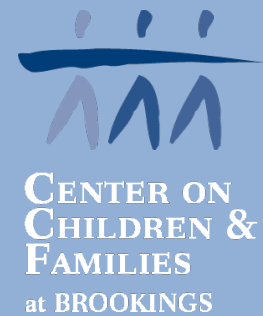


# The Character Factor: Measures and Impact of Drive and Prudence



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## Abstract

There is growing interest among psychologists and economists in the importance of ‘non-cognitive’ skills for doing well in life. In this paper we assess the quality of measures available in US survey data for two specific non-cognitive skills, drive and prudence, which we term “performance character strengths” – non-cognitive skills that relate to outcomes important for economic mobility, such as educational attainment. We evaluate and rank the measures of drive and prudence found in these surveys, categorizing them as broad or narrow, and indirect or direct. Next, we use one of these measures (the BPI-hyperactivity scale in the NLSY) to look at socioeconomic gaps in performance character strengths, and the relative importance of performance character strengths for educational attainment. We find that family income and maternal education are positively associated with higher levels of performance character strengths, and that the influence of the measure on educational attainment is comparable to the influence of academic scores.

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## 1. Introduction

A growing body of empirical research demonstrates that people who possess certain character strengths do better in life in terms of work, earnings, education and so on, even when taking into account their academic abilities. Smarts matter, but so does character.

This is hardly a revelation: most of us would think it a matter of common sense that being able to work hard, defer gratification, or get along with others will help somebody to do well in the labor market, school, family and community. Why the interest now? Three reasons: First, there is more concrete evidence for our intuition that character matters, thanks to the work of Jim Heckman, Angela Duckworth, Carmit Segal and others, summarized in Paul Tough’s recent book, *How Children Succeed: Grit, Curiosity and the Hidden Power of Character*. Second, this evidence suggests that character skills may count for a lot – as much, perhaps, as cognitive skills – in terms of important life outcomes. Third, given their proven importance, it seems to many observers (including ourselves) that too little attention is paid by policy-makers to the cultivation and distribution of these character skills. For a longer treatment of this last point, see our accompanying piece “The New Politics of Character” (originally published in *National Affairs*, Reeves, 2014b).

We need to be clear what we are talking about. For many years, the preferred scholarly terminology among economists has been ‘non-cognitive’ skills – in other words, every skill not captured by cognitive tests. ‘Non-cognitive’ is now a term that almost nobody likes but almost everyone uses. The problem is that it is too broad, lumping together a very wide range of skills, traits and attributes – from stable aspects of personality through to everyday social skills.

In this paper, we:

- i) Motivate an interest in character strengths from an equality of opportunity perspective
- ii) Sketch existing evidence for the impact of drive and prudence for life outcomes
- iii) Describe the distribution of character strengths by socioeconomic background
- iv) Evaluate existing datasets and measures of character strengths
- v) Estimate the influence of one measure of character strengths in the early and middle childhood years for educational and other outcomes

## 2. Why Care About Character?

An important distinction can be drawn between performance and moral character. Performance character refers to “those qualities needed to realize one’s potential for excellence – to develop one’s talents, work hard, and achieve goals,” while moral character consists of “those qualities needed to be ethical – to develop just and caring relationships, contribute to community, and assume the responsibilities of democratic citizenship”(Character Education Partnership, 2008).<sup>1</sup>

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<sup>1</sup> This paper’s expanded view of character as including moral and performance character builds on work first presented in Thomas Lickona and Matthew Davidson’s *Smart & Good High Schools*, jointly published by the Center for the 4th and 5th Rs and the Character Education Partnership in 2005 with major funding from the John Templeton Foundation.

Of course the distinction is far from clear-cut, and many scholars argue that the distinction is arbitrary and/or unhelpful (see Mead, Etzioni, Sawhill and Berkowitz in the accompanying essay collection for differing views).

For the sake of the current paper, however, we focus explicitly on performance character. Even so, there are a wide range of definitions and frames and considerable variation in terminology between disciplines. The key is to be as clear as possible. Psychologists would describe the student who always shows up to class on time and studies hard as conscientious; other similar or related labels might be having grit, persistence, or resilience. Conscientiousness, one of the Big Five dimensions of personality, captures a person's tendency to be controlled, goal-directed, and able to delay gratification. And so even this single item is quite broad the top researchers on conscientiousness describe the term as "somewhat broad and ambiguous in meaning...better suited to represent the family of traits" (Roberts et al., 2009).

At the forefront of research on performance character is Angela Duckworth, a psychologist at the University of Pennsylvania, who focuses on two specific traits: grit, the tendency to stick with long-term goals, and self-control. She and a team of researchers have designed a grit scale based on a self-report survey, which highly correlates with other measures of character such as conscientiousness. In one study (Duckworth, Peterson, Matthews, and Kelly, 2007), West Point entrants scoring highly on the grit scale were 60 percent more likely to complete the tough summer training than those who were not. Duckworth and colleagues have also more recently begun examining self-control and regulation among school-aged children in studies that look at domain-specific self-control behaviors (Tsukayama, Duckworth, and Kim, in press).

For the remainder of the paper, we will focus on variations of these two character strengths which appear to be especially important for individual academic and economic success: the ability to work hard even when faced with challenges and the ability to choose tomorrow over today.<sup>2</sup> These capture a person's orientation towards task and towards time, respectively. Labels for the two vary across academic disciplines and between different researchers. We describe them as 'drive' and 'prudence.'

People with drive are able to stick with a task, even when it gets boring or difficult; they work hard and don't leave a job unfinished. Drive includes not just the ability to work hard (industriousness) but also the ability to overcome setbacks and to keep going (resilience).

Prudent people are able to defer gratification and plan for the future; they can make sacrifices today in order to ensure a better tomorrow. The better developed a person's character strength

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2 A note on terminology: We use the term 'character strengths' for the remainder of the paper rather than traits, attributes, or skills. This question of terminology is not an entirely trivial question. A character 'trait' implies a fairly permanent feature of an individual's makeup, analogous to a personality trait such as optimism or introversion, while a 'skill' can be learned, perhaps quite quickly. The question is whether we are referring to a skill a person acquires, or to an essential aspect of that person? Under the character umbrella, different attributes will lie at different points on this spectrum. It is hard to learn kindness, somewhat easier to learn self-control. The elements of character that matter most for mobility lie somewhere between semi-fixed 'traits' and straightforwardly-acquired 'skills.' We therefore adopt the term character strength. Strength implies greater depth than 'skill,' but greater malleability than 'trait.'



of prudence, the less they suffer from what economists call ‘present bias,’ the tendency to under-weight future utility. They can both plan for the future and exert self-control in the moment to reach their long-term goals.

**Table 1: Drive and Prudence**

Character Strength	Ability to...	Contains:
Drive	Apply oneself to a task and stick with it	Perseverance, industriousness, grit, resilience, curiosity, application
Prudence	Defer gratification and look to the future	Self-control, future orientation, self-discipline, impulse control, delay of gratification

### 3. How Much Do Drive and Prudence Matter?

#### 3.1 Drive: Existing Evidence

That drive matters for academic and economic success is a plausible intuition. A student who abandons a paper when it gets challenging is unlikely to get a good grade. An employee who never shows up to work on time is unlikely to get promoted. But what’s the empirical evidence? Duckworth’s grit scale, which worked so well at West Point, also strongly predicts a whole range of academic outcomes, even including National Spelling Bee rankings (Duckworth et al., 2007).

Character strengths may be important for understanding – and closing – one gap that matters a great deal for opportunity: the one between starting college and finishing college. Only six of every 10 students (59 percent) who entered a 4-year degree-granting institution in 2005 graduated with a bachelor’s degree within 6 years. At 2-year institutions, only 3 of every 10 students who entered completed a credential within 3 years. In contrast to college enrollment, which grew by 32 percent from 2001 to 2011 (from 15.9 million to 21.0 million), rates of completion have been growing slowly (e.g., 55 percent of students who entered a 4-year degree-granting institution in 1996 graduated with a bachelor’s degree within 6 years). The college challenge is a completion challenge, not an enrollment challenge.

Drive appears to be related to college completion. High school GPA, which captures both drive and cognitive skill, predicts six-year graduation rates above and beyond an individual’s SAT or ACT scores, which only capture the cognitive side. Whereas a one standard deviation improvement in test scores is associated with a 2 percentage point greater likelihood of graduating college in six years, a one standard deviation improvement in high school GPA is associated with more than a 6 percentage point greater likelihood of graduating (Bowen, Chingos, and McPherson, 2009).

The character strength of drive also appears to influence earlier educational attainment.

Heckman and Rubinstein (2001) found that GED recipients do much worse than traditional high school graduates in terms of further educational attainment, earnings, and employment, even though they score just as well on achievement tests. Heckman argues convincingly that the GED route captures students who are smart enough to graduate high school but do not possess the character strengths to stick it out to graduation, which hurts them in other areas of life as well (Heckman, Humphries, and Kautz, 2014).<sup>3</sup>

Research using other measures that seem to capture drive has also identified effects on college attendance and completion. Collin Hitt and Julie Trivitt, researchers from the University of Arkansas, found that the more questions left unanswered on a survey – instances in which participants responded “I don’t know” or left it blank – the less likely that the respondent would enroll in college (Hitt and Trivitt, 2013). The idea that non-response to survey questions captures some element of character is a new and intriguing one, which could open up some new empirical options. The justification offered by Hitt and Trivitt is quite compelling: Surveys are long and boring. Despite volunteering to participate, respondents may lose interest or focus. Nonetheless, most individuals in these samples are answering all or almost all of the eligible questions. For example, in the National Longitudinal Survey of Youth 1997 (NLSY97), an average respondent answers 96 percent of the questions (Hedengren and Stratmann, 2012). A large percentage of questions left blank or answered with “Don’t Know” could signal someone who comparatively lacks drive.

