

LABOR-MARKET CONSEQUENCES OF POOR ATTITUDE AND LOW SELF-ESTEEM IN YOUTH

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Using longitudinal data on a cohort of high-school graduates, I show that youth who reveal poor attitude and self-esteem subsequently attain fewer years of postsecondary education relative to their high school cohort, are less likely to be employed 14 years following high school and, where working for pay, realize lower earnings. Furthermore, I find evidence that poor attitude and self-esteem in high school are significant predictors of structural outcomes, such as the degree of supervision under which individuals subsequently work, job characteristics, and on-the-job activities. These relationships suggest that real economic consequences exist in fostering positive attitude and self-esteem in youth. (JEL J13, J20, J30)

In a recent national survey that asked employers to rank the importance of particular applicant traits for nonsupervisory and production positions, “applicant’s attitude” was the only trait that was reported to be “very important.” In fact, “academic performance, years of schooling completed, teachers’ recommendations, and industry-based credentials (certifying applicant skills)” all ranked lower (Bowles et al. 2000). A second, independent survey of employers in Holzer and Wissoker (2000) also suggests that more weight is placed on a good attitude than on basic skills among new hires of low-skilled workers. In this article, I assess the role of pre-labor market attitude and self-esteem in explaining disparities observed in the labor market experiences of a sample of high school graduates. The apparent importance employers ascribe to attitude and self-esteem gives clear reason to expect that such a relationship exists.

I demonstrate that such survey responses are corroborated by real economic consequences for those with poor attitude and self-esteem. Using longitudinal data on a 1972 cohort of high school graduates, I show that high school students who reveal negative attitudes and self-esteem subsequently attain

fewer years of postsecondary education relative to their high school cohort, are less likely to be employed 14 years following high school, and where working for pay, earn less. Accounting directly for the labor force participation decision, I also document a higher incidence of unemployment among these individuals. Furthermore, I find evidence that negative attitudes and self-esteem are associated with jobs later in life that require the individual to spend time working with things, as opposed to people, for example, and that those who exhibit poor pre-labor market attitude and self-esteem are subsequently more closely supervised at work and given less discretion in their daily activities. All told, attitude and self-esteem in youth are shown to have important and long-lasting economic implications.

In the following section I briefly discuss related literatures. Specifically, two areas of the literature are considered: the effect of joblessness on self-esteem and the relationship between other noncognitive skills or worker attributes and labor market outcomes. Section II then introduces the data and methods used in investigating the relationships in question. Empirical results are reported in section III and are followed by some discussion and concluding remarks.

I. PREVIOUS LITERATURE

This article is closely related to two areas of existing literature. First, there exists a small body of literature that documents a relationship

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between labor market activity and self-esteem. However, this literature has heretofore focused more on the damage of joblessness to an individual's perception of self-worth than on the direction of causality considered here. For example, Goldsmith et al. (1995, 1996a) find relationships between contemporaneous joblessness and self-esteem and historic joblessness and subsequent self-esteem, respectively. Arguably, the causality between attitudes and jobless spells is not clearly in one direction or the other. In this article, I contribute clear evidence of the reverse causation—causation running from attitude and self-esteem to future labor market outcomes.

Second, there is a growing body of literature on the importance of noncognitive skills in wage determination. This literature suggests that measures of aggression and withdrawal (Osborne 1999), individual motivation (Goldsmith et al. 2000), behavioral problems in high school (Cawley et al. 2001), one's "locus of control" or outlook on life (Goldsmith et al. 1997b; Osborne 1999; Bertrand and Mullainathan 2001; Coleman and DeLeire 2003), and mental health (Bartel and Taubman 1979, 1986; Frank and Gertler 1991; Mullahy and Sindelar 1993) each have predictive power with respect to wages. That employer surveys suggest that attitude is highly valued alone leads one to anticipate that attitude be related to earnings. The current analysis goes beyond previous literature in its focus on attitude and self-esteem because it relates to a broader array of labor-related outcomes, suggesting the existence of deeper, more structural shortcomings associated with attitude deficiencies than previous studies of wages have disclosed.

Of course, one cannot rule out that poor attitude and self-esteem in youth simply reflect an accurate perception by some that they are themselves of low ability. By extension, any observed differences in outcomes that correlate with measured attitudes and self-esteem may be due to ability indirectly revealed through survey responses. Likewise, however, one cannot rule out that attitude and self-esteem are themselves a dimension of ability—an additional "psychological ability"—and therefore correlate directly with subsequent outcomes. Adopting a full set of controls for ability, the analysis below strongly suggests that aspects of attitude and self-esteem are, in fact, direct inputs into one's productivity. Empirical regularities in the data are also

consistent with employers having learned to associate perceptions of poor attitude and self-esteem with lower productivity—bidding down employment and wage offers. Although there is no direct evidence of a difference in marginal return to education for those with poor attitude and self-esteem, the data do reveal that respondents may anticipate such treatment insofar as they invest less in postsecondary education. The data also suggest that such individuals may self-select into positions where the returns to better attitude may be lower—spending more on-the-job time working with things, for example, and much less time working with people. In short, associations revealed in the data are often strong and point to the potential for far-reaching implications of fostering positive attitudes and self-esteem in youth.

II. DATA AND METHODS

To analyze whether one's youthful attitude and self-esteem contribute to future labor market outcomes, I consider the National Longitudinal Study of the High School Class of 1972 (NLS-72), a representative survey of graduating high school seniors that records both pre-labor market measures of attitude and subsequent outcomes such as educational attainment, labor force participation, and wages, making it well suited to parse out the effect of attitude relative to other variables. The basic methodology adopted in this article is to regress such outcomes on measures of attitude and self-esteem taken prior to entry into the labor market, controlling for other factors that may also explain variation in outcomes. In this section I discuss the measures of attitude used in the analysis and their suitability. Before reporting estimation results, I also briefly discuss endogeneity, omitted variables, subjective response data, and sample construction.

Attitude and Self-Esteem Measured

Among the high school experiences recorded in NLS-72, three series of questions from the attitudes and opinions portion are of particular interest. In one series, respondents were asked how they felt about self-image statements including some from the now established Rosenberg (1965) Self-Esteem Scale,

such as “I take a positive attitude toward myself,” and “I feel I am a person of worth, on an equal plane with others,” and “On the whole, I’m satisfied with myself.” In a second series of questions, focusing more on the respondent’s attitude and outlook on life, subjects were asked how important were, for example, “Being successful in [their] line of work,” and “Being able to find steady work.” A third series in the attitude and opinions portion of the 1972 survey asks, in particular, how not feeling “part of the school” had interfered with their high school education. Although extreme responses to all other questions in this series cannot be categorized as revealing respondent attitude or self-esteem, not feeling part of the school is an indication often thought of as indicating poor self-esteem and is therefore included in the index. These survey questions, reproduced in Table 1, form the basis of this analysis of whether attitude and self-esteem relate to observed disparities in outcomes of interest. A breakdown of responses is also provided in Table 1.

With a four- or five-option format of responses accompanying each question (e.g., agree strongly, agree, no opinion, disagree, or disagree strongly), responses are quantified only as agreement or disagreement, resulting in a two-point (0, 1) response for each question. This binary method of accounting for subjective responses is common in the creation of such scales and is in direct response to the potential for anchoring: Two people with identical reactions to a statement may evaluate the strength of their reactions differently, one claiming to agree while the other claiming to strongly agree, for example. Thus it is argued and assumed that where a person anchors their scale is more likely to influence the intensity of agreement than whether they agree in principle, which leaves the two-point scale unaffected by anchoring. The sum across all such two-point responses then forms an index of attitude and self-esteem (*ASE*), the variation in which one might expect to contribute to explaining the variation in observed outcomes. Adopting the convention of assigning a point value of one to negative responses, the resulting index is higher where attitude is poor and where self-esteem is low. Although respondent outcomes could be regressed on responses to single questions, doing so strongly suggests that revealing poor attitude or self-esteem through a single response is

insignificant in predicting outcomes. As such a methodology measures the effect of variation in a single response while holding responses to all other questions constant, this is not surprising. In fact, one would anticipate that it is rather through observing systematically negative responses that one is able to separate those with poor attitude and self-esteem from the larger sample of respondents and thereby contribute to explaining more of the variation in observed outcomes.

