heterogeneous in its character skills than were the highly disciplined World War II veterans.

Early on, the American Council of Education admitted the limitations of its GED test:

> It should be emphasized . . . that the General Educational Development Tests do not measure all the attributes that a high school attempts to develop in its students (character, attitude, interest, etc.). The Fact-Finding Study does not suggest that the high school level General Educational Development Tests are a substitute for a formal high school education. — American Council on Education (1956, 12)

In the 1950s and 1960s, powerful forces propelled the widespread acceptance of achievement tests. A push for egalitarianism and meritocracy created a demand for objective measures of talent. The SAT was designed to identify bright kids and break the old boy networks of Ivy League schools.[46]

During the Kennedy-Johnson administration, the accountability-in-government movement further fueled the proliferation of achievement testing. Robert McNamara and the

[44]See Tyler (1989), particularly "The Objectives and Plans for a National Assessment of Educational Progress" (pp. 223–226) and "National Assessment—Some Valuable By-Products for Schools" (pp. 227–237), and Rothstein, Jacobsen, and Wilder (2008).

[45]The original NAEP was designed to include measures of character skills. See Tyler (1989, 223–237; 1973).

[46]See Lemann (1999). The SAT used to be called the Scholastic Aptitude Test, but in its most recent incarnation, the acronym has become the name.

"Whiz Kids" at the Defense Department applied Taylorism to government. Specifically, they sought to apply the principles of economic cost-benefit analysis to government programs and produce a social version of a profit-loss statement.[47,48]

Lyndon Johnson's Great Society expanded these principles to a wider swath of government activity.[49] It introduced a modern version of Taylorism to monitor a broad array of social policies. Achievement test scores and IQ scores were viewed as valid and objective instruments to evaluate a series of newly launched human capital development programs. Promoting GED certification became part of a broader strategy to alleviate poverty.

Over the past 50 years, the use of tests in American education has changed greatly from serving a low-stakes advisory function to becoming a measuring rod against which schools are evaluated, funds are dispersed, and students are promoted or failed.[50] Figure 1.1 shows the spectacular growth in achievement test sales per student in elementary school or secondary school. By 1974, the U.S. Congress required that a major federal educational program (Title I) be evaluated using scores on achievement tests.[51]

[47] See Hitch and McKean (1960) and Aaron (1978).

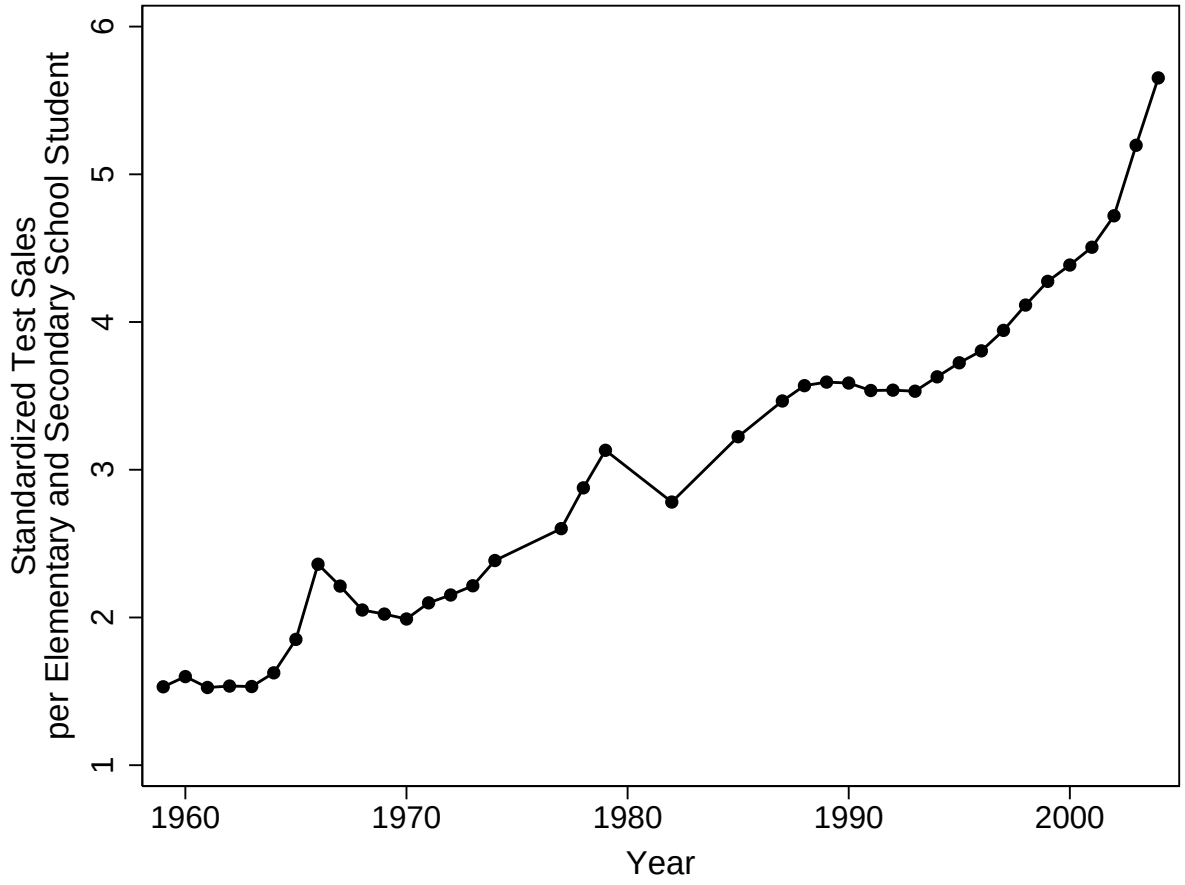
[48] An extreme instance of this mentality was the use of body counts to measure American success in the Vietnam War.

[49] See Aaron (1978).

[50] See Koretz (2008) and Worner (1973).

[51] Koretz (2008). NCLB is a reauthorization and expansion of this program.

Figure 1.1 Standardized Test Industry Sales per Elementary and Secondary School Student



Sources: Digest of Education Statistics (Various Years); *The Bowker Annual: Library and Book Trade Almanac* (Various Years).

The focus on accountability reached new heights with the publication of *A Nation at Risk: The Imperative for Educational Reform*, which used achievement test scores to document the problems of American education.[52] From that point on, the accountability movement went wild, culminating in the No Child Left Behind Act (NCLB) in the 2000s.[53] As documented by Koretz (2008) and Rothstein, Jacobsen, and Wilder (2008), the narrow focus of the NCLB movement squeezed the curriculum to focus only on the tested domains—reading and mathematics—diminishing the emphasis on many other subjects, never mind character education. Standardized achievement tests are now a major feature of social evaluation and assessment systems. It is possible that test preparation builds certain aspects of character, but the exams fail to measure many character skills.[54] As a result, they divert the focus of the educational system to what achievement tests measure and away from important character skills.

The secularization of American education also promoted reliance on achievement tests. The Common School Movement in the nineteenth century viewed moral and character education as an integral part of the mission of schools. There was an implicit acceptance of the ethical and moral teachings of Protestant Christianity.[55] As America became religiously and ethnically more diverse, the schools developed a more broad-based moral and ethical curriculum based on a common core of religious belief.[56] A leading historian of American education presents the following summary of Horace Mann's views on the essential nature of moral and character education:

> [I]f common schools were to attract the children of all religious sects, a common religious core of belief had to be identified. On the centrality of moral education, Mann said, "The naked capacity to read and write is no more education than a tool is a workman . . . Moral education is a primal necessity". Indeed, Mann said, "so decisive is the effect of early training upon adult habits

[52] National Commission on Excellence in Education (1983).

[53] See Koretz (2008).

[54] To the best of our knowledge, there are no scholarly studies of the enhancement in character skills arising from preparation for exams.

[55] See, for example, Cremin (1988) and Kaestle (1984).

[56] Kaestle (1984, 102).

> and character", that if all children "could be brought within the reformatory and elevating influences of good schools, the dark host of private vices and public crimes, which now embitter domestic peace and stain the civilization of the age, might, in ninety-nine cases in every hundred, be banished from the world." — Kaestle (1984, 102)[57]

As American society became even more diverse in the twentieth century, pressure intensified to secularize education and eliminate any religious overtones of moral education and eventually to deemphasize it in public schools. The U.S. Supreme Court decision in *McCollum v. Board of Education* (1948) mandated the separation of church and state in the schools. Kaestle (1984) discusses how federal government involvement in the schools led to the decline in moral education and assessment of character in the schools:

> One of the key factors is the increased involvement of the federal government. In deciding a series of religious cases, federal jurists have developed a line of thinking about the separation of church and state that underlines a secular definition of public education. Decisions about religious exercises in state schools and financial aid to parochial schools have reinforced the notion that one can distinguish between secular and religious education and that governments may fund only secular education.
> — Kaestle (1984, 108)

Since moral education and assessment were perceived to be founded on religious and moral beliefs, any hint of moral education in schools flirted with violation of the boundaries between church and state. Character education was left to the family and the church. During the 1960s when moral education and evaluation were deemphasized, American families were, by and large, functioning entities that could provide adequate instructions in morality and character, even if it was lacking in the schools.

The federal government's intervention in the schools was not limited to separating church and state. In the 1960s and 1970s, the civil rights revolution broadened to guarantee the "rights of students." As documented in Arum (2005), a series of court cases, many initiated by the Legal Services Administration, protected the rights of students and

[57]The Kaestle composite is based on Mann (1847, 53) and Mann (1848, 90, 95–96).

introduced explicit prohibitions on disciplinary practices into the school systems.[58] Traditionally, student discipline was one method for enforcing and instilling character skills.[59] Arum documents how school discipline declined in those regions where litigation was most successful in limiting the rights of teachers to discipline students.