Some of the best evidence for the importance of drive has been generated using the Coding Speed test, which forms part of the Armed Services Vocational Aptitude Battery (ASVAB). It is very easy, but very dull; and it turns out to capture something important about an individual, which is the ability to stick with an intrinsically unrewarding task (Segal, 2012). Scoring one standard deviation higher on the coding speed test is associated with an increase of 9.5 percent in earnings over twenty years later, controlling for cognitive ability as measured by their performance on other sections of the ASVAB (Segal, 2012). In earlier work, we found that high-scorers on the coding speed test have higher levels of upward intergenerational income mobility (Reeves and Howard, 2013). Roughly a third of adolescents from the bottom income quintile but scoring in the top third on coding speed make it to the top-two fifths of the income quintile as adults. In contrast, only one in ten of those from the bottom income quintile who score in the bottom third on coding speed make into one of the top two income quintiles.

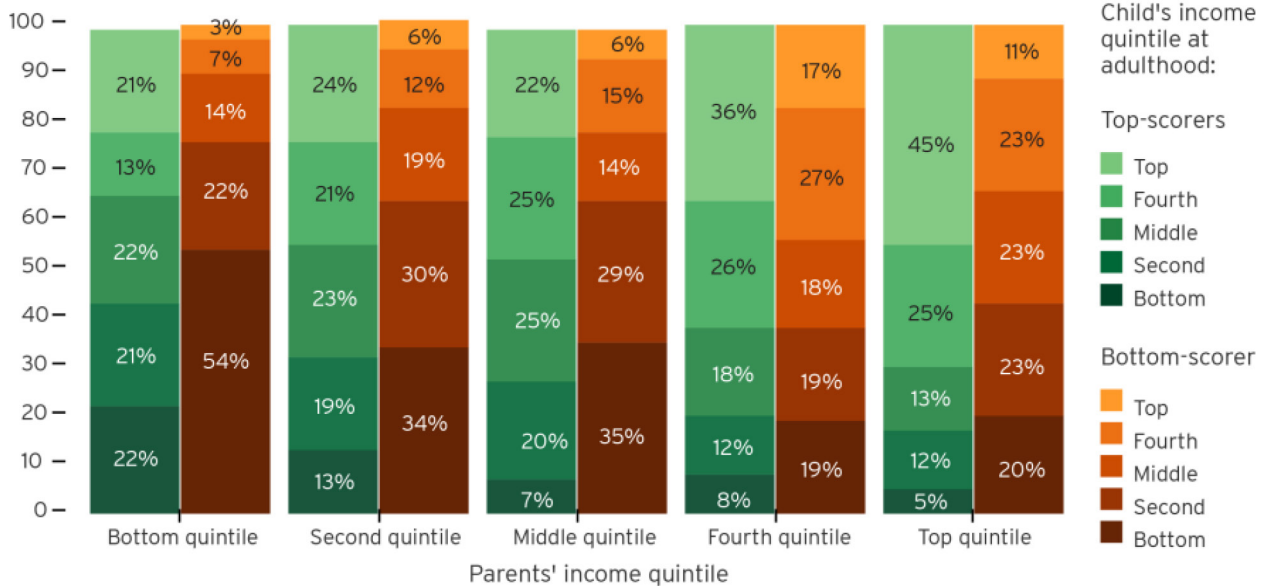
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3 Another study looked at four measures thought to capture effort (middle school grades, hours spent on homework, disciplinary incidents, and grade retention) and found that a composite measure of non-cognitive skills predicted a student’s probability of enrolling in college by as much as socio-economic status and cognitive ability (Jacob 2002).



**Figure 1: Drive and Mobility**

Percent chance of moving up or down the family income ladder, by parents' income quintile and non-cognitive skills



Source: Figure 4b from Reeves, Richard V., and Kimberly Howard. 2013. "The Glass Floor: Education, Downward Mobility, and Opportunity Hoarding." Washington, DC: Brookings Institution.

### 3.2 Prudence: Existing Evidence

It is also intuitively clear why the character strength of prudence would matter for life outcomes. Someone only interested in today is less likely to choose homework over a party or hard work over surfing the internet. Someone who puts little value on the future is less likely to save. By traditional measures of success, then, who might under-perform compared to their more prudent peers.

There is a long research literature on the importance of self-control, or the ability to defer gratification – a close corollary of our conceptualization of the character strength of prudence. The most famous study in this area is the marshmallow test designed by Walter Mischel in the late 1960s. He tested the ability of four-year olds to resist a marshmallow, with the promise of getting an extra one if they waited. The longer toddlers were able to wait, the higher their SAT scores and earnings later in life.

The simplest interpretation is that children who can delay gratification do better in school and in life. Follow-up studies have added interesting twists to the main findings, however. First, if children are trained in 'resistance techniques,' such as putting an imaginary picture frame around the marshmallow or visualizing it as a cloud, they are able to wait much longer (Mischel and Baker 1975; Moore, Mischel, and Zeiss, 1976; Mischel, Shoda, and Rodriguez, 1989). Second, the reliability of the reward for exhibiting self-control matters. Researchers from the University of Rochester re-ran the marshmallow test in 2012, but added an additional frame. Before the main trial, they gave the four year-olds some old crayons, but said if they could wait



a few minutes, some new ones would be provided. Half of them got new crayons; the other half got an apology and a request to make do with the original ones. Kids who got the new crayons waited, on average, four times as long (12 minutes) for a second marshmallow, as those who did not (Kidd, Palmeri, and Aslin, 2012).

Research on the importance of impulse control to success is not limited to the marshmallow test, of course. In one study, participants in the National Longitudinal Survey of Youth 1979 (NLSY79) who were identified as impatient or restless during their interview were found to be 55 percent more likely to drop out of high school than those who were not judged by the interviewer as impatient or restless. They also earned 13 percent less by middle age, on average (Cadena and Keys, 2014).

Both self-reported and parent-reported levels of self-control during childhood predict higher achievement in school. Duckworth and Seligman (2005) found that self-discipline of 8th grade students, measured by a combination of self-reports, parent reports, teacher reports, and questionnaires on temporal money tradeoffs, predicted student grades and achievement test scores more strongly than IQ. In 2010, Duckworth published a paper attempting to control the findings for other time-varying variables that could confound this observed relationship between self-control and achievement, such as self-esteem. The results bolstered the original findings: while changes in self-control at one point in time predicted changes in GPA at a later date, the opposite was not true (Duckworth, Tsukayama, and May, 2010).

The character strength of prudence is also very predictive of other life outcomes besides education and earnings that we consider important. For example, prudent individuals are more likely to exhibit healthy behavior, which has obvious long-term consequences. ‘Future-oriented’ adults, measured in the PSID scale, have a 17 percent greater likelihood of exercising than those who are not future-oriented, for example (Chiteji, 2010).

In a study of 1,000 children in New Zealand, children with greater self-control, as measured by a combination of reports by the researcher, teachers, parents, and self-report from age 3 to 11, were healthier, richer, less likely to be single parents, and less likely to be convicted of a crime as adults, controlling for childhood social class and IQ. And these differences were big: children in the highest fifth of the sample on measured self-control had crime conviction rates of 13 percent versus children in the lowest fifth who had crime conviction rates of 43 percent (Moffitt et al., 2011).

Drive and prudence contribute to higher earnings, more education, better health outcomes and less criminal behavior. We can also easily imagine that they are important for marriage, parenting, and community involvement. Individuals benefit from the ability to persevere, overcome setbacks, and plan ahead in all of these domains.

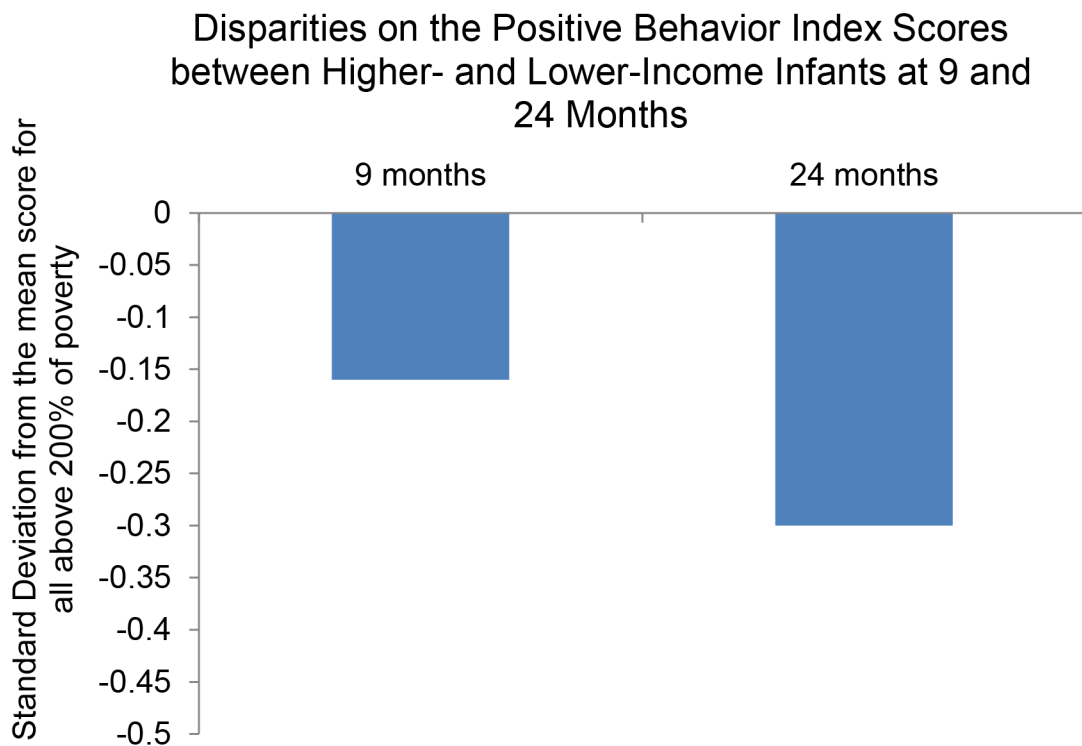
#### 4. Class Gaps in Performance Character Strengths

If character strengths significantly impact life outcomes, disparities in their development may matter for social mobility and equality. As well as gaps in income, wealth, educational quality, housing, and family stability, are there also gaps in the development of these important

character strengths? Relatively little research has been done on the distribution of character strengths or non-cognitive skills across the income distribution or by class. But what evidence that exists suggests quite marked gaps.