Of course, from a purely econometric position one recognizes the analysis as one querying whether being distinguished from the rest of the sample through this *ASE* index correlates with subsequent outcomes—earnings, joblessness, job characteristics, and so on—in any systematic way. As such, it is reasonable for one to interpret the index in relation to the sample of respondents, as opposed to absolute and externally comparable to other such indices. In fact, in considering the data, the extent to which the distribution of survey responses is skewed, estimation results may be more a reflection of the extent to which an individual holds positions in conflict with a social norm in a way that would be considered poor attitude or self-esteem. For example, only 1% of NLS-72 respondents claim that being successful in their line of work is not important, and less than 4% believe that they are not able to do things as well as most other people. By singling out those who systematically reveal such positions, the index allows one to query whether such atypical statements correlate with real outcomes, having controlled for a variety of other factors. Of course, to the extent such responses are independent of any variation in outcomes attenuation would yield no such relationship.

Suitability of the Index

Psychologists generally assess the validity of scales on three principles; namely, convergent validity (that a similar index would yield a like assessment of the individual), stability (that the index would deliver a similar assessment if administered again a short time later), and reliability (that responses to each question comprising the index be highly correlated). Cronbach’s alpha, a measure of reliability, is reported for all indices in a subsequent table. However, although measures of convergence and stability are unavailable for the index

TABLE 1
Proportional Breakdown of NLS-72 1972 Attitude and Opinion Responses

Survey Question	Proportional Breakdown of Responses			
	Very Important	Somewhat Important	Not Important	
BQ20. How important is each of the following to you in your life?				
A: Being successful in my line of work. B, N	.850	.141	.010	
B: Finding the right person to marry and having a happy family life. B, N	.832	.128	.040	
C: Having lots of money.	.157	.612	.236	
D: Having strong friendships. B	.815	.171	.014	
E: Being able to find steady work. B, N	.766	.209	.025	
F: Being a leader in my community. B	.119	.448	.434	
G: Being able to give my children better opportunities than I've had. B	.642	.288	.070	
H: Living close to parents and relatives.	.501	.427	.071	
I: Getting away from this part of the country.	.606	.268	.125	
J: Working to correct social and economic inequalities. B	.276	.528	.196	
	Agree Strongly	Agree^b	Disagree	Disagree Strongly
BQ21. How do you feel about each of the following statements?				
A: I take a positive attitude toward myself. ^a B, N	.254	.538	.017	.085
B: Good luck is more important than hard work for success. B	.012	.055	.418	.040
C: I feel I am a person of worth, on an equal plane with others. ^a B, N	.314	.570	.010	.058
D: I am able to do things as well as most other people. ^a B, N	.265	.624	.006	.038
E: Every time I try to get ahead, something or somebody stops me. B	.033	.124	.168	.069
F: Planning only makes a person unhappy since it hardly ever works out anyway. B	.039	.114	.306	.052
G: People who accept their condition in life are happier than those who try to change things. B	.087	.195	.234	.076
H: On the whole, I'm satisfied with myself. ^a B, N	.174	.537	.033	.064
	Not At All	Somewhat	A Great Deal	
BQ17. How much has each of the following interfered with your education at this school?				
A: Courses are too hard.	.621	.363	.016	
B: Teachers don't help me enough.	.538	.394	.068	
C: School doesn't offer the courses I want to take.	.506	.362	.132	
D: My job takes too much time.	.819	.143	.038	
E: Transportation to school is difficult.	.908	.072	.020	
F: Parents aren't interested in my education.	.823	.082	.095	
G: Don't feel part of the school. B, N	.662	.257	.081	
H: Find it hard to adjust to school routine.	.795	.158	.047	
I: Poor teaching.	.489	.417	.093	
J: Worry over money problems.	.731	.198	.071	
K: My own ill health.	.901	.083	.016	
L: Poor study habits.	.454	.433	.113	
M: Family obligations (other than money problems).	.774	.181	.045	
N: Lack of a good place to study at home.	.782	.170	.048	

Notes: In reproducing survey questions BQ20, BQ21 and BQ17, B indicates that the response contributes to broad indices of attitude and self-esteem and N indicates that the response contributes to narrow indices of attitude and self-esteem.

^aQuestion contained in the Rosenberg Self-Esteem Scale.

^b"No Opinion" is excluded from the table and constitutes the remainder.

created here, neither omission should be overly troublesome. If the survey questions had been repeated within two weeks of the initial survey, one would then be able to comment directly on the stability of the index. Because the initial wave of the survey design did not allow for repeating questions, one can surmise that in the worst-case scenario of the index not being stable it must then be a noisier measure of attitude and self-esteem and in that sense less likely to reveal systematic relationship with outcomes. In general, any failure to capture the underlying latent process that leads to attitude and self-esteem deficiencies should work against finding significant negative relationships between the constructed index and outcomes. With that said, in an attempt to demonstrate the robustness of the findings I appeal to sensitivity analyses in two particular dimensions, with estimation results being reported across four alternative indices. In particular, I proceed systematically along two lines.

First, I report results across the content of the index, producing a broad and a narrow index of attitude and self-esteem. From the complete set of relevant survey questions, the broad index discards only those survey questions for which there is no obvious negative connotation to any response. For example, when respondents weigh the importance of "Having lots of money," it seems unreasonable to code either end of the scale—"very important" or "not important"—as poor attitude.¹ Likewise, the importance of "living close to parents and relatives" or "getting away from this part of the country" is similarly ambiguous and difficult to codify. Discarding such questions, the broad definition of attitude and self-esteem includes 16 survey questions, reproduced in Table 1.

From among this broad set of responses, however, it would be reasonable to still question how indicative certain responses are of poor attitude and self-esteem. For example, even though only 7% of respondents claim that "being able to give my children better opportunities than I've had" is not important, such responses might be more due to a respondent having been given generous opportunities him- or herself than to having a poor attitude.

1. Bertrand and Mullainathan (2001) report that 1980 seniors exhibit a positive association between the importance of money and future wages.

Likewise, responses to "being a leader in my community" and to "working to correct social and economic inequalities" might be only weakly related to our intended focus. (A full 43% of respondents, for example, believe that being a leader in their community is not important.) Furthermore, that strong friendships are "not important" may not systematically represent the negative attitude one might initially contend. In fact, in certain types of work, one could imagine that such a response may be indicative of a positive productivity differential. As such, though the most generally measured indicators of attitude and self-esteem are included in the broadly defined index, empirical results are also provided for a narrow definition according to the range of responses included in the index. Under such a rule, a narrowly defined index includes eight survey responses.

The second dimension to the sensitivity analyses is to adjust the intensity threshold required for a response to contribute to the index. For example, following each question in the BQ21 series, respondents are given the opportunity to take a position of "agree strongly," "agree," "no opinion," "disagree," or "disagree strongly." By comparing attitude indices derived from "strong" positions—disagree strongly or agree strongly—to those derived from "at-least-weak" positions—disagree strongly, disagree, agree, or agree strongly—the analysis reveals the robustness of the findings if not how the intensity of reported feelings may matter. Though not strictly consistent with the motivation for a two-point method of quantifying responses, exploiting the richness of the survey design can yield a fuller characterization of any potential relationship. Furthermore, providing sensitivity analysis with respect to the threshold speaks not only to the robustness of relationships but also provides context for evaluating the sensitivity of the reported regularities in the data. With that said, in subsequent discussion, I rely primarily on estimates derived from "at-least-weak" indices because they are robust to potential anchoring. All four indices employed in the analysis are defined in Table 2, along with Cronbach's alpha, a measure of reliability.