Reinforcing these trends was the emergence of cognitive psychology, which influenced the design and evaluation of school curricula. Jerome Bruner's classic study (1956) appeared to justify a cognitive focus in schools. Reinforcing this trend, an influential book by Mischel (1968) claimed that there were no stable character skills. They were thought too ephemeral in nature and too difficult to measure despite Tyler's concrete suggestions and a rich body of work in personality psychology measuring those skills. Achievement tests and IQ tests were in hand to measure cognition. A cognitive focus appeared to have strong intellectual support, did not infringe on student rights, nor did it bring religion into the schools. It was also viewed as ethically neutral and satisfied the goals of cultural pluralism. Again quoting Kaestle:

> But where nineteenth-century educators had asserted that the chief aim of common schooling was moral education—and even their Progressive descendants of the mid-twentieth century had stressed the ethical socialization of the "whole child"—the emphasis of the 1960s was cognitive: it was on schooling for equal achievement, for pay-off, as well as education of the talented, guided by the new heady curricula of the Bruner generation. While moral education had receded as an educational goal because of pressing cognitive goals, two other developments also affected the schools' approach to moral authority. The potential for a more genuine cultural pluralism flowed from the attention to minority rights. The ideal and the reality of cultural pluralism made educators in the more heterogeneous school settings re-examine some of the comfortable assumptions of an ethnocentric morality. The virtues of manliness, competitive individualism, standard English, future orientation, and Anglo-Saxon superiority could no longer be taken for granted. — Kaestle (1984, 109)

In sum, numerous cultural, legal, and intellectual factors, as well as technological changes, shifted the emphasis of American education toward cognition. Character ed-

[58] See also Wise (1979).

[59] See Durkheim (1973) and the discussions in Beck, Crittenden, and Sullivan (1971).

ucation became suspect, and character itself became a "soft skill" deemed as unstable and impossible to adequately measure. The growing diversity in the American population favored a more inclusive curriculum, less oriented toward character education that appeared to have inherently subjective elements associated with it and that appeared to some to introduce middle-class values and religion into the schools and intrude on the prerogatives of the family. The entry of the federal government into the financing and control of education sharpened the separation of church and state and accelerated the decline of character education and character evaluation in schools. At the same time, educational and psychological theories favored cognition over character. Tools had been developed to measure cognition, and they were deemed to be rigorously validated.

The achievement tests developed in the first half of the twentieth century provided grist for the accountability mill, which became increasingly influential as the federal government entered into the arena of public education. Standardized tests promoted uniformity and equality of treatment and satisfied a growing demand for meritocracy. Taylorism, Tylerism, and Brunerism shaped the curriculum of mid-twentieth-century American schools and fostered reliance on achievement tests. The growth of GED testing was part of a broader application of achievement tests throughout American society.

1.3 The Modern GED Test

The GED exam is a seven-and-a-half hour achievement test that covers writing, social studies, science, reading, and mathematics. Most questions on the exam are multiple choice, but the exam also includes a short essay (GED Testing Service, 1959–2008). Scores cumulate across testing occasions. Students who fail sections of the exam can retake them without retaking the portions that they have passed.[60] The math and reading tests attempt to measure the ability to problem solve, interpret, and synthesize, rather than

[60]See Jepsen, Mueser, and Troske (2011) on the exact rules for retaking the exam; they vary by state. Most pass on the first attempt, but a significant fraction retake the test.

factual recall. Table 1.1 shows examples of GED test questions.

Table 1.1 GED Sample Questions

Test Subject	Sample Question
Writing	Sentence 1: **Some people, catch crappie from the shoreline or from a dock.** Which correction should be made to sentence 1? (1) replace Some with Many (2) remove comma after people (3) change catch to caught (4) change from the shoreline to on the shoreline (5) no correction is necessary
Math	If $8x + 16 = 32$, what is x? A) 8 B) 2 C) 4 D) 3 E) 7
Science	Some beach sands in Alaska currently are being worked for gold. Because there are large gold deposits inland, the soils and sediments along the Alaskan coast contain traces of gold. Which of the following **BEST** explains why the gold is concentrated on those beaches? (1) Dense gold particles are left behind as the waves wash away other materials. (2) The gold was floated onto the shore in icebergs, which have completely melted. (3) The large tidal waves from frequent earthquakes wash the gold onto the shore. (4) Low water temperatures prevent the gold from dissolving as it does elsewhere. (5) Many treasure-laden ships have broken up on those dangerous shores.
Social Sciences	[Initiative] Sec. 8. (a) The initiative is the power of the electors to propose statutes and amendments to the Constitution and to adopt or reject them. (b) An initiative measure may be proposed by presenting the Secretary of State a petition that sets forth the text of the proposed statute or amendment to the Constitution and is certified to have been signed by electors equal in number to 5 percent in the case of a statute, and 8 percent in the case of an amendment to the Constitution, of the votes for all candidates for Governor at the last gubernatorial election. To qualify an initiative to amend the state Constitution, how many voters must sign the petition? (1) 52% of the voters in the state (2) 5% of the voters in the state (3) 8% of the voters in the state (4) 5% of the voters who voted for Governor in the last election (5) 8% of the voters who voted for Governor in the last election

Source: Reproduced from Bobrow (2002).

Note: The source is a preparation guide for the most recent 2002 series of the GED test.

The GED is a typical achievement test. Table 1.2 shows that GED test scores are highly correlated with scores on other standardized achievement tests. The correlations range from 0.61 with the General Aptitude Test Battery (GATB) to 0.88 with the Iowa Test of Educational Development, the progenitor of the GED.[61] A central issue explored in this book is how well these tests predict important life outcomes.

Table 1.2 Validities of GED Test (Correlations with Other Measures of Cognition)

Test	Correlation	Source
Armed Forces Qualification Test (AFQT)	0.75–0.79†	Means and Laurence (1984)
Iowa Test of Educational Development	0.88†	Boesel, Alsalam, and Smith (1998)
American College Test (ACT)	0.80†	Boesel, Alsalam, and Smith (1998)
Adult Performance Level (APL) Survey	0.81†	Boesel, Alsalam, and Smith (1998)
New York's Degrees of Reading Power (DRP) Test	0.77†	Boesel, Alsalam, and Smith (1998)
Test of Adult Basic Education (TABE)	0.66–0.68†	Boesel, Alsalam, and Smith (1998)
General Aptitude Test Battery (GATB)	0.61–0.67†	Boesel, Alsalam, and Smith (1998)
National Adult Literacy Survey (NALS) factor	0.78‡	Baldwin (1995)

Sources: GED Testing Service (2009), Quinn (2002), and GED Testing Service (1959–2008).

† Uses mean GED subtest scores.
‡ Uses a general GED factor.

Since the introduction of the test in 1942, its content and difficulty have changed several times. Table 1.3 shows the key changes to the GED exam. The content has been updated three times with new "series" designed to be relevant for job skills and postsecondary education. ACE is planning to introduce a new test in 2014.[62]

The passing threshold was originally normed so that 80% of graduation-bound high school seniors could pass (Boesel, Alsalam, and Smith, 1998; Quinn, 2002). An analysis of

[61] See Chapter 2.
[62] See GED Testing Service (2012).

the 1943 norming study suggests that the 80% pass rate overstates the actual difficulty of the original test (Quinn, 2002). Quinn claims that there was a high probability of passing the original test due to chance, that is, by guessing. Now 60% of current graduation-bound high school seniors are estimated to be able to pass the entire test on their first try (GED Testing Service, 2009). Boesel, Alsalam, and Smith (1998) cite studies claiming that the test certifies knowledge at the eighth- to ninth-grade level.

Table 1.3 Key Changes to the GED

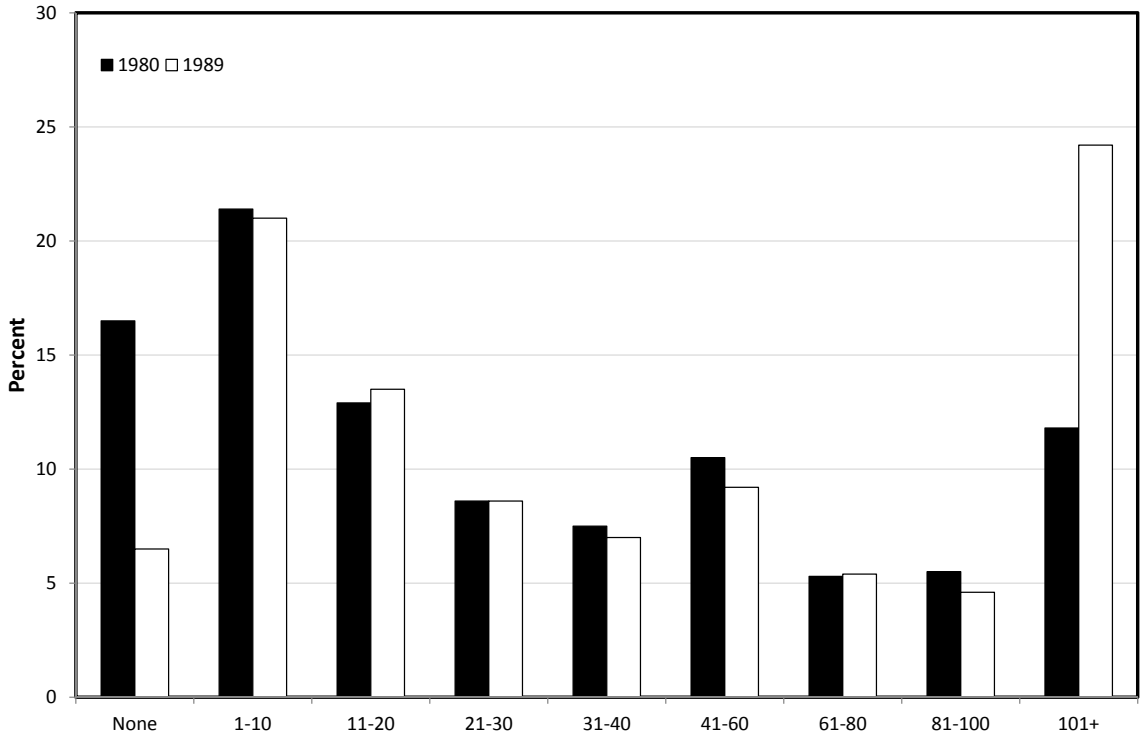
Year	Changes to the GED Testing Program
1942	GED test introduced for veterans. 80% of graduation-bound high school seniors said to be able to pass all five batteries.
1947	New York offers GED test to civilian high school dropouts.
1959	More civilians taking the GED test than veterans.
1974	California becomes last state to introduce GED test for dropouts.
1978	Second series of the GED test introduced. Test time of 6 hours.
1981	Time limit extended to 6.75 hours. National minimum age for testing abolished.
1982	Standards made more difficult, 75% of graduation-bound high school seniors said to be able to pass the entire test.
1988	Third series of GED test introduced. First series to include a writing sample. Time extended to 7.5 hours for taking the test.
1992	National minimum age for GED test taking of 16 implemented.
1997	Passing standards made more difficult, 67% of graduation-bound high school seniors said to be able to pass the entire test.
2002	Fourth series of the GED test introduced. Calculator allowed for first time on parts of the math test. Passing standards made more difficult; 60% of graduation-bound high school seniors said to be able to pass the entire test. Test time of approximately 7 hours.