As with cognitive skills, gaps in non-cognitive strengths open up at an early age and persist throughout an individual's life. For example, gaps between poor and non-poor infants in behaviors such as paying attention to tasks, adapting to changes in materials, and displaying social engagement are visible as early as nine months of age and widen by the age of two (Halle et al., 2009):

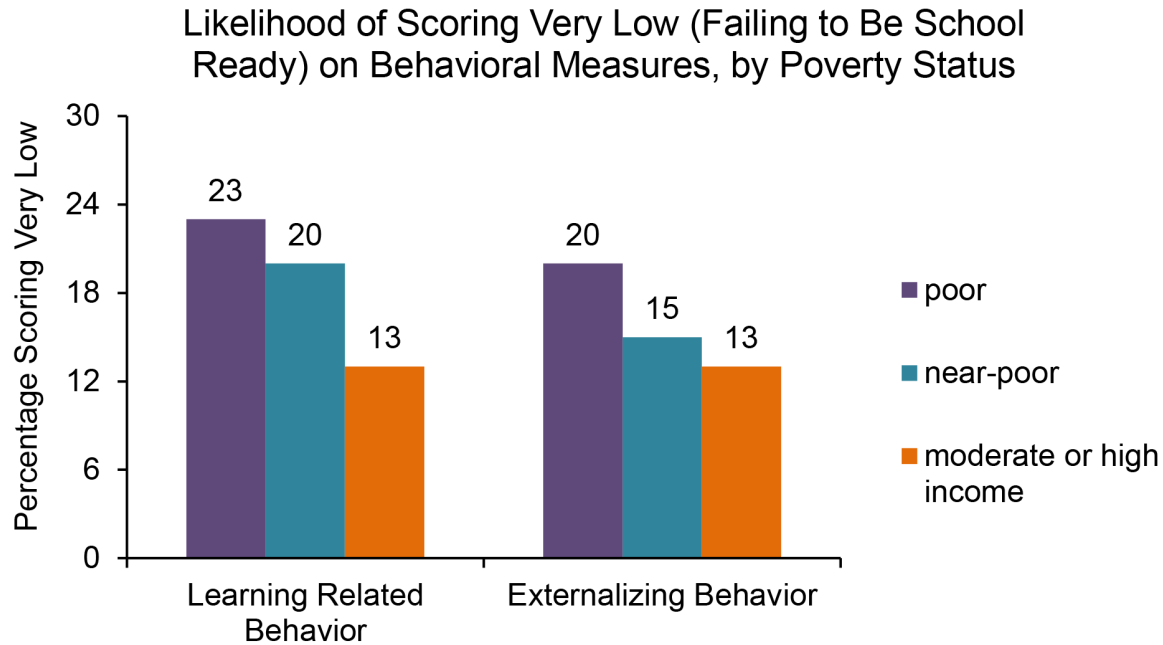
**Figure 2: Very Early Non-Cognitive Gaps**



*Source: Halle, Forry, Hari, Perper, Wandner, Wessel, and Vlck, 2009*

When entering kindergarten, children from low-income families do worse on school-readiness measures of learning-related behaviors (e.g., paying attention) and externalizing behaviors (e.g., disrupting others) than moderate or high income children (Isaacs, 2012):

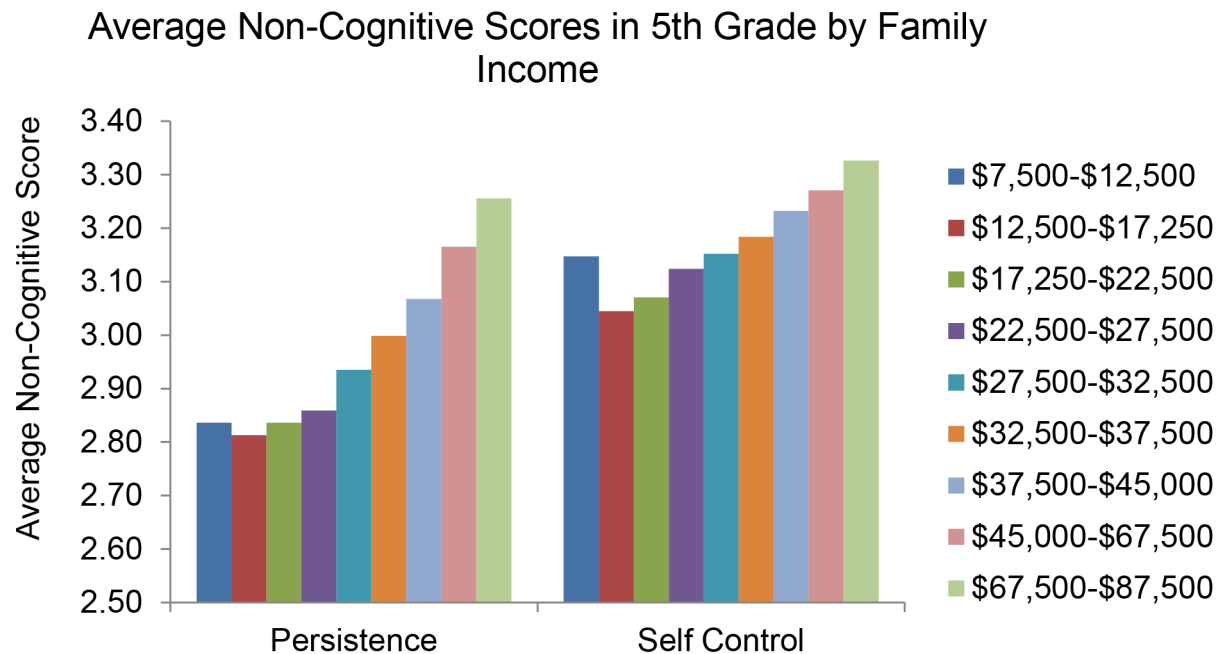
**Figure 3: Ready for School?**



Source: ECLS-B, Julia Isaacs.

Measures of non-cognitive strengths in the school years show a strong relationship to family income:

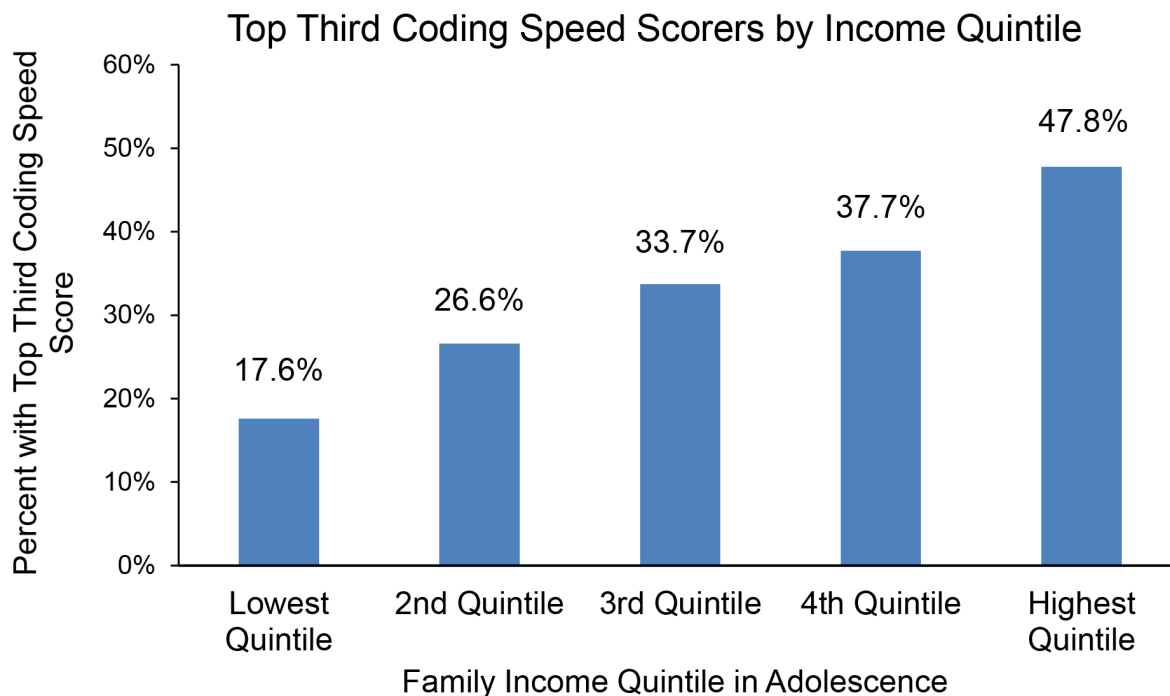
**Figure 4: Fifth Grade Gaps in Non-Cognitive Scores by Family Income**



Source: ECLS-K, data supplied by Jason Fletcher.

Finally, our own research (Reeves and Howard, 2013) finds gaps by family income in a commonly used measure of drive or persistence, the coding speed section of the NLSY (see below for more details):

**Figure 5: Coding Speed Scores by Family Income Quintile**



Source: NLSY, Brookings calculations.

## 5. Evaluating Measures & Data

There are no widely accepted tests for character strengths equivalent to the IQ test for cognitive skills. There is no such thing as a Character Quotient score. So how do we capture the skills that traditional knowledge tests don't measure but that also matter for school and job success? Such measures matter for researchers of course. But they may also be important to parents, schools, and employers. KIPP, a highly-successful national network of charter schools, recently introduced character report cards, based on the Peterson and Seligman classification of strengths, to encourage conversations among parents, teachers and students about character development.<sup>4</sup>

### 5.1 Measurement Approaches

There are three principal approaches to measuring character strengths: surveys, behavior, and tests (see Table 2):

<sup>4</sup> One of the authors, Kimberly Howard, is now an employee of KIPP DC.