Although I do not explicitly model the process that leads to poor attitude or low self-esteem, note that the indices defined above tend to be higher (i.e., poorer attitude

TABLE 2
Attitude and Self-Esteem Index Definitions and Descriptive Statistics

Attitude and Self-Esteem Index (<i>ASE</i>)	Mean (SD)	Proportion Nonzero	Maximum Observed	Maximum Possible	Cronbach's Alpha
Broad definition—at-least-weak position.	4.143	.987	13	16	50.44
Sum of: “Not important” and “Somewhat important” positions on the following questions: BQ20a, BQ20b, BQ20d, BQ20e, BQ20f, BQ20g and BQ20j. “Disagree strongly” and “Disagree” positions on the following questions: BQ21a, BQ21b, BQ21c, BQ21d and BQ21h. “Agree strongly” and “Agree” positions on the following questions: BQ21e, BQ21f and BQ21g. “Somewhat” and “A great deal” positions on the following question: BQ17g.	(2.08)				
Broad definition—strong position.	1.102	.633	11	16	42.19
Sum of: “Not important” position on the following questions: BQ20a, BQ20b, BQ20d, BQ20e, BQ20f, BQ20g and BQ20j. “Disagree strongly” position on the following questions: BQ21a, BQ21b, BQ21c, BQ21d and BQ20h. “Agree strongly” position on the following questions: BQ21e, BQ21f and BQ21g. “A great deal” position on the following question: BQ17g.	(1.19)				
Narrow definition—at-least-weak position.	1.369	.696	7	8	43.52
Sum of: “Not important” and “Somewhat important” positions on BQ20a, BQ20b and BQ20e. “Disagree strongly” and “Disagree” positions on BQ21a, BQ21c, BQ21d and BQ21h. “Somewhat” and “A great deal” positions on BQ17g.	(1.32)				
Narrow definition—strong position.	0.224	.176	6	8	36.39
Sum of: “Not important” position on BQ20a, BQ20b and BQ20e. “Disagree strongly” position on BQ21a, BQ21c, BQ21d and BQ21h. “A great deal” position on BQ17g.	(0.56)				
Independent Variables	Mean (<i>n</i> = 6,533)	SD	Mean (Discarded Observations)		SD
Male	.460	.498	.511		.499
Black	.071	.256	.165		.371
Other	.077	.267	.098		.297
Ln[cognitive ability test]	3.93	.184	3.86		.231
Aptitude: high	.367	.482	.177		.382
Aptitude: low	.170	.375	.396		.489
Ln[percentile rank in class]	4.03	.673	3.83		.844
Parent education: high school	.361	.480	.398		.489
Parent education: some college	.217	.412	.202		.401
Parent education: college	.141	.348	.101		.302
Parent education: graduate degree	.126	.332	.092		.290
Participated in athletics	.562	.496	.437		.496
Only child in family	.037	.190	.031		.174
Youngest child in family	.189	.392	.157		.363
Oldest child in family	.210	.407	.158		.365

Note: Descriptive statistics are for the sample of 6,533 observations in Table 3.

and lower self-esteem) for less able students and for students with low aptitude and, at least marginally, higher where parents are more educated. Attitude and self-esteem are significantly improved for those who participated in high school athletics. Black students seem to reveal lower broadly defined indices, but higher “narrow definition—strong position” indices, as do other nonwhite students. There is generally little explanatory power in such regressors, however, with all characteristics (i.e., gender, race, ability, aptitude, parent education controls, family income, etc.) collectively explaining less than 1% of the variation in the indices. Nonetheless, these explanatory variables are included in subsequent analysis. Where appropriate, controlling for attitude and self-esteem in an intermediate year also ensures that the effect of the early, pre-labor market attitude of interest is captured holding constant that which exists closer to the time the outcome is observed.

With respect to contemporaneous high school performance and attitude, potential endogeneity makes assigning causality difficult. Estimating percentile rank and attitude simultaneously (not reported) suggests that if a significant causal relationship exists at all, it may run from rank to attitude. However, finding valid instruments from among the available data—variables correlated with attitude but not the error—is quite difficult, and confidence in the estimated coefficients of such a model would be suspect. Because the focus of all other outcomes is on the predictive power of pre-labor market attitude and self-esteem on future outcomes, subsequent empirical tests will not suffer from the endogeneity of attitude as would be the case, for example, if one were to focus on contemporaneous relationships, and individuals who did relatively well in the labor market, in turn, revealed better contemporaneous attitudes relative to their cohort.² As previously discussed, however, variation in unobserved but marketable ability may be picked up with variation in the indices. Thus, it remains key that one includes controls for ability. In all subsequent specifications, this is accomplished

with the inclusion of the respondent’s performance on a cognitive ability test, an aptitude measure provided in the NLS-72, rank in high school class, and parent education. The inclusion of parent education should also alleviate any concern that having a more educated parent correlates with a student having added motivation which may otherwise be attributed to better attitude and self-esteem.

Subjective Response Data

Because the use of subjective data has been met with some skepticism in the past (e.g., Freeman 1978), the four alternative indices also provide additional transparency, giving a valuable indication of the robustness of the reported relationships. However, note that it is in particular with respect to the discussion of anchoring that subjective response data is often criticized. For example, one may reasonably assume that the reported attitude is attributable to the true underlying attitude plus some error term. Were the error term simply white noise, attenuation bias would result, making any relationship between attitude and future labor market outcomes appear less significant. One may alternatively hold, however, that this error term not be white noise and instead be correlated with some characteristic of the individual. One should therefore recognize the care needed in interpreting any results based on subjective survey responses.

In short, the estimated coefficients capture the effect of attitude plus the effect of other variables that influence how attitude is reported. Note, however, that one may even presume that the effects of these “other variables” are also related to the individual’s productivity in which case one may even desire that they be included.³ Regardless, Bertrand and Mullainathan (2001) demonstrate that although there is little justification for the use of subjective response data as dependent variables, if measurement error is small subjective measures may reasonably be used to predict outcomes.

2. In short, being predetermined, attitude and self-esteem can be treated, at least asymptotically, as if it were exogenous in the sense that consistent estimates can be obtained when it appears as a regressor (Greene 2003). For further discussion of endogeneity issues with respect to psychological capital and wages see Goldsmith et al. (1997a).

3. Given the particular focus on attitude and self-esteem, to the extent that psychological deficiencies captured by *ASE* indices are themselves dimensions of ability (and not merely proxies for otherwise unobserved ability) one could reasonably hold that policy may be properly motivated as much by what influences how attitude is reported as by what influences attitude itself. Moreover, it is not immediately clear that policy would change if the two were separable.

Sample Construction

The sample used is less than the initial size of the survey for a variety of reasons. Because I am considering the longest time period the data will allow, attrition accounts for the largest decrease in sample size. However, a substantial number of participants did not provide demographic information on such factors as age, race, parent's education, marital status, or school size and type, each of which are used as controls in the following estimation procedures. A combined score from comprehensive tests over mathematics, verbal skills, and reading is used to obtain a measure of cognitive ability that is also unavailable for some respondents, as are high school ranks in some cases. For a small number of remaining individuals (65) the attitude and self-esteem index described is unavailable.⁴ Although the NLS-72 is seemingly ideally suited to investigate the issue at hand, note that the data set does exclude high school dropouts. Of course, such an omission may in general suggest that any relationships found in the remaining sample also hint at more economically significant relationships if poor attitude and self-esteem are positively associated with pregraduation attrition.