Note: Reproduced from Heckman, Humphries, and Mader (2011). Original sources: GED Testing Service (2009), Quinn (2002), and GED Testing Service (1959–2008).

As the letter reprinted in the Preface to this book vividly describes, for most GED test takers, preparing for the GED does not entail much basic learning. Figure 1.2 shows the distribution of the amount of time spent studying for the GED exam by test takers in 1980 and 1989. In 1980, the median test taker studied for 20 hours and, in 1989, for 30 hours (GED Testing Service, 1959–2008; Quinn, 2002).[63] More recently, Zhang, Han, and Patterson (2009) found that in 2006 the median study time for those who reported studying for the GED was 32 hours. Earning a high school diploma requires much more effort. An average high school student spends approximately 1,080 hours in class each year, excluding time spent studying and completing homework (Carroll, 1990), and spends 410 hours per year attending core high school courses.[64] It is unlikely that the knowledge acquired while cramming for the GED substitutes for knowledge learned from attending classes.

[63]This amount applies only to test takers not qualifying as exceptions to the minimum age requirement.
[64]Boesel, Alsalam, and Smith (1998).

Figure 1.2 Hours Spent Studying for the Test by the GED Test Takers



Source: Boesel, Alsalam, and Smith (1998).

1.3.1 Growth of the GED Test

The accountability movement in government created a demand for "performance-driven" policies. Because GED recipients were perceived to be the equivalents of ordinary high school graduates, production of GED certificates was deemed a worthy goal.

Since its introduction in civilian populations, government institutions have promoted the GED certificate and incentivized its use (see Chapter 3). The growth of the welfare state explains a substantial part of the growth of GED certification. To many policy makers, the GED appears to be a valid and cost-effective substitute for high school graduation. As an example, a 2009 report on the GED in New York City claimed that, over a person's lifetime, those without a high school diploma cost the city $135,000 in public services, while those with only a high school diploma benefit the city with $190,000 of taxes, net of costs. Its conclusion was as follows:

> Thus, in the aggregate, simply helping one low-skilled New Yorker earn a high school degree or GED is worth more than $325,000 to the city. — Treschan and Fischer (2009, 1)

This sentiment is widespread in many quarters of American society. A number of job training programs promote GED certification.[65] Adult basic education programs prepare students to take the GED test. GED certificates can qualify individuals for welfare. Jails provide incentives for prisoners to obtain GED certificates.[66] The government allocates funds to remedial education programs based on the number of GED certificates issued. Many laws prevent employers from treating GED recipients differently from high school graduates.[67]

The rise in state-mandated high school exit examinations further contributed to the growth of GED recipiency. In response to perceived crises in American education over the last three decades, states have increasingly required students to pass achievement tests before graduating from high school. Schools are evaluated based on the fraction of students who pass.

Students who are unable to pass high school exit examinations turn to the GED as an alternative. Until recently, it was possible for schools to manipulate state accountability measures by encouraging low-performing students to earn a GED certificate so that those students are not counted in the school's passing rate.[68] This topic is discussed further in Chapters 3 and 8.

[65]These job training programs include the Manpower Development and Training Act (MDTA), the Comprehensive Employment and Training Act (CETA), the Job Training Partnership Act (JTPA), and the Work Force Investment (WIA) Act. These are discussed in Chapter 3.

[66]See Chapter 3.

[67]See Commonwealth of Pennsylvania (1955) and Web Appendix W1.1.15 for a variety of laws that mandate the equivalence between the GED and the high school diploma.

[68]Starting with the graduating class of 2011–2012, states are required to count GED recipients as high school dropouts in official statistics (Department of Education, 2008).

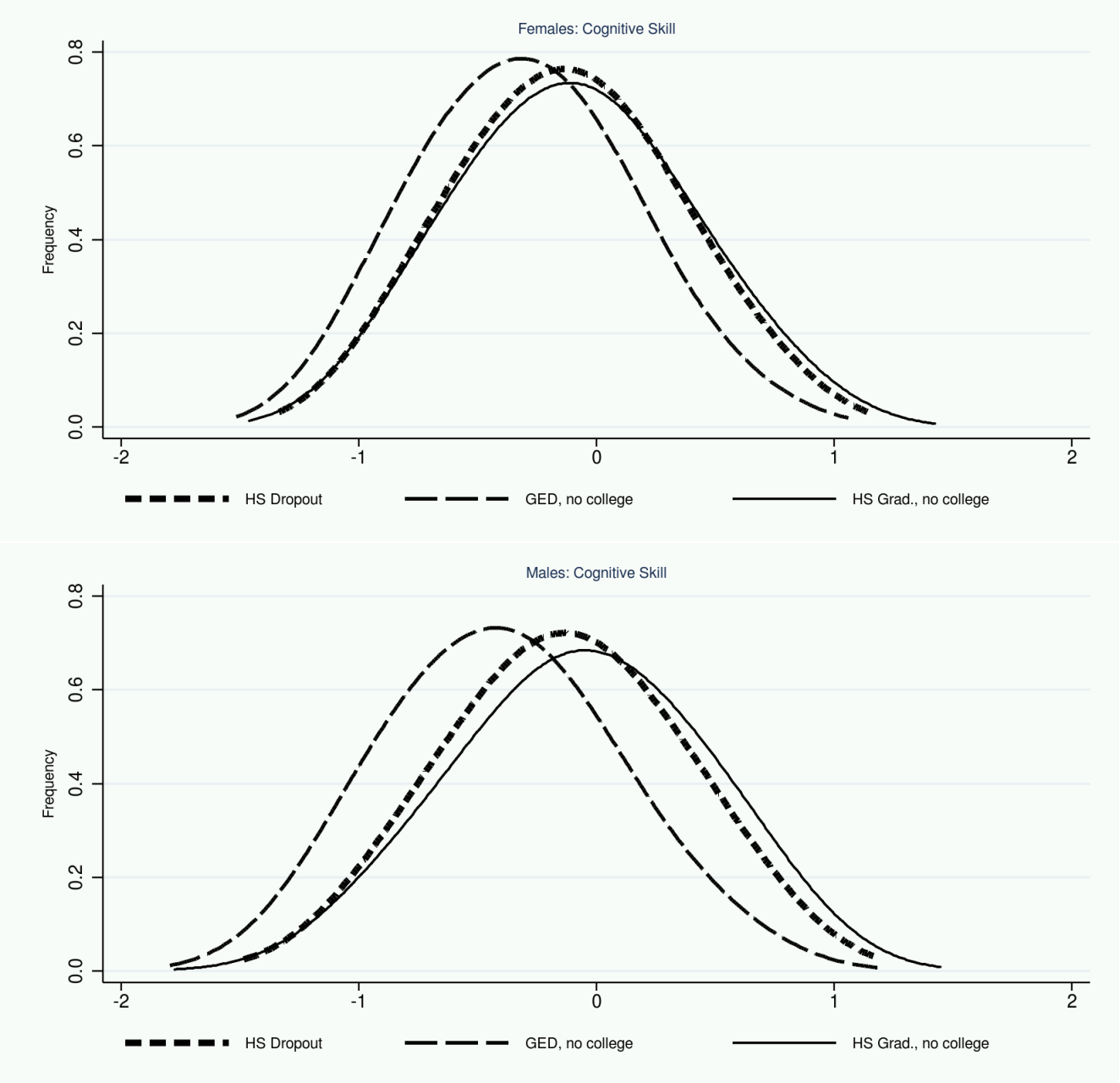
1.4 Social and Economic Benefits of the GED Program

1.4.1 Attributes of GED Recipients

Chapter 4 demonstrates that in multiple samples collected over the past 30-plus years, GED recipients fall short of traditional high school graduates. As a group, GED recipients are as smart as high school graduates who do not attend college, but they lack character. Figure 1.3 shows the distribution of cognitive ability for high school graduates, GED recipients, and other high school dropouts.[69] For both males and females, GED recipients are much more similar to high school graduates than to high school dropouts.

[69]The sample excludes people who attend college.

Figure 1.3 Distribution of Cognitive Ability by Educational Status (No College Sample, All Ethnic Groups)