**Table 2: Measuring Character Strengths**

Method	Rationale	Examples
Surveys	The individual, parent, or teacher, can report the individual's character strengths	Grit scale, Positive Behavior Index, Ten-Item Personality Inventory
Behavior	We can infer from an individual's behavior what character strengths the individual possesses	Savings behavior, Risky sexual behavior, Classroom behavior
Tests	We can observe character strengths based on tasks in a controlled environment	Coding speed test, Continuous Performance Test, 'Marshmallow' Test

## i) Surveys

The most straightforward measurement approach is simply to ask people about their own character strengths. We might be skeptical of how accurately people will rate themselves, but it turns out that people are quite good at assessing their own character. As discussed previously, Angela Duckworth and colleagues' grit scale (2007) is based on a self-report survey and in their study of West Point graduates, the grit scale had more predictive power than IQ score, GPA, or the military's own readiness scale. Nonetheless, there are obvious drawbacks to relying on an individual's self-perception: for one thing, a degree of honesty – a 'moral' character strength! – will be required on the part of the respondent.

A related approach is to survey people in a position to provide an assessment of an individual's character strengths, such as a teacher or parent. An advantage is that an observer may be more objective about an individual's character strengths than the individual themselves; a disadvantage is that biases of various kinds may come into play. Third party surveys must also be seen in context: it is possible, for example, that character strengths demonstrated at school may not be the same as those on display at home, or vice versa.

## ii) Behavior

An alternative measurement approach is to look at what people do, rather than what they say. Real-world behaviors, such as saving or risk-taking, can be seen as proxies for character. As well as using more direct measures of character strengths, Jim Heckman and colleagues (2014) analyze an array of adolescent behaviors, including illegal activity, regular drinking, daily smoking, and sexual activity as markers of character strengths.

Of course, there are other factors influencing these behaviors besides character strengths, such as peer norms, family expectations, and perceived prospects. The danger in using behavior as

a proxy for character strengths is that we may attribute too much to the individual rather than his or her environment and context.

### iii) Tests

Finally, character strengths might be captured by measures of how individuals perform on certain tests, which are conducted in a controlled environment, rather than in the real world. For example, a test might capture impulse control by asking individuals to respond to a target stimulus while ignoring all other stimuli. The upside of this method is that it can help to control for differential social and economic contexts, but this is also a potential downside, because it is possible that the individual will behave differently in a real-world context, where it really matters.

Some other tests have proven to be potentially useful yardsticks of character strengths, even though this was not their original purpose; a good example is the ‘coding speed’ test and non-response rates in the ASVAB discussed above. Indeed, the researchers also have found that non-response rates were associated with the more traditional measure of conscientiousness, in the expected direction. Individuals with higher response rates on surveys, that is, those who rarely refuse to respond to a question or answer “Don’t Know,” earn more (Hedengren and Stratmann, 2012).

## 5.2 Options for Measuring Character Strengths in US Datasets

We have identified two character strengths that seem particularly important in terms of social mobility (drive and prudence) and three basic approaches to measurement (surveys, behavior, and tests). But getting a better sense of how these two strengths develop, how they are distributed, and how much they matter, means finding adequate data sources. In our search for data sources, we adopted the following requirements, in order of priority:

1. *United States sample.* Especially when exploring how character develops, we know that context matters a lot. There are innumerable distinct cultural and social contexts within the United States, but there are also important similarities, including national values and federal policy.
2. *A large sample size.* This is especially important for hard-to-measure concepts like character where there is bound to be error in measurement.
3. *Tracking the same individuals over time.* To see how character develops and whether it matters, we need to see how character strengths in earlier life stages relate to outcomes in later life stages.
4. *Observing individuals as children or adolescents.* To assess intergenerational mobility, we are particularly interested in how character strengths developed before reaching adulthood impact on adult outcomes.
5. *Containing a measure of drive and/or prudence.* (Note: The measure does not necessarily need to be an intentional measure of drive or prudence.)
6. *Including measures of family background.* Ideally, we want to be able to observe how one does in life compared to where one started in terms of income rank or social

class, and how far character strengths influence this intergenerational mobility.

The measures contained in the datasets examined are varied and not all are equally valuable for measuring drive and prudence. The ideal data source will be one that both directly and specifically measures a particular character strength—a good example is the grit scale developed by Duckworth and discussed above. Similarly, a series of questions in one large survey, the Panel Survey of Income Dynamics (PSID), asked in the late 1960s and early 1970s were designed to measure how much individuals plan ahead, save for the future instead of spending money as they earn it, or think a lot about things that might happen in the future. This measure is direct; the questions ask about their orientation toward the future. It is also fairly narrow; it is specifically geared towards observing an individual’s future orientation. For a comprehensive list of potential data sources and related studies, see Table 4.

For each data source, we provide a ranking (from 1 to 3 stars) according to directness (how directly it measures the character strength) and specificity (how broadly or narrowly it measures the character strength). See Table 3 for examples. Direct, narrow measures are ranked with three stars. Reports of disciplinary problems, in contrast, receive a one-star ranking, since they are both indirect (we have to infer from reported behavior that the student lacks self-control) and broad (disciplinary problems can reflect a whole host of other variables besides impulse control). While far from ideal, such reports may still be useful for measuring character strengths, controlling for other observable characteristics of the individual.

**Table 3: Rating Measures of Character**

<p>Indirect, Broad</p> <p>★</p> <p>e.g. risky sexual behavior</p>	<p>Direct, Broad</p> <p>★ ★</p> <p>e.g. Ten-Item Personality Inventory</p>
<p>Indirect, Narrow</p> <p>★ ★</p> <p>e.g. expectation of living to age 35</p>	<p>Direct, Narrow</p> <p>★ ★ ★</p> <p>e.g. grit scale</p>

**Table 4: Measures of Character Strengths in US Datasets**

Dataset	Base Year	Grade / Age at Base Year	Approx. Sample Size	Drive Measure (industriousness / resilience)	Year(s) or Age(s) Assessed	Example(s) of Use	Our Rating	Prudence Measure (self-control / future orientation)	Year(s) or Age(s) Assessed	Example(s) of Use	Our Rating
Wisconsin Longitudinal Study	1957	12th grade	10,300	Big Five Inventory: self-report on 29 questionnaire items measuring extroversion, agreeableness, conscientiousness, neuroticism, and openness	1992, 1994	<a href="#">Mueller and Plug, 2006</a>	★★	Big Five Inventory: self-report on 29 questionnaire items measuring extroversion, agreeableness, conscientiousness, neuroticism, and openness	1992, 1994	<a href="#">Mueller and Plug, 2006</a>	★★
Project Talent	1960	9-12th grade	400,000	Ten Talent Personality Self-Assessment Scale: items on vigor, maturity, e.g. "I do my job, even when I don't like it" and "It bothers me to leave a task half done"	1960	<a href="#">Jencks, 1979</a>	★★	Ten Talent Personality Self-Assessment Scale: items on tidiness and maturity, e.g. "Before I start a task, I spent some time getting it organized"	1960	<a href="#">Jencks, 1979</a>	★★
PSID	1968	All ages	18,000	Need for achievement: self-report on four items probing personal valuation of challenge, affiliation, and power	1972	<a href="#">Hill, et al., 1985; Dunifon and Duncan, 1998</a>	★★	Self-report of whether the individual plans ahead, saves for the future rather than spending money as he/she earns it, and "thinks a lot about things that might happen in the future"	Various years including 1968-1972, 1975, 1976	<a href="#">Hill, et al., 1985</a>	★★★
				Fear of failure: self-report of anxiety about taking and failing tests	1972	<a href="#">Hill, et al., 1985</a>	★★	Pension participation	Every year since 1999	<a href="#">Gouskova, Chiteji and Stafford, 2010</a>	★
National Longitudinal Survey of Youth 1979 (NLSY79)	1979	Ages 14-22	12,000	Performance on the coding speed section of the Armed Services Vocational Aptitude Battery, a very simple timed task, with no external incentive to do well	1980	<a href="#">Segal 2012</a>	★★★	Illegal activity, early drinking, early sex, early smoking, early drug use	Various years beginning in 1980	<a href="#">Heckman, Humphries and Kautz, 2014</a>	★
				Non-response rate on survey	Every year	<a href="#">Hedengren and Stratmann, 2012</a>	★★★	Responses to hypothetical inter-temporal trade-offs, e.g. dollar amount desired for one-year delay of \$1000	2006	<a href="#">Courtemanche, Heutel and McAlvanah, 2011</a>	★★★
								Interviewer rating of individual impatience and restlessness during the interview	Every year	<a href="#">DellaVigna and Paserman, 2005</a>	★★★



High School and Beyond (HS&B)	1980	10th grade	30,000	Student report of interest in school; teacher report of whether student comes to class prepared (with homework, books, pencil and paper); average time the student spends on homework per week; how many days of school the student missed	1982	<a href="#">Rosenbaum, 2001</a>	★	Suspension or probation for disciplinary reasons	1982	<a href="#">Rosenbaum, 2001</a>	★
National Longitudinal Survey of Youth: Children and Young Adults (CNLSY)	1986	All ages	11,500	Ten-Item Personality Inventory: self-report	2006, 2010 for young adults age 15 and older	★★★	Behavior Problems Index: mother report of child internalizing and externalizing behavior in last three months	Biennially from 1986-2010 for children age 4-14	<a href="#">Baydar and Brooks-Gunn, 1991</a> ; <a href="#">Converse, Piccone and Tocci, 2014</a>	★★	
							Risk Taking Behaviors: self-report on items such as "I often get in a jam because I do things without thinking" and "I think that planning takes the fun out of things"	Biennially from 1994-2010 for young adults age 15+	<a href="#">Kowaleski-Jones, 2000</a>	★★	
							Self-report of aspirations for future, including educational attainment, marriage, fertility, employment, relationships	Biennially from 1994-2010 for young adults age 15+		★	
							Criminal activity	Biennially from 1994-2010 for young adults age 15+		★	
National Educational Longitudinal Study of 1988 (NELS:88)	1988	8th grade	18,000	Middle school grades; hours spent on homework per week	1988, 1990, 1992	<a href="#">Jacob, 2002</a>	★	Disciplinary incidents	1988, 1990, 1992	<a href="#">Jacob, 2002</a>	★
				Teacher rating of whether student usually works hard for good grades; how often student completes homework assignments; how often student is tardy for class; whether student is exceptionally passive				Teacher rating of how often student is disruptive in class			
NICHD Study of Early Child Care and	1991	Birth	1,300	Continuous Performance Test: Children press a button whenever a target	54 months, 1 <sup>st</sup> grade, 4 <sup>th</sup> grade	<a href="#">Belsky, Fearon and Bell, 2007</a>	★★★	Child Behavior Checklist and Child Behavior Questionnaire:	54 months	<a href="#">Belsky, Fearon and Bell, 2007</a>	★