III. EMPIRICAL RESULTS

In this section I investigate whether early signs of negative attitude and self-esteem can

4. The NLS-72 consists of 22,652 observations. Restricting the sample to those who had attended and completed high school by 1973 reduces the sample to 22,638. Of these, 10,727 did not respond to the final follow-up survey (1986) used to determine subsequent educational attainment, labor force participation, and earnings. Of those remaining, 4,108 did not provide demographic information on such factors as age, race, parent's education, or marital status, and another 152 did not provide information on school size and type. Finally, for 1,053, there is no information on class rank and/or ability. This leaves a sample size of 6,598. In 65 cases, however, 1972 ASE measures are not able to be constructed due to missing data. This explains the initial sample size of 6,533. Note that after observations with missing values are dropped, the sampling is such that one is not able to generate a nationally representative sample using the weights included with the dataset. However, qualitative results are generally robust to using sampling weights. The most notable difference between those retained and discarded are in gender make-up (e.g., discarded sample is 51% male while the sample of 6,533 is 46% male) and race (16% black versus 7% black). Other measurable differences between the two samples suggest that the retained sample is higher in cognitive ability, aptitude, rank in high-school graduating class and parent income. Sample statistics are reported in Table 2.

warn of elevated propensities for relatively poor performance in subsequent labor-market outcomes.

Subsequent Educational Attainment

To consider the predictive power of high school attitude and self-esteem in future outcomes, I begin by analyzing the years of education attained beyond high school, recorded in the 1986 follow-up survey of the NLS-72. In so doing, I consider the following equation:

$$(1) \quad \ln(1 + E_i) = \alpha_0 + \alpha_1 \ln(1 + ASE_i^{jk}) + \beta' X_i + e_i,$$

where i indexes student respondents, E_i is the respondent's log-number of years of education beyond high school as of 1986, and ASE_i^{jk} is the respondent's index of attitude and self-esteem, where j captures the scope of questions included in the index, $j = \{\text{broad, narrow}\}$, k captures the strength of positions expressed through the attitude and self-esteem index, $k = \{\text{strong, at-least-weak}\}$. X_i is a vector of controls and e_i is an additive error term.⁵ Included as controls are gender, race, the highest education level of parents, birth order, performance in high school, cognitive ability (as measured by a combined score from comprehensive tests over mathematics, verbal skills, and reading), aptitude, and participation in high school athletic programs (as suggested by Barron et al. 2000; Kuhn and Weinberger 2005).

Across all indices, results suggest that respondents who reveal deficiencies in attitude and self-esteem attain significantly fewer years of postsecondary schooling, measured roughly 14 years following graduation. Controlling for many factors that one would expect to correlate with educational attainment, the results in Table 3 suggest that across three of the four indices (accounting for both breadth of definition and strength of position), greater investments in postsecondary education are made by those who reveal more positive attitudes and better self-esteem.⁶ With respect to the sample

5. Results are robust, throughout the analysis, to a linear treatment of attitude and self-esteem.

6. Consistent with the earlier discussion of rank, not controlling for attitude and self-esteem overestimates the effect of percentile rank. There is also some evidence that the marginal effect of education on wages is lower for those with high ASE. However, the evidence is not robust across all measures adopted in this paper and is therefore not reported.

of respondents, pooled sample estimates suggest that one who is at the median of the upper quartile of *ASE* attains up to 15.7% fewer years of postsecondary schooling within 14 years of high school graduation compared to one at the median of the lower quartile.⁷ Furthermore, these results are robust to controlling for unobserved heterogeneity at the school level (in columns 2, 5, 8, and 11), where the coefficients on the *ASE* variables should be interpreted as the effect on educational attainment of a respondent's attitude and self-esteem relative to students within the same high school. This should be encouraging to parents and teachers if it is less costly to discern attitudes and self-esteem relative to a small cohort than to discern attitudes in a larger population.

Though I focus specifically on the effect of pre-labor market attitude and self-esteem, there are at least two reasons one might consider the effect of a similar measure taken somewhere between high school graduation and the 1986 follow-up survey. First, it is not unlikely that attitudes change in the first few years following high school, and this change may nullify any negative outcomes associated with the earlier revealed psychological attributes. Second, to the extent poor attitude and self-esteem are persistent, omitted variable bias may assign to a pre-labor market index a relationship that is actually driven only by its correlation with an intermediate, postgraduation attitude and self-esteem. A like measure is therefore constructed using the 1979 follow-up survey responses.⁸ In short, although the inclusion of the additional measure of attitude and self-esteem does lower the significance of the pre-labor market *ASE*, the initial results are qualitatively robust to the inclusion of this intermediate measure. Controlling for attitude and self-esteem in 1979, a respondent's attitude in 1972 remains a significant predictor of educational attainment in all but the most conservative "narrow definition—strong position" case reported in column (12), where it was also insignificant without the 1979 measure. Although there are significant differences across race and gender in educational attainment on average,

7. From columns 1, 4, 7, and 10 of Table 3, the broad-weak estimated difference is 15.7%; broad-strong, 13.2%; narrow-weak, 7.9%; and, narrow-strong, 4.1%.

8. The correlation coefficients between the 1972 and 1979 attitude measures range from 0.08 to 0.25.

separate estimation procedures reveal no evidence that the marginal effect of attitude differs by race or gender.⁹ Furthermore, though controls for birth order have significant level effects, there is no evidence that the marginal effect of attitude differs by birth order.

Although not immediately apparent in the comparison of coefficient estimates, the results of column (1) suggest that within the sample, one who has relatively low ability but good attitude invests an economically significant 8.5% more in postsecondary education than one who has relatively high ability but poor attitude. This is at least suggestive that in terms of outcomes, one is better off having low ability and good attitude than high ability and poor attitude. For all subsequent results, indications of the relative importance of attitude are summarized later.

Subsequent Labor Market Status

To identify any relationship between attitude and self-esteem upon exiting high school and subsequent labor-market status, I look at both the likelihood that an individual is working for pay and, separately, at the likelihood that an individual is unemployed conditional on labor force participation. Both measures are available in the 1986 follow-up survey, when survey participants are directly questioned regarding their activities during the first week of February. Respondents who answered that they were not working for pay were then given a series of follow-up questions that reveal their true unemployment status. Considering the likelihood of working for pay, I estimate the following logit model:

$$(2) \text{ Prob}(W_i = 1) = \Phi(\alpha_0 + \alpha_1 \ln(1 + ASE_i) + \beta' X_i + e_i),$$

where W_i indicates if the respondent was working for pay 14 years following high school (1986), X_i is a vector of controls, and Φ is a logistic cumulative distribution function.