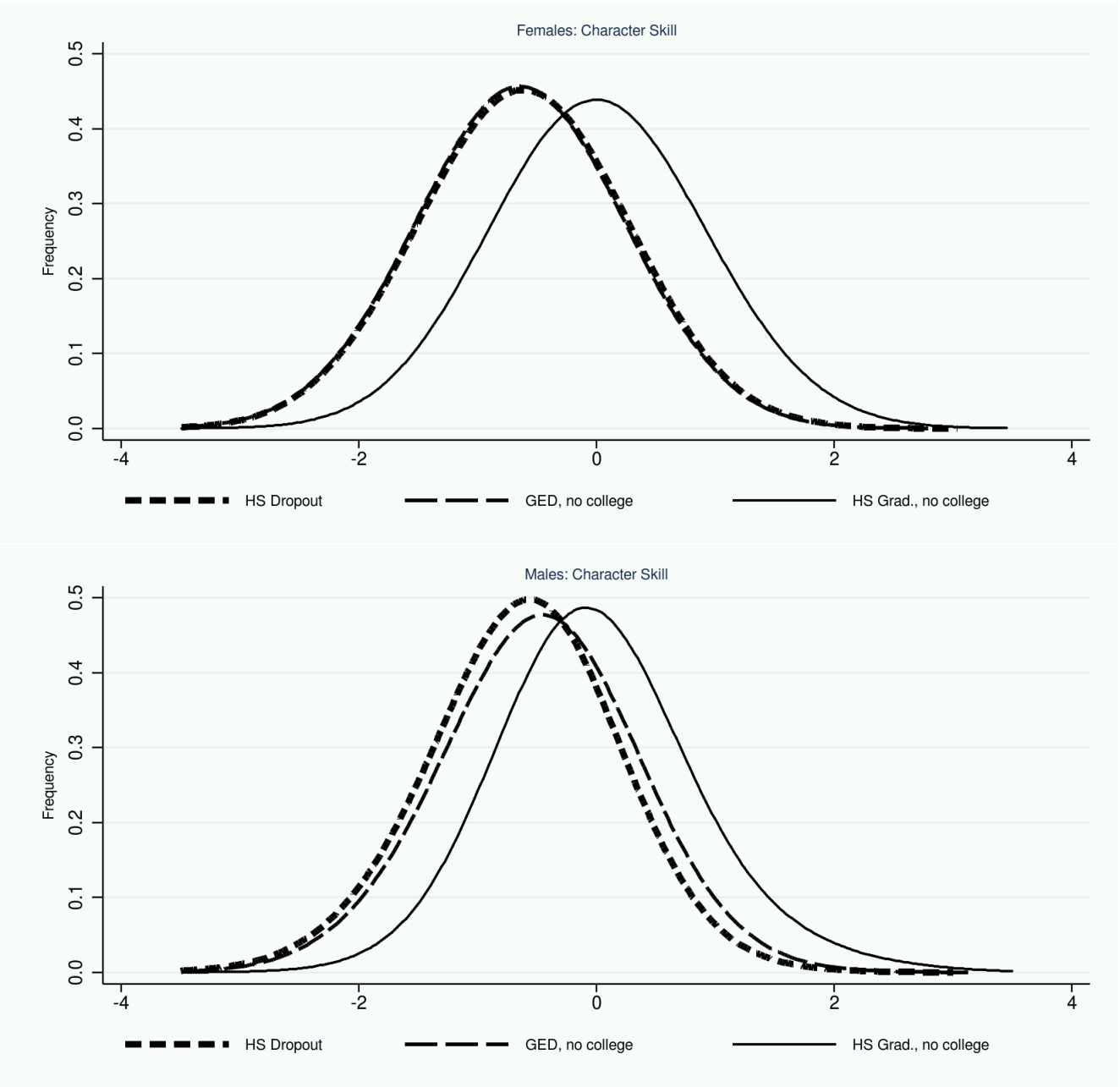


Source: Reproduced from Heckman, Humphries, Urzúa, and Veramendi (2011), which uses data from the National Longitudinal Survey of Youth, 1979 (NLSY79).
Notes: The distributions represent cognitive factors, estimated using a subset of the Armed Services Vocational Aptitude Battery (ASVAB). The factors are adjusted for educational attainment, as laid out in Hansen, Heckman, and Mullen (2004). The sample is restricted to the cross-sectional subsample for both males and females. Distributions show only those with no postsecondary educational attainment. The cognitive factors are normalized by gender to be mean zero, standard deviation one.

If, as a group, GED recipients are as smart as high school graduates who do not attend college, why do they drop out of high school? GED recipients lack the character skills required to complete high school. Figure 1.4 shows the distribution of character, as measured by risky behaviors during adolescence.[70] GED recipients are almost identical to other dropouts by this measure, whereas high school graduates are much better. In Chapter 4, we show that similar patterns arise across four different data sets for many adolescent behaviors, including sex, drinking, drug use, violent behavior, petty crimes, major crimes, school attendance, grades, and enrollment in remedial classes.

[70]These measures implement Tyler's insight (1940) that adolescent behaviors can provide valid measures of character skills.

Figure 1.4 Distribution of Character Skills by Education Group



Source: Reproduced from Heckman, Humphries, Urzúa, and Veramendi (2011), which uses data from the National Longitudinal Survey of Youth, 1979 (NLSY79).
Notes: The distributions represent noncognitive factors, estimated using measures of early violent crime, minor crime, marijuana use, regular smoking, drinking, and early sexual intercourse. Sample restricted to the cross-sectional subsample for both males and females. Distributions show only those with no postsecondary educational attainment. The noncognitive factors are normalized to be mean zero, standard deviation one.

Differences in skills across dropouts, GED recipients, and high school graduates emerge early and are linked in part to family backgrounds. Compared to high school graduates, GED recipients and dropouts are more likely to come from broken families, have mothers with lower levels of education, and receive lower levels of parental investment. The gaps in skills apparent in Figures 1.3 and 1.4 emerge by age six. These findings suggest that many children are destined to drop out of high school at a very young age unless their character skills are bolstered. Chapter 9 discusses interventions that target children born into disadvantage and effectively combat the school dropout problem. Many of these programs work by improving character skills.

1.4.2 Educational and Labor Market Benefits of the GED

The GED is a second-chance program, created with the implicit premise that people may change after making mistakes in adolescence. Adolescence is a time of self-discovery when people push boundaries and experiment with risky activities. Some dropouts might outgrow early problem behaviors and flourish later in life. The GED could be a lifeline for them.

The GED certificate might confer valuable benefits to its recipients. The GED program might promote human capital accumulation by encouraging test takers to enhance their skills to pass the exam. Another benefit might be the signal it sends. It might convey to schools and the market valuable information about the skills of recipients compared to uncertified dropouts even if skills are not acquired in studying for the exam. We investigate these hypotheses and reject them. The wages of GEDs are the same before and after they take the exam.

The GED certificate also privides an option value by allowing recipients to attend college. It opens doors to higher education because many postsecondary institutions accept the GED as equivalent to a high school degree for admitting students. While many GED recipients attempt college, few GED recipients graduate. For most GEDs, the same

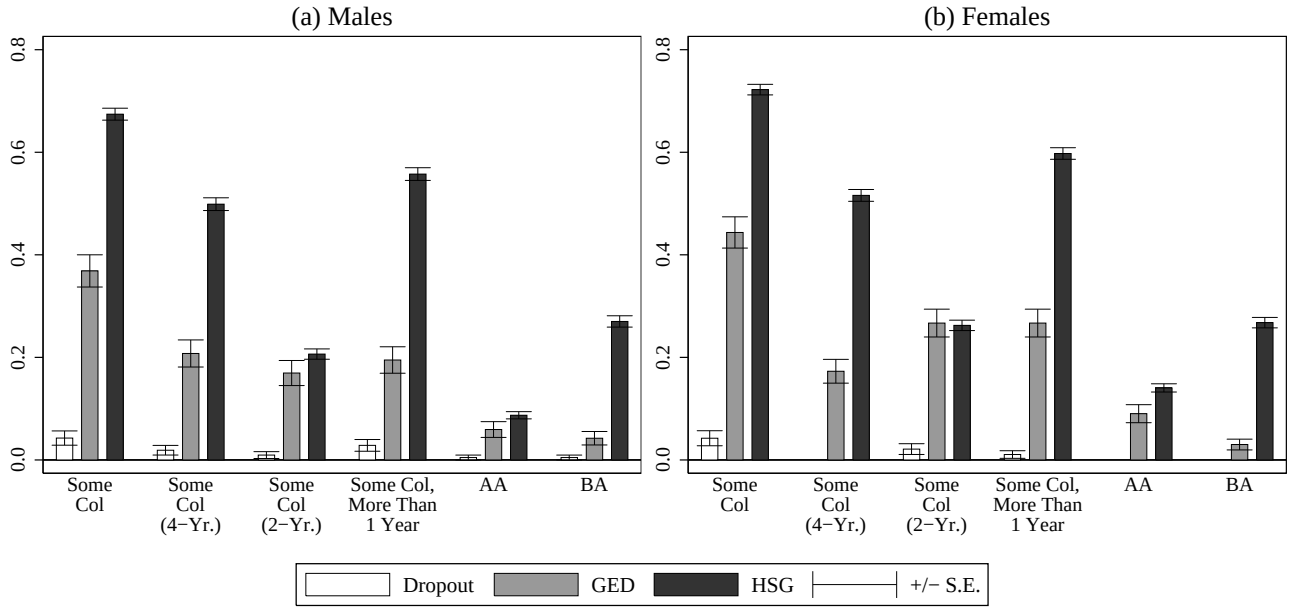
deficits in character skills that caused them to drop out of high school cause them to drop out of postsecondary education.

Chapter 5 studies the economic and social outcomes of GED recipients through age 40 and finds that most GED recipients continue to lack the skills that caused them to drop out of high school in the first place. Figure 1.5 shows the postsecondary educational attainment of dropouts, GED recipients, and high school graduates. About 40% of GED recipients attend some college. Only half complete more than one year. Only 3%–4% earn bachelor's degrees, although 5%–9% earn associate's degrees. These rates are considerably lower than those for regular high school graduates—27% for bachelor's and 14% for associate's degrees, respectively. Compared to GED recipients, high school graduates who attend college are about twice as likely to earn a degree.[71] In all cases, the differences between high school graduates and GED recipients are statistically significant, and, for most cases, so are the differences between GED recipients and dropouts.[72]

[71]Web Appendix tables W1.2.1 and W1.2.2 show education progression and attainment probabilities for GED recipients and high school graduates.

[72]See Chapter 5 and Web Appendix 5.

Figure 1.5 Postsecondary Educational Attainment across Education Groups through Age 40 (NLSY79)—All Races



Source: National Longitudinal Survey of Youth, 1979.
Notes: The graph displays the postsecondary educational attainment of dropouts, GED recipients, and high school graduates through age 40. The bars indicate the standard errors, a measure of sampling uncertainty. *Variable Definitions*: "Some Col"—people who entered any postsecondary institution. "Some Col (4-Yr.)"—people who entered a 4-year college. "Some Col (2-Yr.)"—people who entered a 2-year college and never entered a 4-year college. "Some Col, More Than 1 Year"—people who completed at least a year of some postsecondary education. "AA"—people who obtained an associate's degree. "BA"—people who obtained a bachelor's degree. "BA" also includes people with higher education: master's, Ph.D., and professional degrees. Tests of significance are reported in Chapter 5.

Figures 1.6 and 1.7 show the performance of GED recipients and high school graduates in the labor market compared to other dropouts. For each outcome, the first pair of bar charts shows the effects of GED certification (the first in the pair) and ordinary high school graduation (the second in the pair) relative to uncertified dropouts after controlling for age, race, and region of residence. The second pair shows GED effects after additionally controlling for the Armed Forces Qualification Test (AFQT), a measure of scholastic ability. In both figures we display standard error bars.