Youth Development (SECCYD)				stimulus appears on a computer screen. Responses to non-targets signal lack of attentional control				teacher report of externalizing behavior			
National Longitudinal Study of Adolescent Health (Add Health)	1994	7th grade	21,000					Self-report of expectation of living to age 35, expectation of graduating from college	1995, 1996	<a href="#">Harris, Duncan and Boisjoly 2002</a>	★
								Criminal activity, early sexual activity	1995, 1996, 2001, 2007		
National Longitudinal Survey of Youth 1997 (NLSY97)	1997	Ages 12-18	9,000	Performance on the coding speed section of the Armed Services Vocational Aptitude Battery, a very simple timed task, with no external incentive to do well	1997		★★★★	Self-report of expectation of being alive in a year and by 20 <sup>th</sup> birthday	1997		★
				Ten-Item Personality Inventory: self-report	2009		★★	Risky sexual behavior; drug use; criminal behavior	Various years since 1997		★
				Time spent on homework	1997		★	Self-report risk assessment	2011, 2012		★★
Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K)	1998	Kindergarten	21,000	Social Ratings Scale: teacher rating of approaches to learning	1998	<a href="#">Hsin and Xie, 2012</a>	★★	Social Ratings Scale: teacher rating of self-control and externalizing problem behavior	1998	<a href="#">Hsin and Xie, 2012</a>	★★
Fragile Families and Child Wellbeing Study	1998	Birth	4,900	Leiter International Performance Scale - Revised: Attention Sustained: Children were shown a picture of a "target" object and of a variety of objects, asked to cross out any pictures that matched the target. The number of correct cross-outs measures child's focused attention	Age 5	<a href="#">Razza, Martin and Brooks-Gunn, 2012</a>	★★★★	Leiter International Performance Scale - Revised: Attention Sustained: Children were shown a picture of a "target" object and of a variety of objects, asked to cross out any pictures that matched the target. The number of incorrect cross-outs measures child's lack of impulsivity	Age 5	<a href="#">Razza, Martin and Brooks-Gunn, 2012</a>	★★★★
								Child Behavioral Checklist: Mother report of child self-control	Age 3	<a href="#">Boutwell and Beaver, 2010</a>	★★

Early Childhood Longitudinal Study, Birth Cohort (ECLS-B)	2001	9 months	14,000	Positive Behavior Index: observer report of child's attention and arousal, orientation and engagement	2001, 2003	<a href="#">Halle, 2009</a>	★★	Positive Behavior Index: observer report of child's emotional regulation	2001, 2003	<a href="#">Halle, 2009</a>	★
Education Longitudinal Study of 2002 (ELS:2002)	2002	10th grade	15,000	Self-reported valuation of life values such as "getting a good education," "being successful in line of work," "becoming an expert in field of work"	2002, 2004		★	Self-report of educational expectations	2002, 2004		★

As our evaluation shows, there are few major US datasets with high quality measures of drive or prudence. The PSID, the Fragile Families survey, and the various iterations of the NLSY have the best measures of these character strengths, but even their measures are inexact. In contrast, all the major US datasets all contain accepted measures of cognitive skills: math and reading subject tests, the Armed Forces Qualification Test, IQ tests, and so on. Searching for measures of character strengths is much more of a challenge. Few of the commonly used US longitudinal datasets contain items that measure character strengths both directly and narrowly, although many have some measures that can cast some light on the question. In terms of data, scholars working on the non-cognitive side of the equation are the poor cousins to those researching cognitive skills. As interest in character strengths grows, we need to continue to develop better methods for measuring drive and prudence. This is not an easy task, but it is a necessary one. Understanding the importance of character strengths has implications for what parents focus on in the home, what teachers strive to impart in the classroom, and what individuals value and develop in themselves.

## 6. Estimating the Impact of Character Strengths for Life Outcomes

In addition to evaluating the quality of measures of performance character strengths, it is also important to understand how we should incorporate them into the discussion about social mobility, educational attainment, and labor market success. As a large body of research spearheaded by James Heckman and colleagues shows, cognitive skills cannot explain all of the gaps in educational attainment (Heckman, Pinto and Savelyev, 2012; Heckman and Rubinstein, 2001). As such, we want to look at the contribution of drive and prudence to educational attainment and compare its relative importance to comparable measures of cognitive skills.

For our analysis, we use the data set derived from the Social Genome Model (SGM) to give us a sense of the importance of character strengths. The model includes outcomes for these children at age 29 and 40, simulated using the older cohort of the National Longitudinal Survey of Youth. Children of the SGM data set were mostly born in the 1980s and 1990s. This allows us to estimate the effects of measures observed in early childhood (our measure of drive/prudence, described below and measures of math and reading scores in early and middle childhood) on outcomes in adolescence and adulthood. For more on the composition of the SGM dataset, see Winship and Owen (2013).

### 6.1 An Early Measure of Performance Character

Based on our evaluation of survey measures above, we have selected a measure that we think captures both drive and prudence throughout childhood, the hyperactivity subscale of the Behavior Problems Index (BPI) which is derived from a well-known and validated measure, the Child Behavior Checklist, on which mothers rate their child's typical behavior from the past three months.<sup>5</sup> The BPI was developed for the National Longitudinal Survey of Youth 1979: Children

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<sup>5</sup> It should be noted that this scale, despite being named a 'hyperactivity' scale, certainly does not necessarily indicate that a child is medically hyperactive (that is, has a diagnosis of attention-deficit hyperactivity disorder). In this sense, the terminology here is unhelpful.



and Young Adults, and is one of the most frequently used of its child assessments. The mother’s report is captured in early childhood, around age 5 or 6, and in middle childhood, around age 10 or 11. A disadvantage of the scale is the reliance on mothers’ reports; an advantage is that its availability in the large NLSY dataset also allows our analysis to incorporate and allow for a wide range of other variables.

The five items on this scale capture the strengths that we are especially interested in for a child’s academic and economic success, namely, a child’s ability to persist in and concentrate on a task (drive) and the ability to control impulses and think before acting (prudence). Specifically, the mother rates the following statements about her child as “not true,” “sometimes true,” or “often true”:

- Has difficulty concentrating/paying attention
- Is easily confused, seems in a fog
- Is impulsive or acts without thinking
- Has trouble getting mind off certain thoughts
- Is restless, overly active, cannot sit still

The average child in NLSY is rated as sometimes or often displaying two of these behaviors, both at age 5/6 and age 10/11. About 16 percent of children in early childhood and 17 percent in middle childhood, however, are rated as sometimes or often displaying four or five of these behaviors. These children are the ones struggling to develop important strengths, especially the ones we describe as drive and prudence.

In order to assess the importance of the strengths captured by the scale, we ranked children as having ‘low skills’ (lower than 1 SD below average on the hyperactivity scale), ‘middling skills’ (between 1 SD below and 1 SD above average on the hyperactivity scale), or ‘high skills’ (higher than 1 SD above average on the hyperactivity scale). See Table 5 for a breakdown of what portion of the sample falls into each category.

**Table 5: Low, Medium, and High Scores on BPI Measure**

N= 5783	Low Skills	Medium Skills	High Skills
Early Childhood	15.61%	59.29%	25.09%
Middle Childhood	16.84%	55.06%	28.10%

Next, we created a composite measure of performance character strengths, describing children as ‘Always Low’ (with low skills in early and middle childhood), ‘Sometimes Low’ (low skills in one period), ‘Always Middle’ (middle skills in both periods), ‘Sometimes High’ (high skills in one period), and ‘Always High’ (high skills in both periods). There is a very small overlap – about two percent of the sample – between the ‘Sometimes Low’ and ‘Sometimes High’ categories, made up of children who had high skills in one period and low skills in the other. (For the purposes of our analyses using the composite measure, we exclude these children). Table 6 shows how our sample breaks down into the different categories of the composite measure.



**Table 6: Composite Measure: Low, Medium, and High (BPI Measure)**

Skill Level	Percent of Sample
Always Low	6.73%
Sometimes Low	17.05%
Always Middle	36.88%
Sometimes High	23.53%
Always High	13.85%
Low/High	1.95%

If we look at the demographic breakdown of scores on our composite measure, we see gaps by socioeconomic status, mirroring gaps seen in other studies. Scores on composite measure of the Behavioral Problems Index we developed for our analysis of education outcomes (see above) is not evenly distributed across the population. Children born in the households in the lowest fifth of the income distribution are almost four times as likely to be in the ‘always low’ category as those from households in the top fifth. Similar patterns can be seen at the other end of the income distribution, and for maternal education levels, as Figure 6 shows.

