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Diagnosis or Determination?: Assessment Explained through Human Capital Theory and the Concept of Aptitudes

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ABSTRACT

In this paper the concept of high stakes testing is evaluated against human capital theory and cognitive psychology's concept of aptitudes for the purposes of determining whether or not the use of assessment in high stakes testing policies is consistent or inconsistent with cornerstone beliefs in American public education. In the process, an important criterion is established for evaluating, more generally, the use of educational assessments.

I
INTRODUCTION

Over the past decade high stakes testing policies, such as the *Leave No Child Behind* legislation, have come to occupy a strange position in American society. As a proposed reform mechanism, high stakes testing is increasingly popular among politicians and sections of the public, while educational professionals remain either unsure about high stakes testing policies or surely opposed to them. To date, the literature on high stakes testing reflects this state-of-affairs. There are a variety of politically charged arguments for and against high stakes testing, while actual empirical research has yet to catch up in the debate.[i]

In light of the abundance of politically persuasive arguments for and against high stakes testing and the current temporal restraints on empirical study, this paper is a step toward determining how to improve learning and the development of opportunities to learn. By evaluating the concept of high stakes testing according to what we believe, and will argue, are established concepts at the core of American public education, we compare a uniform conception of human development against two different uses of assessment.

Human capital theory and the more contemporary concept of aptitudes are ideas that have very different origins. Human capital theory addresses rational decision-making for investing in individual capacities and falls squarely within the field of economics. The concept of aptitudes addresses how the human mind develops and functions in the social context and is primarily the work of cognitive psychology. The context of educational assessment, however, brings to light a striking and rather telling similarity between the two ideas. Both ideas characterize human development, with respect to individual change, in a manner that logically suggests high stakes testing would be both socially inequitable and economically unproductive.

II

HUMAN CAPITAL THEORY IN AMERICAN PUBLIC EDUCATION

The concept of human capital entered mainstream academic inquiry in the early 1960s through the work of Theodore Schultz and Gary Becker (Becker 1993; Schultz 1963). In the decades since, it has fueled considerable and lasting debate among researchers. At the core of many of these debates are the assumptions spelled out in Becker's 1964 *Human Capital,* where he formalized a theory presenting education as one of many investment alternatives individuals may choose to obtain future benefits. One assumption within human capital theory is that labor market earnings increase for individuals with more education *because* schools increase the productive skills of students. This assumption is the root of much debate over the role of education in society. In this section we illustrate that the elements outlined in human capital theory (and much of the debate it has generated) can be observed everyday in our public schools.

Human capital theory has typically been applied to education in explaining investment decisions in higher education and on-the-job training. In choosing among various investment alternatives, individuals behave as if they perform a private calculus measuring the rates of return associated with each alternative. Investment in education occurs only if the expected returns compare favorably against existing alternatives, such as full-time employment.

The key assumption of human capital theory is that "schooling raises earnings and productivity mainly by providing knowledge, skills and a way of analyzing problems" (Becker 1993). The impacts of this causal statement are many. By making schools responsible for the economic productivity students bring to the labor market, human capital theory joins investment in education, labor market earnings of students, and the very process of classroom learning. This bold assumption takes a broad social theory into the heart of the education process.

Human capital theory claims that high school and college education in the U.S. "greatly raise a person's income, even after netting out direct and indirect costs of schooling, and after adjusting for the better family backgrounds and greater abilities of more educated people" (Becker 1993). Such a claim, together with the assumption that school changes students, suggests that independent of socioeconomic status, family dynamics, or the skills and knowledge students develop prior to schooling, it is largely what takes place inside the classroom that corresponds to increased earnings once students enter the labor market.

The claim that schools change students by providing them with productive knowledge and skills has been countered by the claim that schools do not change students, but rather serve some other social function (Berg 1970; Collins 1979). The claim that schools change students by providing them with productive knowledge and skills has also been countered by the claim that schools change students, but not in economically productive ways (Rubinson and Browne 1994). Some critical theorists, sociologists, and economists have claimed that schools change students by socializing them to fit into and accept as legitimate their respective placements on the social ladder (Bourdieu and Passeron 1977; Bowles and Gintis 1976; Spring 1976).