Across the menu of indices reported in Table 4, the estimation of equation (2) clearly suggests that the likelihood of working for pay 14 years following high school graduation is

9. See Ajzen and Fishbein (1980) for some discussion of attitudes and behavioral *intention* as they relate to behavior.

TABLE 3
The Effect of Poor Attitude in High School (1972) on Years of Formal Education (1986)

Independent Variable	Broad Attitude and Self-Esteem Index						Narrow Attitude and Self-Esteem Index					
	At-Least-Weak Positions			Strong Positions			At-Least-Weak Positions			Strong Positions		
	OLS ^a	Control for School-Specific Unobserved Heterogeneity	Control for Intermediate Measure of ASE	OLS ^a	Control for School-Specific Unobserved Heterogeneity	Control for Intermediate Measure of ASE	OLS ^a	Control for School-Specific Unobserved Heterogeneity	Control for Intermediate Measure of ASE	OLS ^a	Control for School-Specific Unobserved Heterogeneity	Control for Intermediate Measure of ASE
Ln[1 + ASE Index] 1972	-0.113 (6.58)***	-0.102 (5.63)***	-0.092 (5.19)***	-0.085 (5.65)***	-0.076 (5.00)***	-0.057 (3.77)***	-0.039 (2.84)***	-0.035 (2.49)**	-0.027 (1.95)*	-0.040 (1.65)	-0.030 (1.20)	-0.033 (1.35)
Ln[1 + ASE Index] 1979			-0.106 (5.26)***			-0.122 (7.87)***			-0.071 (4.62)***			-0.119 (3.64)***
Male	0.118 (8.18)***	0.125 (7.70)***	0.111 (7.74)***	0.119 (8.24)***	0.126 (7.77)***	0.113 (7.86)***	0.116 (7.98)***	0.124 (7.57)***	0.107 (7.36)***	0.118 (8.18)***	0.127 (7.76)***	0.113 (7.84)***
Race: Black	0.326 (9.17)***	0.290 (6.99)***	0.325 (9.16)***	0.330 (9.25)***	0.294 (7.11)***	0.321 (8.97)***	0.335 (9.30)***	0.297 (7.16)***	0.333 (9.28)***	0.337 (9.33)***	0.299 (7.19)***	0.338 (9.40)***
Race: Other	0.068 (2.36)**	0.023 (0.68)	0.066 (2.32)**	0.068 (2.40)**	0.021 (0.63)	0.062 (2.18)**	0.067 (2.31)**	0.021 (0.61)	0.065 (2.25)**	0.068 (2.35)**	0.020 (0.59)	0.070 (2.42)**
Ln[Cognitive ability test]	0.085 (2.00)**	0.149 (2.81)***	0.080 (1.90)*	0.087 (2.04)**	0.152 (2.85)***	0.083 (1.95)*	0.084 (1.99)**	0.151 (2.83)***	0.079 (1.85)*	0.088 (2.07)**	0.155 (2.91)***	0.086 (2.02)**
Aptitude: High	0.338 (19.03)***	0.283 (15.05)***	0.344 (19.33)***	0.337 (19.00)***	0.283 (15.03)***	0.343 (19.39)***	0.340 (19.09)***	0.285 (15.08)***	0.344 (19.26)***	0.338 (18.98)***	0.283 (15.01)***	0.338 (19.01)***
Aptitude: Low	-0.303 (12.93)***	-0.259 (10.62)***	-0.299 (12.75)***	-0.307 (13.10)***	-0.263 (10.75)***	-0.304 (13.07)***	-0.310 (13.15)***	-0.265 (10.86)***	-0.311 (13.20)***	-0.309 (13.11)***	-0.265 (10.82)***	-0.306 (13.01)***
Ln[Percentile rank in class]	0.169 (12.73)***	0.210 (15.56)***	0.168 (12.64)***	0.170 (12.78)***	0.210 (15.58)***	0.168 (12.65)***	0.173 (12.96)***	0.214 (15.79)***	0.172 (12.82)***	0.175 (13.10)***	0.215 (15.92)***	0.173 (12.89)***
Parent education: High school	0.120 (4.67)***	0.117 (4.79)***	0.118 (4.60)***	0.123 (4.79)***	0.120 (4.92)***	0.123 (4.77)***	0.119 (4.61)***	0.117 (4.77)***	0.117 (4.53)***	0.119 (4.63)***	0.118 (4.82)***	0.118 (4.56)***

Parent education:	0.335	0.313	0.331	0.336	0.314	0.331	0.333	0.313	0.329	0.332	0.313	0.331
Some college	(12.49)***	(11.44)***	(12.31)***	(12.49)***	(11.47)***	(12.31)***	(12.44)***	(11.41)***	(12.24)***	(12.37)***	(11.40)***	(12.30)***
Parent education:	0.449	0.397	0.447	0.450	0.397	0.447	0.445	0.396	0.442	0.444	0.396	0.443
College	(15.10)***	(12.64)***	(15.06)***	(15.15)***	(12.63)***	(15.06)***	(14.95)***	(12.57)***	(14.81)***	(14.90)***	(12.58)***	(14.86)***
Parent education:	0.517	0.434	0.515	0.520	0.437	0.516	0.518	0.437	0.515	0.517	0.437	0.516
Graduate degree	(17.27)***	(13.57)***	(17.18)***	(17.27)***	(13.63)***	(17.16)***	(17.26)***	(13.62)***	(17.11)***	(17.14)***	(13.62)***	(17.11)***
Participant in	0.126	0.133	0.126	0.127	0.134	0.122	0.134	0.140	0.132	0.137	0.142	0.136
athletics	(8.24)***	(8.16)***	(8.24)***	(8.25)***	(8.18)***	(7.92)***	(8.73)***	(8.57)***	(8.65)***	(8.91)***	(8.75)***	(8.86)***
Missing athletic	0.010	0.047	0.005	-0.002	0.039	-0.019	0.007	0.047	-0.003	-0.003	0.036	-0.005
participation ^b	(0.08)	(0.36)	(0.04)	(0.02)	(0.29)	(0.15)	(0.06)	(0.35)	(0.02)	(0.02)	(0.28)	(0.04)
Only child in family	0.177	0.172	0.174	0.177	0.169	0.176	0.179	0.171	0.177	0.178	0.171	0.178
	(4.94)***	(4.21)***	(4.84)***	(4.96)***	(4.14)***	(4.93)***	(5.00)***	(4.20)***	(4.97)***	(4.99)***	(4.18)***	(4.97)***
Youngest child in	0.098	0.095	0.096	0.098	0.095	0.098	0.100	0.096	0.097	0.100	0.097	0.098
family	(4.93)***	(4.65)***	(4.83)***	(4.96)***	(4.65)***	(4.95)***	(5.01)***	(4.69)***	(4.86)***	(5.02)***	(4.71)***	(4.94)***
Oldest child in	0.033	0.039	0.034	0.033	0.039	0.035	0.033	0.040	0.035	0.034	0.041	0.034
family	(1.76)*	(1.99)**	(1.85)*	(1.77)*	(1.99)**	(1.90)*	(1.79)*	(2.03)**	(1.89)*	(1.82)*	(2.07)**	(1.87)*
Missing 1979			-0.049			-0.048			-0.047			-0.047
Attitude Index ^b			(1.47)			(1.44)			(1.41)			(1.40)
Constant	-0.274	-0.679	-0.125	-0.414	-0.804	-0.313	-0.442	-0.835	-0.378	-0.487	-0.883	-0.457
	(1.55)	(3.13)***	(0.71)	(2.37)**	(3.76)***	(1.80)*	(2.52)**	(3.88)***	(2.15)**	(2.80)***	(4.12)***	(2.62)***
R ²	0.33	0.30	0.33	0.32	0.29	0.33	0.32	0.29	0.33	0.32	0.29	0.32
Observations/groups	6533	6533/904	6533	6533	6533/904	6533	6533	6533/904	6533	6533	6533/904	6533

Notes: The dependent variable is Log[1 + respondents years of education beyond high school]. The within-sample mean number of years beyond high school is 2.9 years. Absolute values of *t*-statistics are in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%. Results are qualitatively robust to the inclusion of controls for high school quality/resources such as faculty-to-student ratios and the number of library books per student and to using educational attainment as of 1979 as an alternative dependent variable. Results also robust to *ASE* entered linearly and to permutations of *ASE* in terms of content.

^aErrors are assumed to be independent across observations from different high schools but not necessarily across observations within each high school.