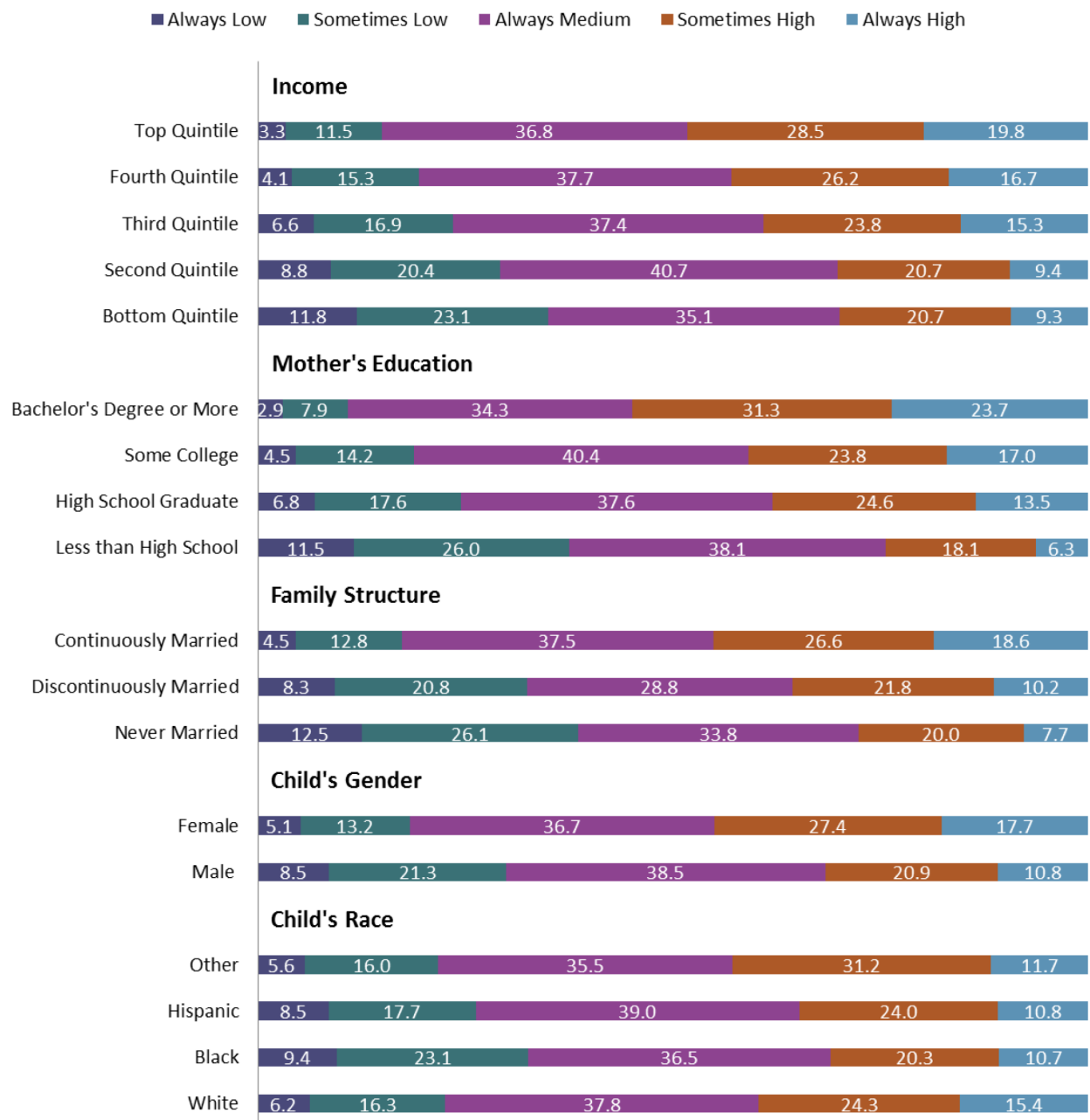
To see which background factors matter most for the development of character, we examined the influence of demographic variables on the chances of being in the ‘always low’ group for behavioral problems, controlling for other variables (see Figures 8 and 9).

Descriptively, there are four things to note here. First, girls perform more strongly than boys on the index, regardless of other factors, in both early and middle childhood. Second, race does not seem to be a strong factor once controls are added – indeed, in the early years, there appears to be a positive influence from being in the ‘other’ race category. Third, teenage motherhood has a strong effect in the early years, but not in the middle years.

Lastly, and perhaps most importantly, children from more disadvantaged backgrounds are more likely to score poorly on the BPI measure, even controlling for other family characteristics. Children born in the bottom quintile, for example, are 6.2 percentage points more likely to score poorly on the hyperactive scale in early childhood compared to children born in the middle quintile. Maternal education is also an important factor. The children of mothers without a high school degree are 6.5 percentage points more likely to score poorly than children of mothers with a high school degree in the early years, while the children of college graduates are 7.1 percentage points less likely to be in the ‘low’ category. The effects of disadvantaged circumstances appear to be larger in early childhood than in middle childhood.

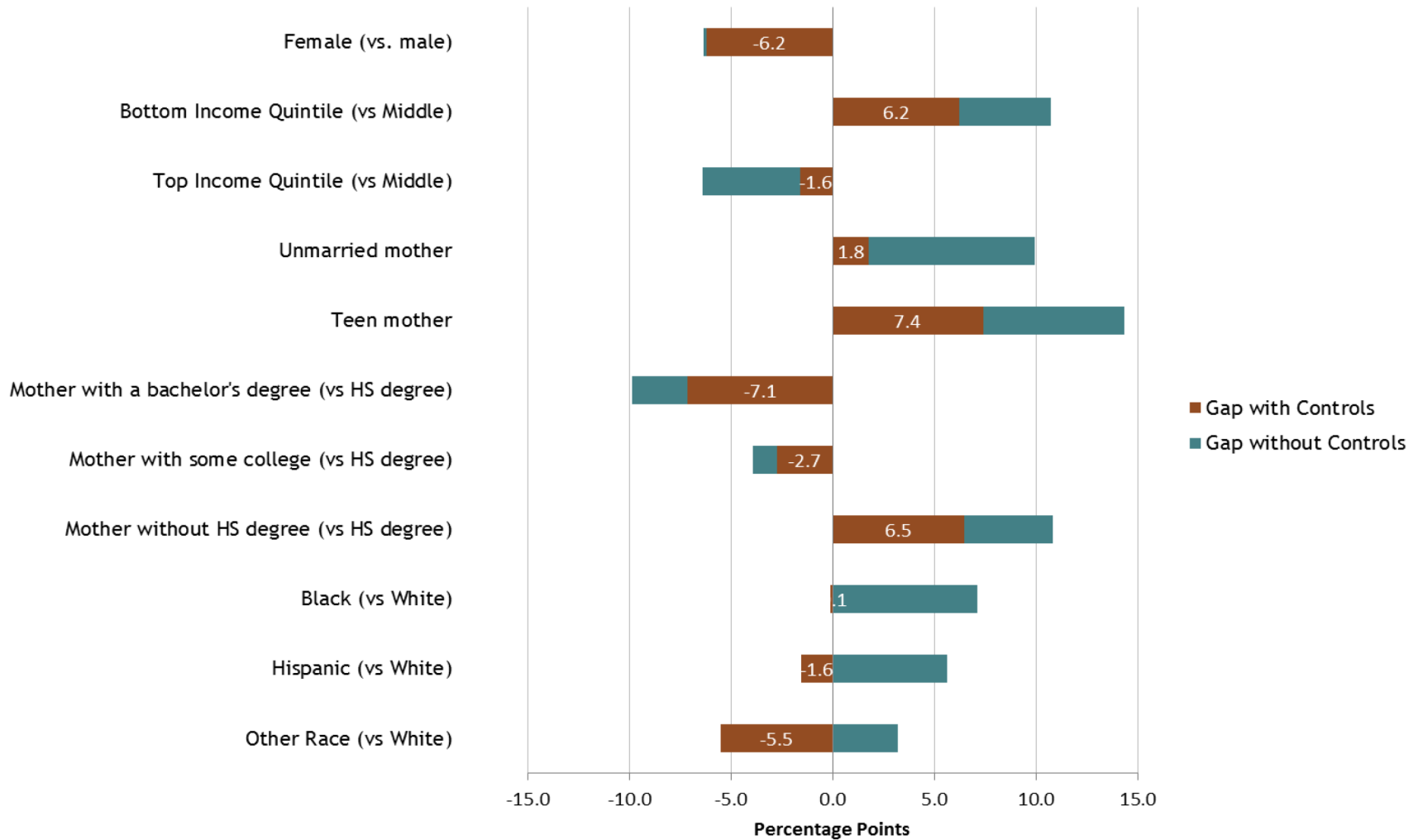


**Figure 6: Demographics of Non-Cognitive Skill Levels, Composite Measure**



**Figure 7: What Factors Are Associated with Low Scores for Character Strengths (Early Years)?**

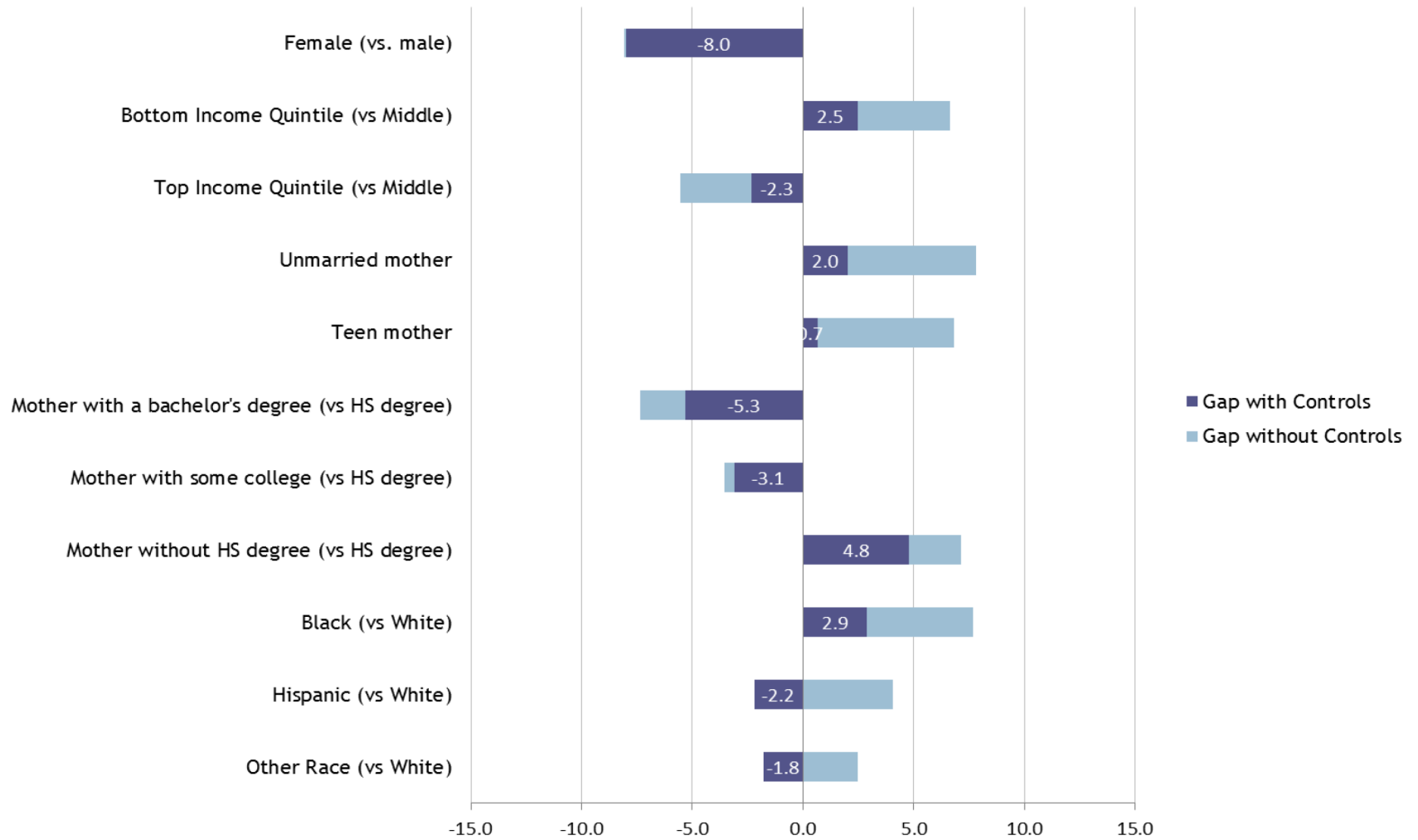
**Early Childhood Hyperactivity Gap, With and Without Controls**  
 Difference in likelihood of being among the weakest children by family characteristics, in percentage points