GED recipients and high school graduates outperform uncertified dropouts if one only adjusts for age, race, and region of residence. After adjusting for scores on an achievement test (the AFQT), outcomes of male GED recipients are nearly identical to those of other dropouts. Female GED recipients have higher earnings compared to other dropouts, but only because they supply more labor to the market. They do not have higher hourly wages and do not have greater life-cycle wage growth with work experience compared to that of other dropouts. Female GED recipients are more likely than other dropouts to participate in the labor force but are not more likely to be employed, given that they enter the labor force. In virtually all cases, the differences between high school graduates and GED recipients are statistically significant, while the differences between GED recipients and dropouts are not.[73] Controlling for a standard set of background variables does not change this story.[74]

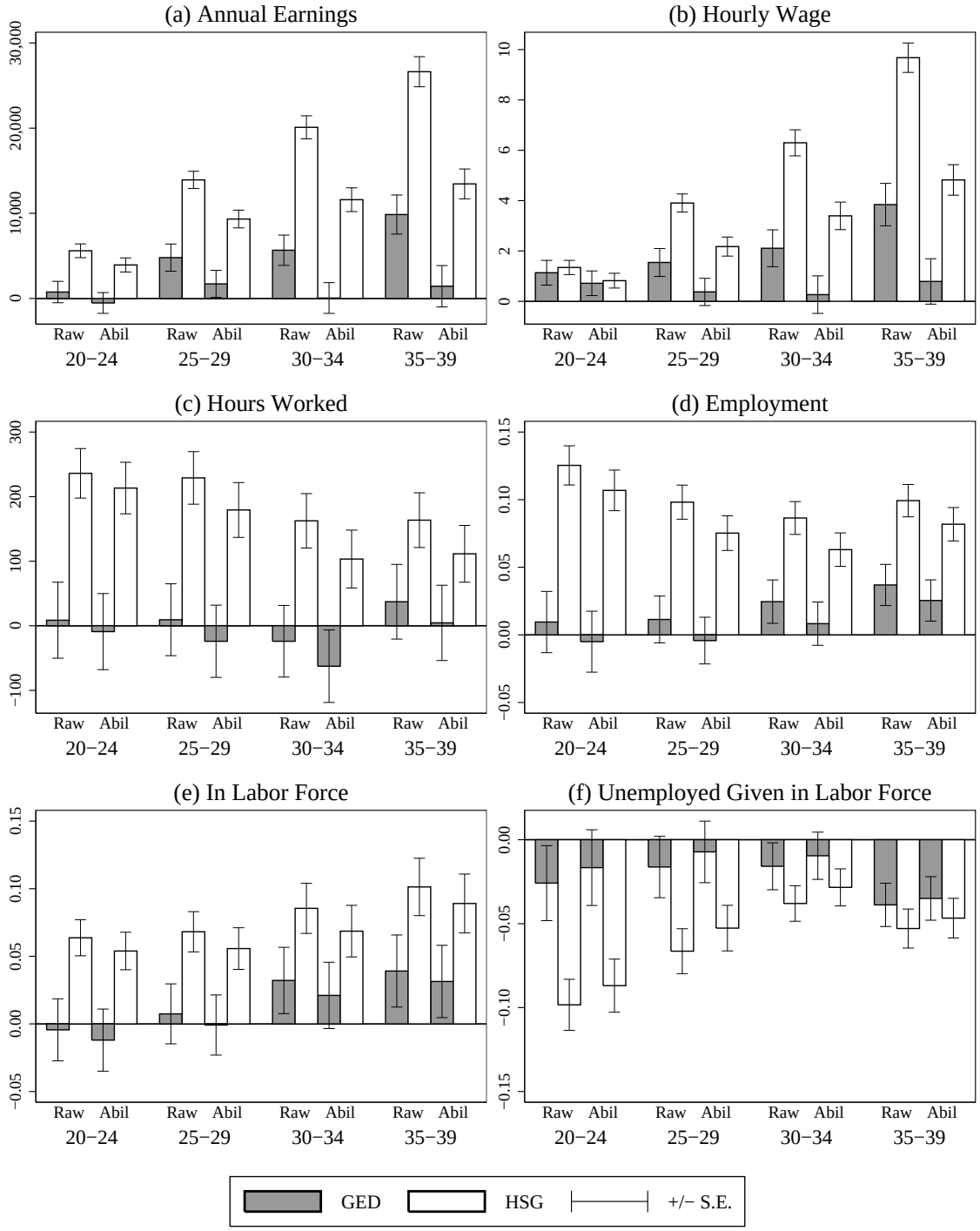
Two groups of women appear to benefit from GED certification. The first group consists of girls who get pregnant and reenter school after their children are old enough to place in child care. Their adolescent character skills are relatively strong compared to those of other dropouts. It is possible that they would have been more attached to the labor force even if they did not earn a GED certification. They have experienced an adverse shock from which they partially recover. The second group is made up of girls who do not get pregnant but have low levels of baseline character skills. They appear to

[73]See Chapter 5 and Web Appendix 5 for tests of significance.
[74]See Chapter 5 and Web Appendix 5 for analyses that control for other background variables.

improve their character as they mature. Many go to college.

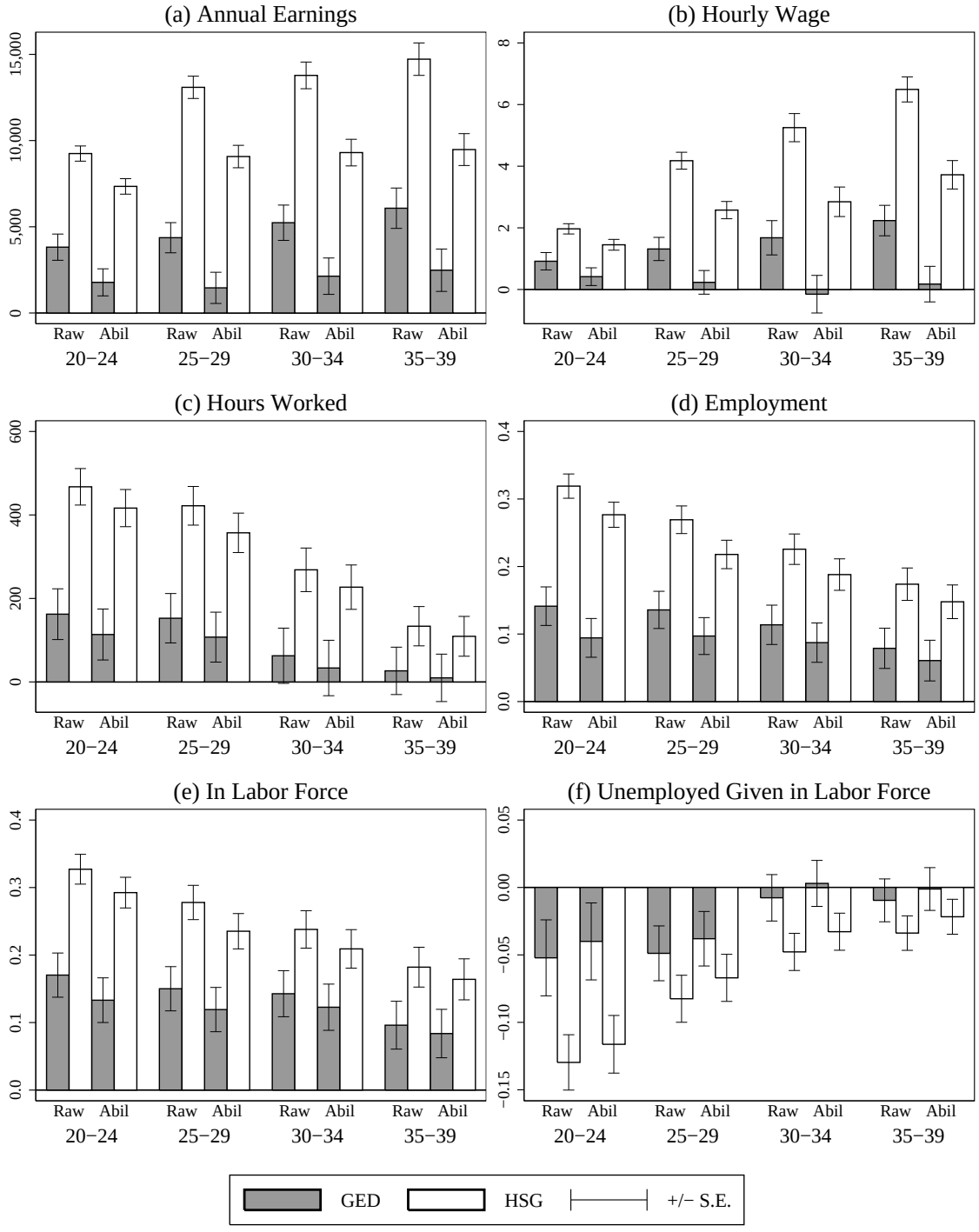
However, character skills are generally very persistent over time for most groups. Chapter 5 shows that the same skill deficits that cause GED recipients to drop out persist throughout adult life. They divorce and commit crimes at greater rates than high school graduates and are less likely to be employed. Chapter 6 shows that GED recipients drop out of the military at similar, if not higher, rates than other high school dropouts. For this reason, the military now only accepts GED recipients under special circumstances.

Figure 1.6 Labor Market Differences Compared to Uncertified Dropouts—Ages 20–39 (Males, All Levels of Postsecondary Education)



Source: National Longitudinal Survey of Youth, 1979.
Notes: Controls: "Raw"—age and region or state of residence; "Abil"—AFQT adjusted for schooling at time of test. Regressions exclude those reporting earning more than $300,000 or working more than 4,000 hours. The intervals around each bar are standard errors centered around the mean—a measure of sampling variability. All regressions allow for clustered standard errors at the individual level. Tests of significance are presented in Chapter 5.

Figure 1.7 Labor Market Differences Compared to Uncertified Dropouts—Ages 20–39 (Females, All Levels of Postsecondary Education)



Source: National Longitudinal Survey of Youth, 1979.
Notes: Controls: "Raw"—age and region or state of residence; "Abil"—AFQT adjusted for schooling at time of test. Regressions exclude those reporting earning more than $300,000 or working more than 4,000 hours. The intervals around each bar are standard errors centered around the mean—a measure of sampling variability. All regressions allow for clustered standard errors at the individual level. Tests of significance are presented in Chapter 5.

Even if earning a GED does not improve skills, the certificate might act as a signal in the labor market. We evaluate this possibility by comparing the labor market performance of GED recipients before and after they receive the certificate. We find little evidence that for most participants the GED is a useful signal of skills present before GED certification.[75] Eventual GED recipients earn the same wages before and after they GED certify.

Clark and Jaeger (2006) argue that the GED promotes immigrant assimilation by providing a signal of ability that is more familiar to employers than educational credentials earned outside the United States, or by signaling language skills and cultural assimilation of GED certifiers. The authors analyze earnings data from the Current Population Survey and claim that foreign-born GED recipients with no domestic educational credentials have statistically significantly higher wages than non-GED recipients or native-born dropouts.