Despite these claims and other critical accounts of human capital theory, the reality of K-12 education embodies the human capital assumption that school changes students in economically productive ways. There is no other way of justifying compulsory education in a democratic society. In fact, there is nothing unreasonable about stating that the notion of 'getting ahead through education' is (and has been since at least the turn of the century) ingrained in mainstream American culture (Labaree 1997). Education researchers and theorists may questions if or why people really get ahead through education. But few principles are as thoroughly and consistently accepted in American culture than the connection between education (by way of schooling) and economic well being (by way of human capital).

III
THE CONCEPT OF APTITUDES

In this section we do three things. We begin by describing the concept of aptitudes from the field of cognitive psychology. Next, we illustrate a few of the many implications that this concept generates for educational professionals. Finally, we argue that the concept of aptitudes requires that assessment be used in very specific ways.

A prominent cognitive psychology symposium recently defined aptitude to mean "degree of readiness to learn and perform well in a particular situation or in a fixed domain" (Corno et al. 2002). In any given situation, any characteristic that is a "forerunner of success" (p.3) is an aptitude. A handful of important corollaries can be taken from this. To begin with, the diversity of characteristics, skills and abilities that constitute aptitudes is unmistakable. Anything that aids in goal attainment is an aptitude. Also according to this conceptualization, without exception, aptitudes and situations cannot be separated.

There are a variety of examples of both the diversity of aptitudes and the situation-based nature of aptitudes. The ability to find the main sentence of a paragraph, the ability to create and read an outline, reading comprehension skills, good eye-sight, attentiveness, good nutrition, a handful of problem strategies, and proper rest all represent the diversity of aptitudes relevant to educational success. According to this conceptualization, specific cognitive skills, as well as specific forms of social and cultural capital constitute aptitudes (Bourdieu 1986; Coleman 1988).

For example, take independent-mindedness to represent the situation-based aspect of aptitudes. Feelings of independence that enable a child to feel comfortable and safe exploring the world undeniably aid in many aspects of a child's development. However, regardless of why, if a child were to be so independently-minded that learning could not take place in an organized classroom setting, problems would arise

and inevitably compound. As much as any characteristic or strategy can constitute an aptitude, any characteristic or strategy can also constitute an inaptitude, depending upon the situation.

The preceding concept of aptitudes offers substantial implications for those who study, organize, or engage directly in the process of education. To begin very generally, the preceding concept absolutely refutes the notion of innate IQ. If human development is most effectively described in terms of skills and characteristics, which need to be learned, practiced, used as scaffolding, etc., then notions of inborn intelligence have little educational value. The implicit assumption, that there exists in individuals an inborn maximum intellectual potential, is improvable and unworkable.

Also, the meanings of, and differences between aptitude and achievement are clarified by the contemporary concept of aptitudes. Aptitude tests assess specific aptitudes, such as reading comprehension, general reasoning, and the like. Achievement tests, on the other hand, assess the application of specific cognitive skills, or aptitudes, within a specific knowledge domain, such as history, literature, or biology. Conceptually, the difference between aptitude tests and achievement tests might be similar to the difference between taking an eye exam and taking an eye exam while driving a car. While the results of both exams may be useful, interpreting and making effective use of the latter is far more complex than with the former, especially in light of the variety of things that could constitute an aptitude in a given multi-task situation.

On a more technical note, the concept of aptitudes has implications for practices like student grouping. The concept of aptitudes refutes the traditional belief that, in heterogeneously grouped classrooms, higher achieving students are necessarily slowed or bored with lower achieving students, or that lower achieving students are necessarily frustrated by the pace. Given the proper situation, higher achieving students would be able to role model whatever skills are being exercised, and lower achieving students would be able to offer a perspective that requires relearning and rethinking for

whomever they work with. Of course, a de-tracked classroom situation, with students grouped heterogeneously, would require trust and respect from every student. However, trust and respect should not be considered obstacles to success. Rather, trust and respect are aptitudes in need of further development.

One of the most powerful implications of the concept of aptitudes is the validation and empowerment of specific and long-standing sociological concerns. A review of literature on the *Educate America Act* and the *Leave No Child Behind* legislation reveals several concerns sociologists of education have in regard to federal education reform legislation. The extent to which reform legislation addresses inequalities is a major concern. More recently, a tool that sociologists increasingly use is the 'opportunity to learn standard,' sometimes referred to as the OTL standard. "The 'opportunity-to-learn' conceptualization represents the most current strategy in the pursuit of equality of educational opportunity" (Braddock II and Williams 1996). The concept of aptitude(s) validates the use of the OTL because, in refuting the primacy of inborn intelligence, human development is characterized as an aggregate (or lack) of developmental opportunities. It tells us, quite simply, that OTL standards are at least as important as any other kind of educational standards.