**Figure 8: What Factors Are Associated with Low Scores for Character Strengths (Middle Years)?**

**Middle Childhood Hyperactivity Gap, With and Without Controls**  
Difference in likelihood of being among the weakest children by family characteristics, in percentage points



## 6.2 The Link Between Character Strengths and Outcomes

How much does this measure of performance character affect life outcomes? To address this question, we first ran some simple regressions (without any controls) of four different success measures on our measure of character strength. This shows the percentage of children at different strength levels (low, medium and high, as defined above) who succeed in terms of graduating high school with decent grades, turning twenty without an arrest record, turning twenty without a pregnancy, and graduating college.

Figure 9 shows the percent of children scoring at the different levels on the BPI scale at age 5/6 who succeed on the key success benchmarks, drawn from the Social Genome Model for the adolescent period:

**Figure 9: Character Strengths in the Early Years and Key Outcomes**

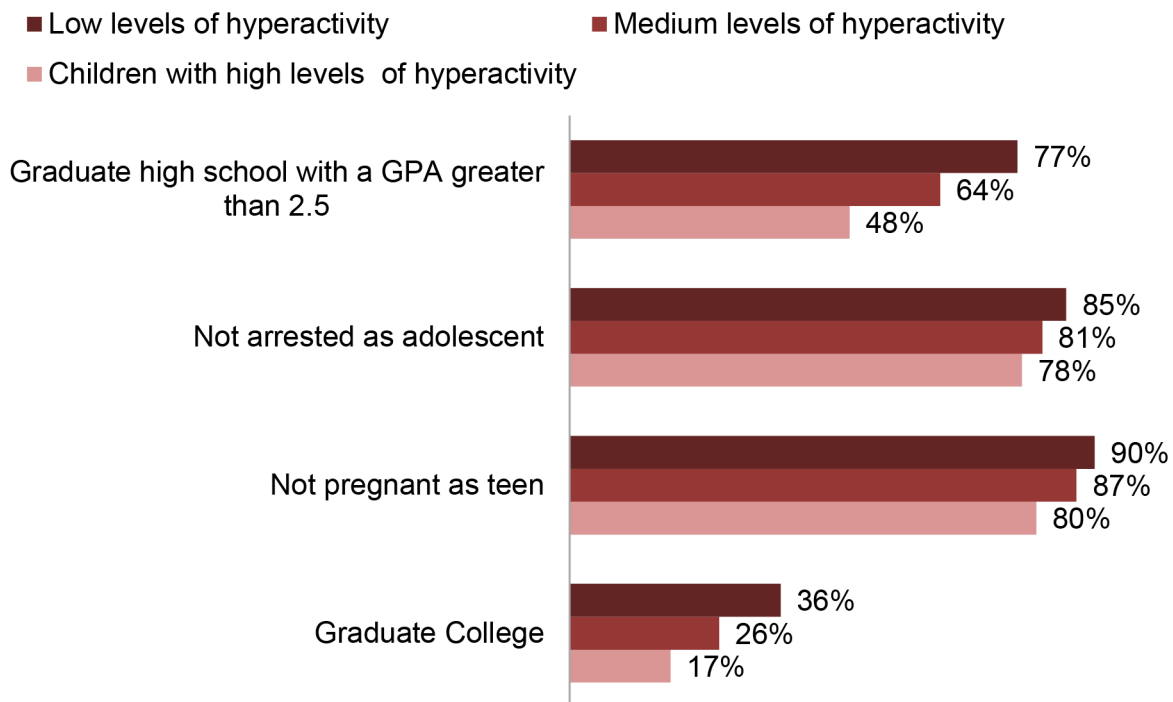


Figure 10 shows the same measures for children based on their BPI scores in middle childhood (i.e., around the ages of 10 to 11):

**Figure 10: Character Strengths in the Middle Years and Key Outcomes**

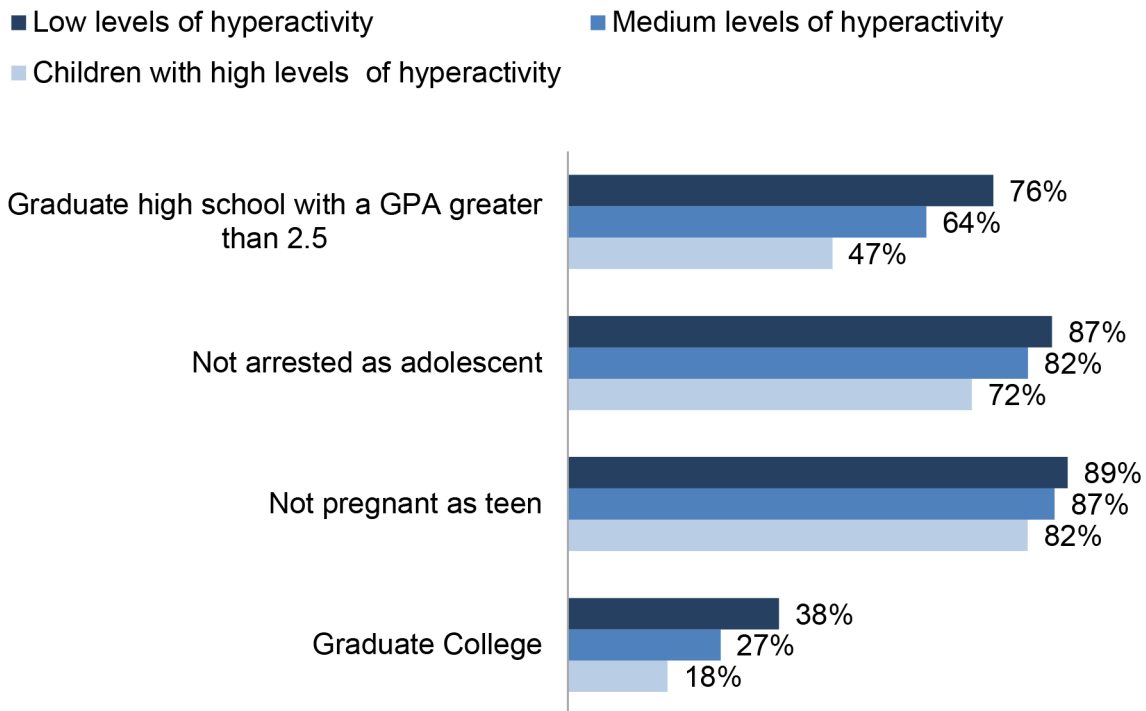
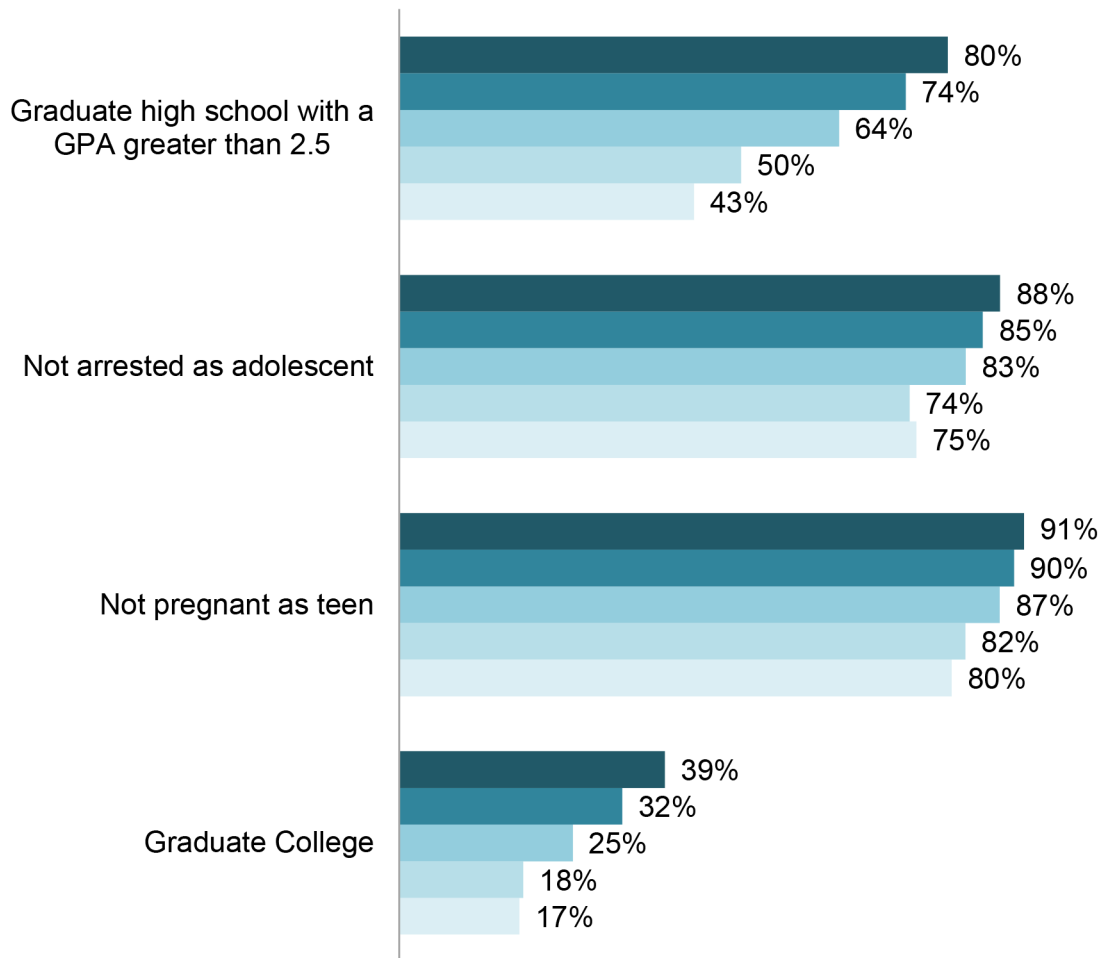