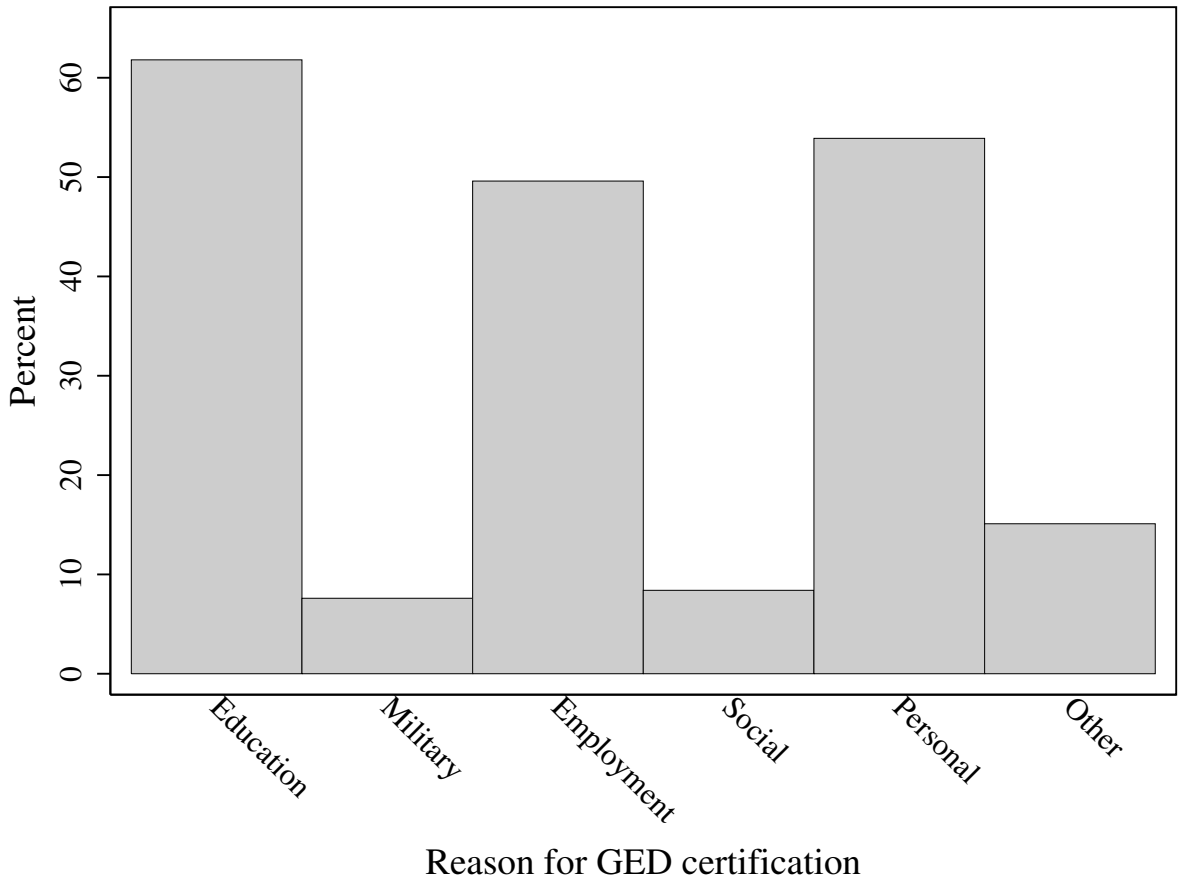
Chapter 5 summarizes the evidence in Heckman and LaFontaine (2006) who question the Clark and Jaeger (2006) conclusions. The Clark-Jaeger results are driven by data artifacts and limitations. After accounting for selection, differences in cognitive ability, and cohort effects, there is no earnings premium for any group of immigrant GED recipients.

1.4.3 The Option Value of the GED

One reason for acquiring a GED is to attain further education (see Figure 1.8). Indeed, the growth in GED certification tracks the rise in the return to postsecondary schooling (see Figure 1.9).

[75] See Chapter 5 and Cameron and Heckman (1993).

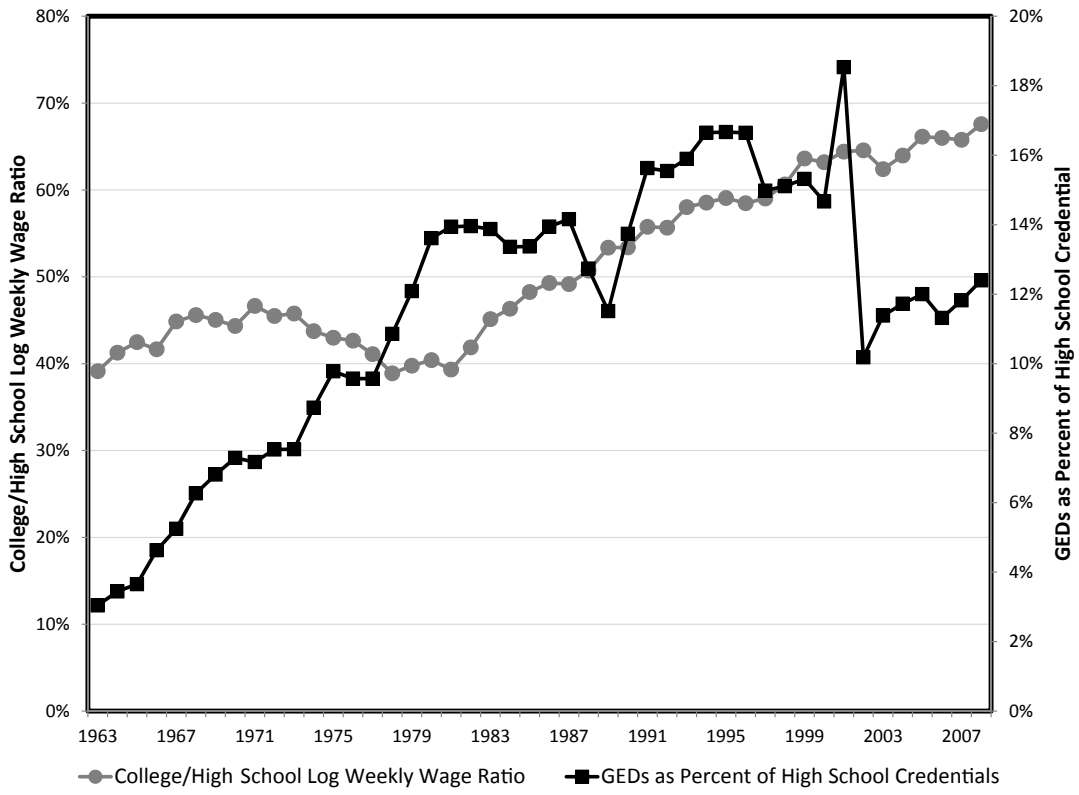
Figure 1.8 Reported Reasons for GED Certification



Source: Reproduced from American Council on Education (2009).

Notes: Educational reasons include attending a 4-year college, attending a 2-year college, attending a technical or trade program, and job training. Military reasons include military entrance and military career. Employment reasons include get a first job, keep current job, get better job, and employer required. Social reasons include early release, court order, and public assistance requirement. Personal reasons include positive role model and personal satisfaction. Responses are not necessarily mutually exclusive.

Figure 1.9 College/High-School Log Weekly Wage Ratio, 1963–2008



Source: Reproduced from Acemoglu and Autor (2011); *Digest of Education Statistics* (Various Years); GED Testing Service (Various Years).

Notes: The sharp drop in the proportion taking the GED in 2000 (and the rise just before it) comes from a pre-announced increase in the GED passing standards and a reform in the system that wiped out cumulated scores on past tests. Thus students in the middle of the certification process had to start their GED records from scratch.

The GED benefits a select few who pursue postsecondary education. For these people, the GED has an "option value" because the GED is a pathway to further education which usually leads to higher earnings. The bulk of any estimated wage or earnings benefit to receiving a GED arises from the option value it confers. The option value for both male and female GEDs tends to be small. For men it is not statistically significantly different from zero at any age. It is larger and statistically significant at most ages for women, but it constitutes much less than half of the total effect of the GED. There is little evidence of any option value benefit for men.

Any benefits from further educational attainment are diminished by the delay in completing schooling associated with dropping out of high school. Even though GEDs who become college graduates have annual earnings comparable to those of other college graduates, the present value of their lifetime earnings is at least 30% lower due to their delay in obtaining their degrees.

1.5 The GED Program Distorts Social Statistics

A one-dimensional focus of public policy on "smarts" conceals major problems by distorting social statistics and by misdirecting the efforts of institutions and individuals. Heckman and LaFontaine (2010) show that counting GED recipients as high school graduates paints a rosy but false picture of the health of the American educational system. If GED recipients are properly counted as high school dropouts, the U.S. high school dropout rate has increased slightly since the early 1960s. This trend is worrying because the return to high school graduation has risen dramatically in the past 30 years.[76]

The rising high school dropout rate helps to explain the recent slowdown in the growth of skills in the American economy and the rise in inequality. At a time when skilled labor has become more valuable and when a high-skill workforce is needed to compete in

[76]See Heckman, Lochner, and Todd (2006).

the world economy and to meet fiscal challenges, America's rate of producing skills has decelerated. Thirty years ago, America had the highest rates of college graduation in the world. Today it is ranked fourteenth (Organisation for Economic Co-operation and Development, 2012, United States).

Official statistics suggest that the black–white gap in high school attainment has converged substantially. However, the reported convergence is an illusion manufactured in part by the GED program. Heckman and LaFontaine (2010) show that the apparent educational advance of black males is in large part due to their higher rates of GED certification. Part of the growth in GEDs is attributable to higher black male incarceration rates and the production of GED credentials in prison. Prisoners are not counted in many official statistics on educational attainment. Since most prisoners are high school dropouts, their removal from social statistics inflates the measured high school graduation rate for black males. In addition, many black males obtain GED certificates while incarcerated. If we properly count GED recipients as dropouts, there has been *no* progress in black male high school attainment rates over the past 50 years.

It is revealing that the GED program persists, despite all of the evidence that it is not working. Palliative solutions dominate public policy discussions despite a growing awareness that America has to address long-run structural problems.[77] The continued reliance on the GED is part of a broader pattern of self-deception and misrepresentation in American public life.

1.5.1 The GED Induces Potential High School Graduates to Drop Out

In addition to concealing problems, the GED program creates them by inducing students to drop out of high school. Society recognizes that adolescents are not fully capable of making some important decisions. There are age restrictions on smoking tobacco,

[77] See Rajan (2010) and the National Commission on Fiscal Responsibility and Reform (2010) (commonly referred to as Simpson-Bowles).

drinking, and joining the army. Even though adolescents are not fully mature, they make life-shaping decisions.

Recent evidence from neuroscience suggests that the evolution of the brain with age leads to increased risky behavior among teens. Steinberg (2008) argues that different parts of the brain mature at different rates and that the part that governs the choice of risky activities does not mature until early adulthood. Many adolescents make decisions that yield short-run benefits but have adverse long-run consequences. Choosing to drop out of high school is one such decision. The GED offers a temptation that many cannot resist.