The concept of aptitudes empowers the use of OTL standards by clearly indicating how concerns over equity can be more directly addressed. If aptitude tests genuinely assess readiness to learn as it manifests through specific cognitive skills, aptitude tests are actually documenting what kinds of opportunities to learn students need following assessment. And if achievement tests, on the other hand, genuinely assess the application of specific cognitive skills (or aptitudes), achievement tests are actually documenting the extent to which opportunities to learn have been equitably distributed.

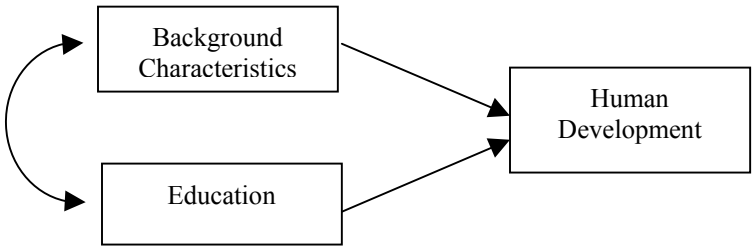
IV
TWO LANGUAGES, ONE MESSAGE

The uniformity in which human capital theory and the concept of aptitudes characterize human development is unmistakable and extremely suggestive. The way in which human capital theory conceptualizes human development is through the acquisition of economically productive skills. Human capital theory - with the assumption that schools change students and the claim that change takes place independent of students' backgrounds - characterizes human development in terms of real changes that are facilitated by learning and developing certain skills. The concept of aptitudes implies that human beings develop according to an array of situation-based physiological, socio-economic, and academic opportunities.

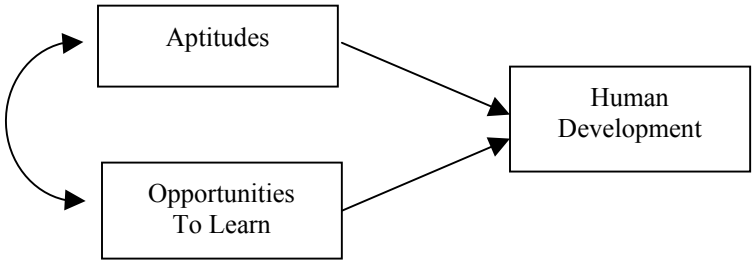
Both concepts tell us that development is fundamentally based on the combined effects of what economists call background characteristics and education, and what cognitive psychologists and sociologists call aptitudes and opportunities to learn. This interaction of background characteristics and education (or aptitudes and opportunities), is ongoing and cumulative. Figure 1 portrays both the human capital theory interpretation of human development as well as the interpretation of human development according to the concept of aptitudes.

Figure 1

The human capital theory interpretation of human development



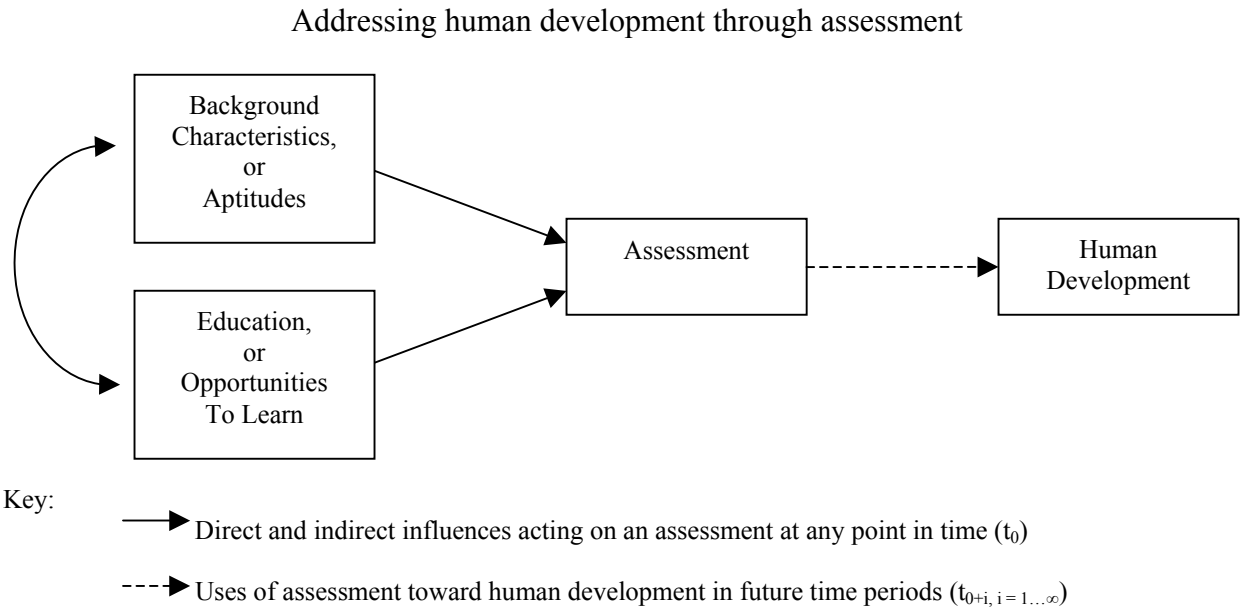
The interpretation of human development according to the concept of aptitudes