^bMissing observations are controlled for with an indicator variable whenever the intermediate measure is missing. However, results are robust to the sample of observations for which this information is available.

TABLE 4
The Effect of Poor Attitude and Self-Esteem in High School (1972) on Subsequent Work Status (1986)

Independent Variable	Working for Pay							
	Broad Attitude and Self-Esteem Oindex				Narrow Attitude and Self-Esteem Oindex			
	At-Least-Weak Positions		Strong Positions		At-Least-Weak Positions		Strong Positions	
	Logit (1)	Control for Intermediate Measure of <i>ASE</i> (2)	Logit (3)	Control for Intermediate Measure of <i>ASE</i> (4)	Logit (5)	Control for Intermediate Measure of <i>ASE</i> (6)	Logit (7)	Control for Intermediate Measure of <i>ASE</i> (8)
Ln[1 + <i>ASE</i> Index], 1972	-0.203 (2.42)**	-0.150 (1.74)*	-0.181 (2.68)***	-0.152 (2.20)**	-0.236 (3.81)***	-0.180 (2.85)***	-0.209 (1.96)**	-0.171 (1.60)
Ln[1 + <i>ASE</i> Index], 1979		-0.272 (2.65)***		-0.140 (1.87)*		-0.366 (5.46)***		-0.717 (5.80)***
Male	1.436 (18.07)***	1.423 (17.96)***	1.439 (18.10)***	1.435 (18.03)***	1.424 (17.96)***	1.383 (17.42)***	1.440 (18.12)***	1.411 (17.67)***
Race: Black	0.316 (2.27)**	0.315 (2.24)**	0.318 (2.28)**	0.315 (2.25)**	0.326 (2.34)**	0.304 (2.17)**	0.340 (2.44)**	0.332 (2.37)**
Race: Other	-0.037 (0.29)	-0.038 (0.30)	-0.037 (0.30)	-0.041 (0.33)	-0.039 (0.31)	-0.046 (0.37)	-0.033 (0.26)	-0.016 (0.13)
Ln[Cognitive ability test]	0.339 (1.81)*	0.328 (1.75)*	0.336 (1.79)*	0.333 (1.78)*	0.316 (1.69)*	0.286 (1.52)	0.333 (1.78)*	0.318 (1.70)*
Aptitude: High	-0.043 (0.55)	-0.025 (0.31)	-0.045 (0.57)	-0.035 (0.45)	-0.033 (0.42)	-0.005 (0.07)	-0.046 (0.59)	-0.032 (0.41)

Aptitude: Low	-0.163 (1.65)*	-0.154 (1.54)	-0.170 (1.72)*	-0.169 (1.70)*	-0.178 (1.81)*	-0.187 (1.88)*	-0.171 (1.73)*	-0.157 (1.58)
Ln[Percentile rank in class]	0.082 (1.54)	0.084 (1.56)	0.083 (1.56)	0.081 (1.51)	0.075 (1.41)	0.072 (1.34)	0.087 (1.63)	0.078 (1.44)
Ln[1 + Yrs of educ beyond high school, 1986]	0.258 (5.00)***	0.247 (4.75)***	0.258 (5.01)***	0.247 (4.74)***	0.264 (5.13)***	0.242 (4.63)***	0.268 (5.21)***	0.250 (4.83)***
Married, 1986	0.444 (2.02)**	0.445 (2.03)**	0.455 (2.08)**	0.459 (2.10)**	0.455 (2.08)**	0.465 (2.13)**	0.454 (2.07)**	0.455 (2.09)**
Male × Married	-0.540 (1.10)	-0.557 (1.13)	-0.540 (1.09)	-0.548 (1.11)	-0.561 (1.14)	-0.579 (1.17)	-0.536 (1.09)	-0.566 (1.15)
Resided in central city, 1986	0.023 (0.29)	0.020 (0.25)	0.029 (0.36)	0.032 (0.39)	0.027 (0.33)	0.024 (0.30)	0.027 (0.33)	0.026 (0.32)
Missing 1979 Attitude Index ^a		-0.118 (0.76)		-0.116 (0.75)		-0.130 (0.84)		-0.125 (0.81)
Constant	-0.655 (0.85)	-0.268 (0.35)	-0.852 (1.13)	-0.738 (0.97)	-0.685 (0.91)	-0.357 (0.47)	-0.949 (1.26)	-0.763 (1.01)
	chi2(12) = 398.7	chi2(14) = 400.7	chi2(12) = 401.2	chi2(14) = 400.8	chi2(12) = 404.4	chi2(14) = 435.9	chi2(12) = 398.8	chi2(14) = 439.1
Observations	6533	6533	6533	6533	6533	6533	6533	6533

Notes: The binary dependent variable equals 1 if the respondent reports working for pay at the time of the 1986 follow-up survey, and is otherwise equal to 0. The within-sample mean of the dependent variable is 0.810. Absolute values of *z*-statistics are in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%. Results are robust to the inclusion of controls for high-school quality/resources such as faculty-to-student ratios and the number of library books per student, and to the inclusion of controls for high-school athletic participation. Results also robust to *ASE* entered linearly and to permutations of *ASE* in terms of content. Controlling for unobserved heterogeneity at the high-school level yields qualitatively similar results. However, the fixed-effect results are not reported, as the sample size drops considerably (to 4,907) due to lack of variation within groups.

^aMissing observations are controlled for with an indicator variable whenever the intermediate measure is missing. However, results are robust to the sample of observations for which this information is available.

significantly lower for those revealing poor attitude and self-esteem in high school, controlling for gender, race, ability, marital status, and educational attainment, among other characteristics. Comparing the predictions at the medians of the lower and upper quartiles of *ASE* suggests that those with poor attitude and self-esteem are between 11% and 28% more likely to be not working for pay.¹⁰ With one exception, these results are again robust to both high school fixed effects and to the inclusion of the control for *ASE* in intermediate years taken from the 1979 follow-up survey. Further, consider from the results of column (1) that the effects of attitude are sufficiently strong that having relatively low ability is more than completely made up for with relatively good attitude and self-esteem.

Of the 6,533 respondents, 5,290 were working for pay in February 1986. However, not all in the 1,243 difference were active labor market participants. In follow-up survey questions, 230 respondents clearly revealed themselves to be in the labor market, either actively seeking work or awaiting recall. Although there is a negative relationship between poor attitude and self-esteem and labor force participation, estimating a sample selection mechanism to account for this in the unemployment equation does not lead to significantly different results—the selection mechanism is rejected by the data. Thus, I estimate a logit model of a form equivalent to that in equation (2), but for the likelihood of being unemployed for the sample of 5,520 for which this information is certain.

According to the results reported in Table 5, the degree to which respondents reveal a negative pre-labor market attitude and self-esteem is strongly correlated with their likelihood of being unemployed later in life. Across all indices, where one has a poor attitude and self-esteem, one is more likely to be unemployed 14 years out. In fact, movement from the median of the lower quartile to the median of the upper quartile increases the likelihood of being unemployed by between 31% to 68%—equivalent to roughly half of the relative increases predicted for race differentials which range from 76–86% between black

and white respondents.¹¹ Although there are significant differences across race and gender in employment status on average, separate estimation procedures again reveal no evidence that the marginal effect of attitude differs by race or gender.

Subsequent Wages

Of the 5,290 respondents working for pay at the time of the 1986 survey, 84% also report their weekly wages through follow-up questions. Though the results are robust to using the sample of these 4,454 respondents, in an attempt to limit the influence of potential measurement error, I report the results only for a subsample of 4,382 weekly wages falling strictly between the 1st and 99th percentile, excluding unreasonably small and large reported wages.¹² No loss of significance or switching of sign occurs in any estimated coefficient where the full sample is considered. To the contrary, significance is gained by using the full sample.