Students report that they obtain a GED because it is easier than finishing high school. A 2002 survey by the National Center for Education Statistics (2006) found that roughly 40% of surveyed high school dropouts listed "would be easier to get the GED" as among their reasons for leaving school.[78] Behind "Missed too many school days," this was the second most frequently cited reason for leaving. Chapter 7 shows that the GED program induces people to drop out. In Oregon, the introduction of programs that facilitate GED preparation and certification in high schools increased the dropout rate in the affected schools by 4%. The analysis of Chapter 8 shows how the growth of high-stakes testing—another manifestation of the push for accountability in government—fosters production of GEDs.

1.6 What Achievement Tests Miss

The poor performance of GED recipients points to a more fundamental problem with the accountability movement in American education. The GED, a prototypical standardized achievement test, fails to capture character skills that matter in life. Psychologists and economists have studied character skills and have shown that they are predictive of many

[78]See Chapter 7, Table 7.1.

life outcomes. Chapter 9 summarizes and extends this literature.[79]

Achievement tests are typically validated using other achievement tests, IQ tests, and grades, rather than with tasks or outcomes that matter. Table 1.4 shows correlations among scores on standardized achievement tests, IQ tests, and grades. Standardized achievement tests are correlated with IQ tests, but the correlation depends on the subject area of the standardized achievement test. Hartlage and Steele (1977) report that the arithmetic portions of standardized achievement tests are more highly correlated with IQ than other portions. Grades and scores on IQ tests and standardized achievement tests are far from perfectly correlated, however, suggesting that they measure different aspects of "cognitive functioning."[80]

[79]See also the surveys in Almlund, Duckworth, Heckman, and Kautz (2011) and Borghans, Duckworth, Heckman, and ter Weel (2008).

[80]It is an irony of the testing literature that high school grades are more predictive of first-year college performance than SAT scores (Bowen, Chingos, and McPherson, 2009). The SAT and related tests were once thought to be more objective and more accurate measures of student quality than high school grades (Lemann, 1999).

Table 1.4 Psychometric Validities (correlations) of Measures of Cognitive Ability with Other Measures

Test	Validation Domain	Estimate(s)	Source(s)
SAT (Achievement)	1st Year College GPA	0.35–0.53	Kobrin, Patterson, Shaw, Mattern, and Barbuti (2008)
ACT (Achievement)	Early College GPA	0.42	ACT, Inc. (2007)
GED (Achievement)	HS Senior GPA	0.33–0.49	GED Testing Service (2009)
DAT (Achievement)	College GPA	0.13–0.62†	Omizo (1980)
AFQT (Achievement)	9th Grade GPA	0.54	Borghans, Golsteyn, Heckman, and Humphries (2011)
WAIS (IQ)	College GPA	0.38–0.43	Feingold (1982)
WAIS (IQ)	HS GPA	0.62	Feingold (1982)
Various IQ**	9th Grade GPA	0.42	Borghans, Golsteyn, Heckman, and Humphries (2011)
WISC (IQ)	WRAT (Achievement)	0.44–0.75‡	Hartlage and Steele (1977)
WISC-R (IQ)	WRAT (Achievement)	0.35–0.76‡	Hartlage and Steele (1977)
Various IQ**	AFQT (Achievement)	0.65	Borghans, Golsteyn, Heckman, and Humphries (2011)
Stanford Binet (IQ)	WISC-R (IQ)	0.77–0.87	Rothlisberg (1987); Greene, Sapp, and Chissom (1990)
Raven's (IQ)	WAIS-R (IQ)	0.74–0.84	O'Leary, Rusch, and Guastello (1991)
WIAT (Achievement)	CAT/2 (Achievement)	0.69–0.83*	Michalko and Saklofske (1996)

Definitions: WISC – Wechsler Intelligence Scale for Children, WISC-R – Wechsler Intelligence Scale for Children - Revised, WAIS - Wechsler Adult Intelligence Scale, Raven's IQ – Raven's Standard Progressive Matrices, GED – General Educational Development, DAT – Differential Aptitude Test, WIAT – Wechsler Individual Achievement Test, CAT – California Achievement Test, WRAT – Wide Range Achievement Test.
† Large range is due to varying validity of eight subtests of DAT.
‡ Ranges are given because correlations vary by academic subject.
* Ranges are given because correlations vary by grade level.
** IQ test scores in the NLSY79 are pooled across several IQ tests using IQ percentiles.

Psychologists distinguish between fluid intelligence (the rate at which people learn) and crystallized intelligence (acquired knowledge).[81] Achievement tests are heavily weighted toward crystallized intelligence,[82] whereas IQ tests like Raven's progressive matrices (1962) are heavily weighted toward fluid intelligence.[83,84] Many psychologists and economists do not recognize the differences among these measures and use IQ, achievement tests, and grades interchangeably to measure "cognitive ability" or "intelligence."[85]

Validating cognitive ability tests using other measures of cognitive ability is inherently circular. A more relevant measure is how these tests predict outcomes that matter. Table 1.5 shows the extent to which IQ, standardized achievement tests, and grades are correlated with meaningful life outcomes at age 35 in data from the National Longitudinal Survey of Youth, 1979 (NLSY79). The three groups of columns under each category show estimates for different subsamples that vary depending on the availability of the cognitive measures indicated at the top of the columns. For each category, the first column shows the correlation using only the designated measure of cognitive ability.[86] Achievement tests and grades are more predictive than IQ. But none of these measures explains much of the variation of any outcome, leaving considerable room for the operation of other factors. It is unlikely that measurement error accounts for most of the remaining variance.[87]

Character is an important missing ingredient. The second columns in each category display the explanatory power of measures of character. They show the correlation

[81]See, for example, Nisbett, Aronson, Blair, Dickens, Flynn, Halpern, and Turkheimer (2012).

[82]Roberts, Goff, Anjoul, Kyllonen, Pallier, and Stankov (2000).

[83]Raven, Raven, and Court (1988). The high correlation between intelligence and achievement tests is in part due to the fact that both require cognitive ability and knowledge. Common developmental factors may affect both of these skills, and fluid intelligence promotes the acquisition of crystallized intelligence.

[84]Carroll (1993) and Ackerman and Heggestad (1997) discuss more disaggregated facets of cognitive ability.

[85]See Flynn (2007) and Nisbett, Aronson, Blair, Dickens et al. (2012). For examples in economics, see Benjamin, Brown, and Shapiro (2013) and Brinch and Galloway (2012).

[86]See Almlund, Duckworth, Heckman, and Kautz (2011) for a more complete array of outcomes in the format of Table 1.5.

[87]See Bound, Brown, and Mathiowetz (2001). At most 25%–30% of the variance in hourly wages is due to measurement error.

between the designated outcome and the measures of character.[88] In many cases, the predictive power of our measures of character rivals that of cognitive ability. The relative importance of character depends on the outcome considered.[89] The third columns for each subsample show the multiple correlation coefficient when both the cognitive and character measures are used as predictors. In many cases our measures of character are incrementally predictive, so that including them in a regression with cognitive measures increases explained variance. The correlations between the set of measures of character and the measures of cognition are positive, but not especially strong (see the bottom row of each table). Both character and cognition have independent predictive power.

[88]They include measures of adolescent risky behavior, self-esteem, and locus of control (the extent to which people feel they have control over their lives). For precise definitions of the measures used, see the notes to Table 1.5.

[89]Arguably, the limited measures of personality used to construct the estimates reported in Table 1.5 understate the predictive power of personality. See Heckman and Kautz (2012).

Table 1.5 Predictive Validities of Measures of Cognition and Character in Outcomes that Matter (Adjusted Correlations)

	IQ Sample			*AFQT Sample*			*GPA Sample*		
Males	IQ	Non-Cog	Both	AFQT	Non-Cog	Both	GPA	Non-Cog	Both
Earnings at age 35	0.26	0.22	0.30	0.41	0.26	0.43	0.30	0.25	0.34
Hourly wage at age 35	0.27	0.16	0.28	0.36	0.25	0.38	0.26	0.24	0.31
Hours worked at age 35	0.10	0.19	0.19	0.17	0.12	0.18	0.12	0.11	0.14
Jail by age 35	0.17	0.15	0.20	0.25	0.24	0.30	0.17	0.17	0.21
Welfare at age 35	0.08	0.06	0.09	0.17	0.10	0.17	0.09	0.07	0.10
Married at age 35	0.09	0.23	0.23	0.20	0.18	0.24	0.17	0.16	0.20
BA degree by age 35	0.34	0.28	0.40	0.44	0.31	0.47	0.37	0.31	0.42
Depression in 1992	0.12	0.22	0.23	0.19	0.20	0.24	0.14	0.19	0.21
Adjusted, *R* Cog, Character		0.26			0.41			0.33	
	IQ Sample			*AFQT Sample*			*GPA Sample*		
Females	IQ	Non-Cog	Both	AFQT	Non-Cog	Both	GPA	Non-Cog	Both
Earnings at age 35	0.12	0.16	0.18	0.29	0.23	0.32	0.22	0.20	0.26
Hourly wage at age 35	0.22	0.17	0.25	0.35	0.23	0.37	0.25	0.21	0.29
Hours worked at age 35	0.00	0.14	0.14	0.01	0.07	0.07	0.03	0.08	0.08
Jail by age 35	0.00	0.08	0.07	0.10	0.12	0.14	0.11	0.10	0.13
Welfare at age 35	0.15	0.19	0.21	0.32	0.23	0.35	0.22	0.22	0.27
Married at age 35	0.17	0.17	0.21	0.23	0.19	0.27	0.17	0.17	0.22
BA degree by age 35	0.31	0.28	0.37	0.41	0.29	0.44	0.31	0.28	0.36
Depression in 1992	0.12	0.21	0.22	0.19	0.23	0.26	0.13	0.22	0.23
Adjusted, *R* Cog, Character		0.32			0.39			0.32	