Human capital theory and the concept of aptitudes, in recognizing the interaction of background characteristics (or aptitudes) with education (or opportunities to learn) similarly characterize the effective assessment of human development. Any assessment of the school experience inevitably captures both the array of background characteristics or aptitudes each student brings to the test, as well as previous effects of education, or opportunities to learn. If assessment does not control for background characteristics (or aptitudes) it is conceptually impossible to establish how much, or even whether or not education has independently affected human development. The only way to logically assess or control for socioeconomic status and other confounding variables (or other aptitudes) is to take account of "the initial differences of students who are to be served, in order to isolate the 'value added' by the school program itself in students' performance outcomes" (McPartland and Schneider 1996). Figure 2

illustrates this conceptual relationship between the characteristics of human capital theory, aptitude theory, assessment, and human development.

Figure 2



There are two conceivable ways of controlling for background characteristics, or aptitudes. First, attempts can be made to build statistical control into an assessment. This, however, is an extremely difficult methodological process. What's more, the variety of background variables relevant to educational success makes statistical control highly suspect. Second, a logical alternative to statistical control is achieved through the use of information provided by an assessment. If, at any given point in time, a student is treated in terms of what that student needs in order to develop in a successful manner, that student's background characteristics are naturally being taken into account.

Assessing individual needs and adjusting a student's education accordingly implicitly separates that student's education from his or her unique collection of previous and

confounding circumstances. An assessment of this sort is diagnostic and effectively used to facilitate human development via education because the information it provides is used as if education were to begin and not end with the assessment.[ii]

V
CONCLUSION

In the introduction of this essay, we propose that high stakes testing policies are inequitable, unproductive, and contrary to fundamental theories in American public education. In sections two and three, we outline human capital theory and the concept of aptitudes, two ideas with unmistakable and operative connections to public education. Finally, in section four we describe how those connections constitute a very specific criterion concerning the use of assessment. According to both human capital theory and the concept of aptitudes, the only way to control with certainty for the benefits and burdens that individual students bring to school is to use assessments diagnostically. Effectively facilitating human development, embodied in individual change, through education requires that assessments be used to address students' future needs, as opposed to previous deficiencies.

High stakes testing policies of any kind make use of assessment in a manner that is antithetical to diagnostic assessment. In establishing templates by which determinations can be made from assessment scores, high stakes testing policies are neglectful of the diversity of background characteristics students bring to schools and indefensible to sociological charges that schools simply sort students along class lines. High stakes uses of assessment are incapable of differentiating the effects of education from the effects of socio-economic advantages or disadvantages. In fact, the portrait of human development provided by both human capital theory and the concept of aptitudes suggests that distributing rewards and penalties according to students' past aptitude-opportunity (or background-education) interactions is the ideal template for

sorting students by the social classes that shape such a large portion of their development.

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[i] There has been good research done on testing policies. Bob Hauser's research on testing for the National Research Council is a good example. Our point is only that sound research, such as Hauser's, remains overshadowed by more quickly constructed political arguments.

[ii] This characterization of assessment is identical to that provided by the medical model, where treatment follows assessment.