Before turning to results, recall that poor attitude and self-esteem have previously been associated with a higher likelihood of joblessness and, as such, controlling for the selection bias in the wage equation may yield qualitatively different results. In short, this does not appear to be the case. Although there is a negative relationship between working for pay and poor attitude and self-esteem, estimating a selection mechanism to account for this in the estimation of weekly wages is rejected by the data when narrow definitions of poor attitude are adopted. Though the selection mechanism is not rejected for broad definitions, a Heckman procedure accounting for selection yields only slightly stronger and more negative coefficient estimates on the variable of interest, and I therefore report the more conservative estimates.

11. From columns 1, 3, 5, and 7 of Table 5, movement in the broad-weak attitude measure reveals a difference of 47.0%; wide-strong, 31.6%; narrow-weak, 63.8%; and, narrow-strong, 35.3%. These results are also robust to controlling for unobserved heterogeneity at the school level. However, as the sample size drops considerably due to lack of variation within groups, results are not reported.

12. Forty-seven observations fall below the 1st percentile, with reported minimum weekly earnings of \$0.50, mean weekly earnings of \$45.97, and maximum weekly earnings of \$100.10. Forty-six observations fall above the 99th percentile, with reported minimum weekly earnings of \$1,442.31, mean weekly earnings of \$207,638, and maximum weekly earnings of \$2,016,000. As these extreme values seem implausible, it is likely that this conservative approach will yield more reasonable estimates.

10. From columns 1, 3, 5, and 7 of Table 4, the broad-weak attitude measure reveals a difference of 16.2%; broad-strong, 16.2%; narrow-weak, 28.1%; and, narrow-strong, 11.4%.

Regressing log-weekly wages on attitude indices suggests that respondents who reveal psychological deficiencies in high school do earn significantly less 14 years later, conditional on employment. In terms of how poor attitude and self-esteem might influence future wages, consider that the influence of attitude is largest when not controlling for ability, aptitude, or performance in high school. With each additional control, the effect of *ASE* diminishes, suggesting that the raw difference in wages across youthful *ASE* can be in part explained by ability and/or effort in high school. However, the influence of attitude and self-esteem also drops with the addition of post-high school educational attainment, consistent with those having poor attitudes and self-esteem as youth subsequently investing less effort in this dimension. Together, this suggests that the mechanism through which wages are influenced is some combination of both effort in high school and subsequent investment behavior, which would be picked up with heterogeneity in attitudes were such investments not controlled for directly.¹³ The predictive power of *ASE* after controlling for other ability attributes again points to the potential for a direct psychological ability captured in the created indices. As reported in column (1) of Table 6, controlling for, among other characteristics, gender, race, ability, educational attainment, tenure, age, and marital status, and participation in high school athletics, a person at the median of the upper quartile of the “broad definition—at-least-weak position” index receives weekly wages 4.5% lower than those received by a person at the median of the lower quartile. Adopting

13. To the extent those with early displays of poor attitude and self-esteem subsequently find themselves less satisfied with their employment situations, one could also imagine a productivity differential that could explain, in part, the wage gap observed in the data. Though there are well-documented shortcomings in using subjective response variables as dependant variables in regression analysis (e.g., see Bertrand and Mullainathan 2001; Hamermesh 2004) there remain large literatures—including that on job satisfaction—that continue to rely on such data for analysis. Of the 5,290 respondents working for pay 1986, 5,103 provide responses to questions regarding their level of job satisfaction. Results of ordered logit models of job satisfaction as determined by attitude and self-esteem as youth are available on request. In short, in 10 of the 12 attributes of job satisfaction recorded in the NLS-72, those who reveal negative attitudes or low self-esteem in high school are more likely to be dissatisfied with respect to their employment situation 14 years later.

a narrow definition of *ASE*, as in column (7), the same predicted difference is 7.9%.¹⁴

As noted earlier, controls for height are not available among the data. However, the finding of Persico et al. (2004) that the wage premium associated with height is insignificant when one controls for self-esteem is encouraging in this regard. In terms of robustness, it is also noted that the estimation results are again robust to controlling for unobserved heterogeneity that is specific to the respondent’s high school. To allow for the possibility that the effect of *ASE* differs by race or gender, I reestimate the model with additional interactions and find no systematic differences. Although there are significant differences across gender in weekly wages on average, separate estimation procedures reveal no evidence that the marginal effect of attitude differs by gender, race, or birth order. Furthermore, there are no significant level effects associated with birth order.

Although these results suggest that attitude in one’s youth matters with respect to eventual earnings potential, note that there are two important caveats that should keep one from interpreting these results too broadly. First, attitude 7 years following high school is, in general, a strong predictor of earnings 14 years following high school. Second, though point estimates remain negative, estimates based on the “broad definition—strong position” attitude composite, reported in columns (4) through (6), are insignificant.¹⁵

Subsequent Job Characteristics

Beyond those considered, there are other measurable outcomes that one might also expect to depend on attitude and self-esteem. Specifically, contingent on employment, it is interesting to consider one’s type of work and whether there are any discernible relationships between earlier attitude and self-esteem and these activities suggestive of deeper, more structural repercussions. Of the 5,290 respondents working for pay in February 1986,

14. Using broadly defined *ASE*, the corresponding predicted weekly wages are \$420.12 at the median of the lower quartile and \$401.36 at the median of the upper quartile. Narrowly defined *ASE* yields corresponding predicted weekly wages of \$427.53 at the median of the lower quartile and \$393.85 at the median of the upper quartile.

15. Directly controlling for change in *ASE* between 1972 and 1979 suggests that under the narrow definitions of attitude, the extent to which attitude “improves” over the seven years is associated with higher weekly wages in 1986.

TABLE 5
The Effect of Poor Attitude and Self-Esteem in High School (1972) on Subsequent Unemployment Status (1986)

Independent Variable	Broad Attitude and Self-Esteem Index				Narrow Attitude and Self-Esteem Index			
	At-Least-Weak Positions		Strong Positions		At-Least-Weak Positions		Strong Positions	
	Logit (1)	Control for Intermediate Measure of <i>ASE</i> (2)	Logit (3)	Control for Intermediate Measure of <i>ASE</i> (4)	Logit (5)	Control for Intermediate Measure of <i>ASE</i> (6)	Logit (7)	Control for Intermediate Measure of <i>ASE</i> (8)
Ln[1 + <i>ASE</i> Index], 1972	0.482 (2.59)***	0.436 (2.21)**	0.266 (1.91)*	0.210 (1.47)	0.378 (3.08)***	0.326 (2.56)**	0.466 (2.51)**	0.436 (2.36)**
Ln[1 + <i>ASE</i> Index], 1979		0.226 (1.01)		0.275 (1.68)*		0.319 (2.30)**		0.511 (2.01)**
Male	-0.142 (1.01)	-0.129 (0.91)	-0.144 (1.02)	-0.133 (0.95)	-0.128 (0.91)	-0.091 (0.64)	-0.152 (1.08)	-0.130 (0.92)
Race: Black	0.670 (3.14)***	0.678 (3.14)***	0.657 (3.08)***	0.685 (3.17)***	0.641 (3.01)***	0.655 (3.05)***	0.610 (2.85)***	0.612 (2.84)***
Race: Other	0.312 (1.29)	0.314 (1.30)	0.312 (1.29)	0.325 (1.34)	0.317 (1.31)	0.325 (1.34)	0.304 (1.25)	0.289 (1.19)
Ln[Cognitive ability test]	-0.687 (2.00)**	-0.682 (1.99)**	-0.702 (2.05)**	-0.694 (2.02)**	-0.666 (1.91)*	-0.663 (1.88)*	-0.684 (2.01)**	-0.685 (2.00)**
Aptitude: High	0.230 (1.24)	0.217 (1.18)	0.232 (1.26)	0.211 (1.14)	0.209 (1.13)	0.188 (1.02)	0.231 (1.26)	0.220 (1.20)