Source: National Longitudinal Survey of Youth, 1979.
Table Description: The table shows the adjusted multiple correlation coefficient (square root of the adjusted R^2) from regressions of later-life outcomes on measures of character and cognition. This is a measure of the variance explained by the predictor variables used. For each cognitive measure, the first column shows the estimate using only the measures of cognitive ability, the second column shows the estimate from using only the measure of character (Non-Cog), and the third column shows the estimate from using both the measures of character and cognition (Both). The last row shows the correlation between each cognitive measure and the set of character measures. **Measures of Character and Cognition:** The measures of character include minor illegal activity in 1979 (vandalism, shoplifting, petty theft, fraud, and fencing), major illegal activity in 1979 (auto theft, breaking/entering private property, and grand theft), participation in violent crime in 1979 (fighting, assault, and aggravated assault), tried marijuana before age 15, daily smoking before age 15, regular drinking before age 15, and any intercourse before age 15. It also includes measures of self-esteem and locus of control. Self-Esteem is measured using the 10-item Rosenberg scale administered in 1980. Locus of control is a measure of how much control an individual believes they have over their life and is measured using the 4-item Rotter scale. IQ and grades are from high school transcripts. IQ is pooled across several IQ tests using IQ percentiles. GPA is the individual's core-subject GPA from ninth grade. **Outcomes:** Due to the biennial nature of the survey after 1994, some respondents are not interviewed at age 35; for these individuals age 36 is used. Earnings includes zero-earners and excludes observations over $200,000 (2005 dollars). Hourly wage excludes observations less than $3 or over $200 (2005 dollars). Hours worked excludes observations less than 80 or more than 4000. Jail by age 35 indicates whether the respondent had listed residing in a jail or prison at some point before age 35. Welfare at age 35 indicates whether the respondent received any positive amount of welfare at age 35. Married at age 35 indicates whether the respondent was currently married. BA degree by age 35 indicates whether the respondent received a bachelor's degree (or higher) by age 35. Depression in 1992 is based on the 7-item Center for Epidemiologic Studies Depression Scale (CES-D). **Sample:** The sample excludes the military over sample. The samples differ across the IQ, AFQT, and GPA due to missing measures across the samples.

Measures of character predict many life outcomes beyond those shown in Table 1.5. Of the commonly studied character skills, Conscientiousness—the tendency to be hard-working and persistent—is the most predictive. Conscientiousness rivals IQ in predicting educational attainment, job performance, and health.[90] Table 1.6 shows correlations between SAT scores and measures of Conscientiousness with grades in college. Even on the measure that the SAT was designed to forecast, Conscientiousness is a (slightly) better predictor. While we have no direct measures of this skill in the data sets that we analyze, the poor performance of GED recipients in school and other outcomes likely reflects a lack of Conscientiousness.

[90]See Almlund, Duckworth, Heckman, and Kautz (2011).

Table 1.6 The Relative Predictive Power of Conscientiousness and SAT Scores for College GPA

Source	Sample	Timing of Measurement and Outcome	Controls	Metric	Results	Correlation
Conard (2006)	University students in the US (N = 186)	College GPA and SAT were both self-reported during college. Personality was measured in college.	Class attendance	Standardized regression coefficient (β)	SAT Total Conscientiousness	0.27* 0.30*
Noftle and Robins (2007)	University students in the US (N = 10,472)	College GPA and SAT were both self-reported during college. Personality was measured in college.	Gender, other Big Five traits	Standardized regression coefficient (β)	SAT Verbal SAT Math Conscientiousness	0.19 0.16 0.24
Noftle and Robins (2007)	University students in the US (N = 465)	College GPA and SAT were both self-reported during college. Personality was measured in college.	Gender, other Big Five traits	Standardized regression coefficient (β)	SAT Verbal SAT Math Conscientiousness	0.28 0.28 0.18
Noftle and Robins (2007)	University students in the US (N = 444)	College GPA and SAT were both self-reported during college. Personality was measured in college.	Gender, other Big Five traits	Standardized regression coefficient (β)	SAT Verbal SAT Math Conscientiousness	0.18 0.25 0.22
Wolfe and Johnson (1995)	University students in the US (N = 201)	GPA and SAT were provided by the college's record office. Personality was measured in college.	High school GPA	Standardized regression coefficient (β)	SAT Total Conscientiousness	0.23 0.31

Notes: Self-reported SAT scores and those obtained from college records were highly correlated ($r = 0.92$). Self-reported GPA and that obtained from college records were highly correlated ($r = 0.89$).

Achievement test scores themselves are explained in part by personality skills. As discussed in Chapter 9, achievement test scores reflect both IQ and personality. The power of "IQ" that Herrnstein and Murray claimed to have established, is in truth partly the power of character.[91]

1.7 Character Can Be Fostered

Both character and cognition can be shaped by families, schools, and other social institutions. Chapter 9 summarizes a substantial literature on the effectiveness of various interventions at different stages of the life cycle.

Through heredity and parenting, families play a powerful role in shaping the character of their children.[92] The decline of the two-parent family, and the attendant decline of the parenting resources available to children, lead to adverse child outcomes. While the children of the affluent arguably have richer environments than their predecessors, the children of the disadvantaged do not.[93]

Certain early childhood programs have been successful at supplementing the parenting resources of stressed families. The Perry Preschool Program improved later life outcomes of disadvantaged children primarily by improving their character skills. Chapter 9 discusses other childhood programs that achieve long-term success in part because they shape character. These programs do not intrude on the sanctity of the family. Many work with both the parent and the children to create successful children.

Adolescent programs have been less well studied. A promising strategy is to integrate

[91] While stable skills exist and predict behaviors across a wide array of situations, incentives in situations also matter. Any psychological skill, be it a character skill or a cognitive skill, is measured by performance on tasks. Performance on tasks depends on multiple skills and the efforts applied to the tasks. Effort, in turn, is determined by goals and incentives. Thus, expression of a skill in any situation will depend on what it takes to perform in the situation. Psychologists have been slow to recognize this point, and, accordingly, their measures must be used with caution because they capture many things, not just the designated constructs. See Heckman and Kautz (2012) and Almlund, Duckworth, Heckman, and Kautz (2011).

[92] For evidence, see, for example, Moynihan (2006), Cunha, Heckman, Lochner, and Masterov (2006), and Heckman, Pinto, and Savelyev (2013).

[93] McLanahan (2004), Heckman (2008), and Putnam, Frederick, and Snellman (2012).

school and work. The American high school is a recent innovation with certain pathological features. It takes young people out of the larger society and creates an adolescent society with its own values, often detached from those of mainstream society. James Coleman (1961) documented the commonality of anti-intellectual counterculture values in high schools located across broad swaths of the socioeconomic spectrum.

One hundred and fifty years ago most American students stopped their education at grade school. The curriculum in these schools emphasized character education. Post-school apprenticeships integrated adolescents into adult society rather than segregating them from it. Such apprenticeships taught valuable trade skills, including the virtues of working with others, self-control, and showing up on time. The German apprenticeship program is a modern-day paradigm.[94] Chapter 9 discusses several promising American programs that have combined academics with work experience.

As reported in Chapter 9, other adolescent programs have mixed results. Programs that cluster delinquent adolescents appear to run the risk of generating negative peer effects. Programs with individual mentoring and attachment are far more promising.

1.8 The Plan of the Rest of the Book

Chapter 2 (by Lois Quinn) presents a history of the origins and spread of the GED. An achievement test designed to monitor the "general knowledge" of Iowa students was applied to facilitate the integration of disabled veterans into civilian life. It metastasized into a major social institution designed to solve the high school dropout problem that in truth disguised and even fostered it.

Chapter 3 (by John Eric Humphries) investigates why many dropouts decide to earn a GED even though the labor market benefits of certification are low. Changes in demographics, government policies, and the growing emphasis on accountability in public

[94] Evidence on its effectiveness is mixed. See Cooke (2003), Winkelmann (1996), and Clark and Fahr (2002).

education led to rapid growth in the GED program.

Chapter 4 (by James Heckman, John Eric Humphries, and Tim Kautz) discusses the characteristics of GED recipients. They are smart (relative to high school graduates who do not go on to college) but lack character skills. They come from more disadvantaged backgrounds than ordinary high school graduates. Their deficits in character emerge early.

Chapter 5 (by James Heckman, John Eric Humphries, and Tim Kautz) surveys the previous literature on the effectiveness of the GED. It also conducts original empirical studies using seven data sets collected in different time periods to evaluate the effectiveness of the GED testing program using a variety of outcome measures. All data show that GED recipients do not perform at the level of high school graduates. After controlling for cognition and background, the vast majority of male GED recipients do no better than uncertified dropouts.

For some women, there is evidence of an apparent benefit, but the interpretation to be placed on these estimates is ambiguous. We argue that it is primarily due to uncontrolled selective factors and is not a causal benefit of GED certification. Any gain appears to come from their greater labor force attachment and not because of higher hourly wages compared to those of other dropouts. Their life-cycle wage growth is the same as that of dropouts. For both men and women, skills present before certification receive the same market wages and earnings before and after GED certification, so the GED does not serve a signaling function.

Chapter 6 (by Janice H. Laurence) studies the performance of GED recipients in the military. GED recipients perform like other high school dropouts. The six-month attrition rates for GED recipients are 45% compared to 50% for other dropouts. It is 28% for traditional high school graduates. The attrition rate for GED recipients is not due to their lack of cognitive ability but because of their lack of character. It is telling that the U.S. military—the originator of the GED program—recognizes that modern GED recipients

lack the character skills required to succeed in the military.

Chapter 7 (by James Heckman, John Eric Humphries, Paul LaFontaine, and Pedro Rodríguez) conducts three different empirical studies on how the availability of the GED induces high school students to drop out. All point to the conclusion that GED programs promote dropping out. The estimated effects are substantial.

Chapter 8 (by Andrew Halpern-Manners, John Robert Warren, and Eric Grodsky) investigates how changing the difficulty of completing high school through high-stakes achievement testing changes the incentives for GED certification. Over the last three decades, states have increasingly required students to pass achievement tests before graduating from high school. Currently, three out of four high school students in the United States must take an exam to graduate. Individual schools are evaluated based on the fraction of students who pass. State-mandated high school exit examinations have contributed to the growth of GED recipiency for two distinct reasons. First, students unable to pass a high school exit examination turn to the GED as an alternative. Second, until recently, schools could manipulate state accountability measures by encouraging low-performing students to earn a GED certificate so that they are not counted in the school's passing rate.

Chapter 9 (by James Heckman and Tim Kautz) discusses how character skills can be measured and improved through various interventions. Cognitive and character skills can change and be changed but to different degrees at different ages. The chapter considers the effectiveness of a variety of interventions that improve character, ranging from early childhood programs to workplace-based education and apprenticeship programs.

Chapter 10 (by James Heckman, John Eric Humphries, and Tim Kautz) presents policy recommendations about the GED program and the more general problem of promoting skills in the American economy. It argues that any successful approach going forward should recognize the power of character skills. They can be measured, and effective interventions are available to shape them.

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