Figure 11 shows success rates against these metrics for the composite BPI score for middle and early childhood:

**Figure 11: Character Strengths Composite Measure and Key Outcomes**

- Always Low Levels of Hyperactivity
- Sometimes Low
- Always Medium
- Sometimes High
- Always High Levels of Hyperactivity



On the basis of these results, the effects of character strengths as captured by the BPI scale seem clear. But these are simple tabulations, not taking into account other factors likely to be strongly related to both the development of these strengths and other outcomes. The real question is how much these characters strengths matter independently?

To cast some light on this question, we regressed our educational outcomes on our composite measure from the BPI and a set of controls (mother’s education, marital status, age at birth, cognitive skills, and parenting quality; family income; race; math and reading skills in early and middle childhood; teenage parenthood).

Those with low BPI scores in both periods are less likely to graduate high school with a good GPA (35 percent less compared to those with middling skills in both periods), while those with high skills in both periods are more likely to graduate (67 percent more likely). Later life outcomes have an asymmetric relationship with our BPI measure. The likelihood of graduating college is significantly related to having high non-cognitive skills: those with ‘always high’ skills in early childhood are 33 percent more likely to graduate college than those with middling skills. But there was no significant effect from a low BPI score, once other factors were taken into account.

Even when adding controls for other factors, then, the development of character strengths in early and middle childhood is statistically significantly related to later educational outcomes, especially in adolescence.

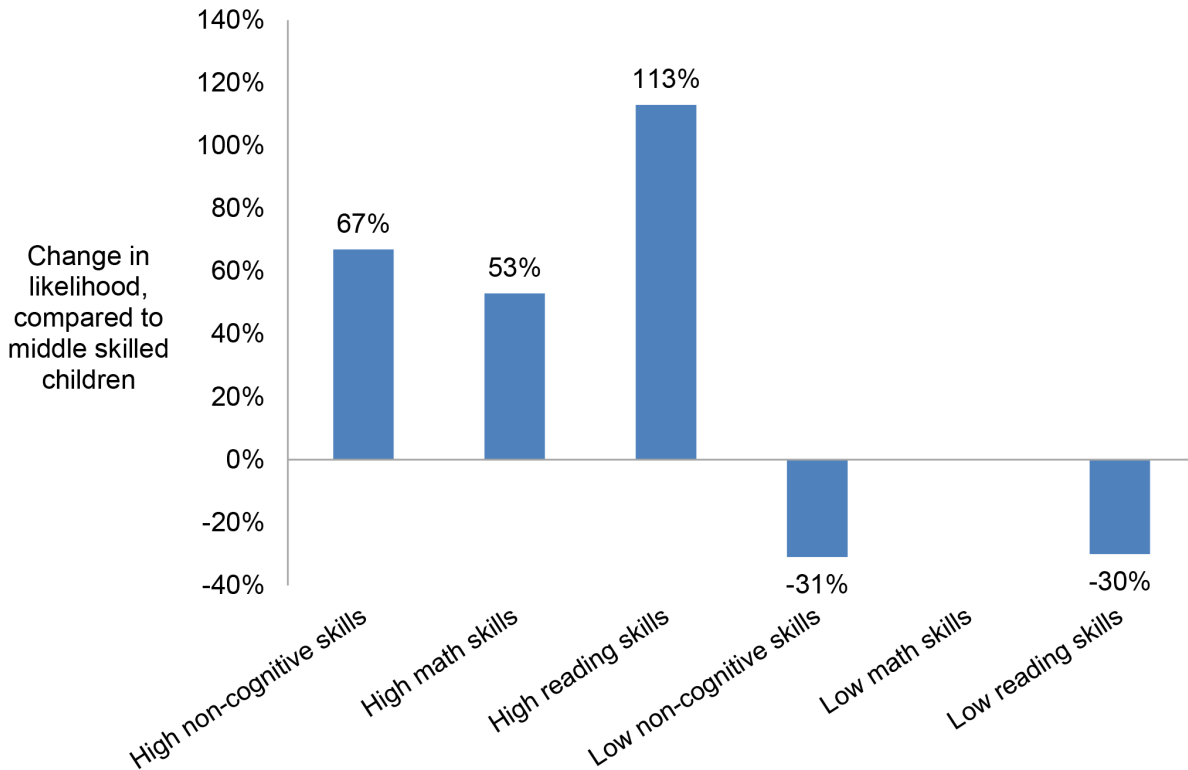
There is still a question of the scale of impact, however, especially against the effects of cognitive scores. We therefore compared the effects of reading or math skills in early and middle childhood with the effects of the BPI scores.<sup>6</sup> Those with the strongest math skills across those two periods (i.e., those who had math skills more than 1 SD above average in both periods) were significantly more likely to graduate high school with at least a 2.5 GPA (53 percent more likely), although there was no negative effect for those with the weakest math skills (i.e., less than 1 SD below average in both periods). Those with the strongest reading skills were more than twice as likely to graduate high school with a 2.5 GPA (113 percent more likely), while those with the weakest reading skills across the two periods were less likely to graduate with a good GPA from high school (30 percent less likely).<sup>7</sup>

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6 Math and reading skills were measured in early and middle childhood and standardized with a mean of 0 and SD of 1, similar to the BPI scale. To create composite measures of reading skills and math skills, we followed the same method as for non-cognitive skills: In each period, a child was characterized as low (math/reading skills less than 1 SD below average), medium (math/reading skills between 1 SD below average and 1 SD above average), or high (math/reading skills above 1 SD above average). Then, each child was categorized as always low, sometimes low, always middle, sometimes high, and always high, as was done for non-cognitive skills. 6.1 percent of children had always low math scores and 7.2 percent had always high math scores. 6.8 percent of children had always low reading scores and 5.2 percent had always high reading scores.

7 The proportion of the sample with always high reading skills and the proportion with always high math skills are smaller than the proportion with always high non-cognitive skills. As such, we would expect that the impact of being high in cognitive skills could potentially be exaggerated compared to the impact of being high in non-cognitive skills. This may be the case for the particularly large effect of high reading skills on high school graduation. If we instead look at those who score always high or sometimes high on reading, which makes up the top 16.2 percent of the sample, we find that being always or sometimes a high scorer increases the likelihood of graduating high school with a good GPA by only 42 percent.

**Figure 12: Drive and Prudence Matter as Much as Book Smarts for HS Graduation**



On the basis of this analysis, it looks as though the influence of the character strength scores is comparable to the influence of the academic scores: it is, at the very least, in the same ballpark.

### Conclusions

We have evaluated which US survey data is most fruitful for measuring character strengths (specifically drive and prudence) and looked at how much one such measure, the BPI hyperactivity scale, relates to educational attainment. Our evaluation suggests that the NLSY iterations, PSID, and the Fragile Families studies offer some of the best measures of drive and prudence, but that other surveys have measures which meet at least one of our criteria for quality (proximity and specificity). We also find that better scores on our composite measure derived from the BPI hyperactivity scale are significantly associated with higher educational attainment and that this relationship is comparable in size to the relationship between doing well on math and reading measures and educational attainment.

So: Character matters. Children who learn and can exhibit character strengths attain more years of education, earn more, and likely outperform other individuals in other areas of life. Of course, many other factors matter a great deal, too – most obviously cognitive skills, but also a host of cultural, social and education attributes.

And it is important to remember that the topic of character is larger than one paper can encompass. In this paper, we focused on a very narrow slice in terms of the kaleidoscope of

attributes and attitudes influencing life outcomes. For one thing, action requires more than just skills. The “capacities to act” do not necessarily translate to *reasons* to act – which are more about self-perception and aspiration (Reeves, 2014a). Similarly, people who are optimistic and believe their actions have influence are more likely to get ahead. Those who see themselves in a positive light – in other words have high self-esteem – are likely to demonstrate greater personal agency and have higher expectations.

Compared to the field of cognitive skill measurement, the character strengths movement is still in the foothills, both in terms of evidence and policy. Whether character strengths can be developed is one question: to which the answer appears to be yes (see Cunha and Heckman 2008; Carneiro and Heckman 2003). Whether character strengths can be developed through explicit public policy is quite another, and here the answer appears to be: we don’t know. Policy-makers often fall into the trap of what philosopher Jon Elster describes as ‘willing what cannot be willed.’ But as we learn more about the importance of character strengths, and disparities in their development, the need to move forward – if only through more research and evaluations of existing character-development programs – becomes more urgent, not least in terms of boosting social mobility. For greater mobility, we need not only to increase opportunities, but also to ensure that people are able to seize them.

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