Aptitude: Low	0.238 (1.32)	0.235 (1.31)	0.257 (1.44)	0.259 (1.44)	0.269 (1.51)	0.289 (1.62)	0.256 (1.43)	0.245 (1.37)
Ln[Percentile rank in class]	-0.080 (0.94)	-0.084 (0.96)	-0.089 (1.04)	-0.086 (0.99)	-0.076 (0.90)	-0.081 (0.93)	-0.089 (1.02)	-0.086 (0.97)
Ln[1 + Yrs of education beyond high school, 1986]	-0.551 (5.03)***	-0.544 (4.96)***	-0.561 (5.18)***	-0.543 (5.00)***	-0.566 (5.24)***	-0.553 (5.10)***	-0.569 (5.29)***	-0.565 (5.24)***
Married, 1986	0.690 (2.17)**	0.700 (2.20)**	0.669 (2.11)**	0.665 (2.09)**	0.674 (2.15)**	0.674 (2.14)**	0.677 (2.14)**	0.677 (2.13)**
Male × Married	-1.532 (1.40)	-1.528 (1.40)	-1.546 (1.42)	-1.546 (1.42)	-1.512 (1.39)	-1.517 (1.39)	-1.570 (1.44)	-1.572 (1.43)
Resided in central city 1986	-0.321 (2.01)**	-0.320 (2.00)**	-0.330 (2.07)**	-0.334 (2.09)**	-0.328 (2.05)**	-0.327 (2.05)**	-0.325 (2.04)**	-0.322 (2.02)**
Missing 1979 Attitude Index ^a		-0.048 (0.16)		-0.040 (0.13)		-0.065 (0.22)		-0.058 (0.20)
Constant	-0.488 (0.34)	-0.772 (0.55)	0.215 (0.16)	-0.005 (0.00)	-0.092 (0.07)	-0.242 (0.17)	0.248 (0.18)	0.199 (0.15)
	chi2(12) = 96.6	chi2(14) = 97.1	chi2(12) = 92.9	chi2(14) = 92.9	chi2(12) = 99.9	chi2(14) = 104.1	chi2(12) = 95.9	chi2(14) = 101.1
Observations	5520	5520	5520	5520	5520	5520	5520	5520

Notes: The binary dependent variable equals 1 if the respondent is unemployed at the time of the 1986 follow-up survey, and is otherwise equal to 0. The within-sample mean of the dependent variable is 0.042. Absolute values of z-statistics are in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%. Results are robust to the inclusion of controls for high school quality/resources such as faculty-to-student ratios and the number of library books per student, and to the inclusion of controls for high school athletic participation. Results also robust to *ASE* entered linearly and to permutations of *ASE* in terms of content. Controlling for unobserved heterogeneity at the high school level yields qualitatively similar results. However, the fixed effect results are not reported, as the sample size drops considerably (to 1,353) due to lack of variation within groups.

^aMissing observations are controlled for with an indicator variable whenever the intermediate measure is missing. However, results are robust to the sample of observations for which this information is available.

TABLE 6
The Effect of Poor Attitude and Self-Esteem in High School (1972) on Subsequent Weekly Wages (1986)

Independent Variable	Broad Attitude and Self-Esteem Index						Narrow Attitude and Self-Esteem Index					
	At-Least-Weak Positions			Strong Positions			At-Least-Weak Positions			Strong Positions		
	OLS ^a (1)	Control for School-Specific Unobserved Heterogeneity (2)	Control for Intermediate Measure of ASE (3)	OL ^a (4)	Control for School-Specific Unobserved Heterogeneity (5)	Control for Intermediate Measure of ASE (6)	OLS ^a (7)	Control for School-Specific Unobserved Heterogeneity (8)	Control for Intermediate Measure of ASE (9)	OLS ^a (10)	Control for School-Specific Unobserved Heterogeneity (11)	Control for Intermediate Measure of ASE (12)
Ln[1 + ASE Index] 1972	-0.054 (3.02)***	-0.044 (2.25)**	-0.038 (2.04)**	-0.023 (1.59)	-0.025 (1.51)	-0.020 (1.32)	-0.059 (4.36)***	-0.051 (3.33)***	-0.041 (2.97)***	-0.064 (2.63)***	-0.050 (1.86)*	-0.051 (2.10)**
Ln[1 + ASE Index] 1979			-0.083 (3.81)***			-0.018 (1.06)			-0.117 (7.28)***			-0.238 (6.19)***
Male	0.475 (28.49)***	0.473 (26.18)***	0.472 (28.22)***	0.475 (28.53)***	0.474 (26.19)***	0.475 (28.48)***	0.472 (28.48)***	0.470 (26.03)***	0.462 (28.10)***	0.475 (28.57)***	0.474 (26.21)***	0.470 (28.05)***
Race: Black	0.010 (0.32)	-0.031 (0.71)	0.014 (0.49)	0.012 (0.42)	-0.029 (0.65)	0.018 (0.61)	0.014 (0.47)	-0.029 (0.66)	0.017 (0.59)	0.018 (0.61)	-0.025 (0.57)	0.024 (0.80)
Race: Other	0.070 (2.41)**	0.043 (1.09)	0.068 (2.36)**	0.071 (2.42)**	0.043 (1.09)	0.070 (2.41)**	0.070 (2.40)**	0.044 (1.11)	0.067 (2.32)**	0.072 (2.47)**	0.044 (1.13)	0.078 (2.68)***
Ln[Cognitive ability test]	0.172 (3.64)***	0.285 (4.81)***	0.169 (3.61)***	0.174 (3.67)***	0.286 (4.83)***	0.174 (3.69)***	0.165 (3.50)***	0.279 (4.70)***	0.156 (3.36)***	0.173 (3.67)***	0.286 (4.83)***	0.172 (3.66)***
Aptitude: High	0.071 (3.90)***	0.052 (2.61)***	0.077 (4.18)***	0.070 (3.84)***	0.052 (2.60)***	0.072 (3.92)***	0.075 (4.09)***	0.055 (2.73)***	0.082 (4.49)***	0.070 (3.83)***	0.052 (2.59)***	0.073 (3.99)***
Aptitude: Low	-0.062 (2.66)***	-0.031 (1.12)	-0.060 (2.59)***	-0.064 (2.75)***	-0.033 (1.17)	-0.064 (2.73)***	-0.066 (2.82)***	-0.035 (1.24)	-0.071 (3.05)***	-0.063 (2.70)***	-0.032 (1.16)	-0.060 (2.59)***
Ln[Percentile rank in class]	0.007 (0.59)	0.020 (1.33)	0.006 (0.54)	0.008 (0.68)	0.021 (1.34)	0.006 (0.51)	0.006 (0.49)	0.020 (1.29)	0.006 (0.55)	0.008 (0.64)	0.021 (1.36)	0.005 (0.42)
Ln[1 + Yrs of education post high school, '85]	0.184 (14.61)***	0.152 (10.89)***	0.181 (14.21)***	0.186 (14.75)***	0.153 (10.98)***	0.184 (14.49)***	0.185 (14.78)***	0.152 (10.93)***	0.179 (14.22)***	0.186 (14.82)***	0.153 (11.04)***	0.183 (14.60)***

Tenure at job	0.078 (5.13)***	0.070 (4.51)***	0.079 (5.18)***	0.079 (5.16)***	0.070 (4.54)***	0.078 (5.16)***	0.078 (5.15)***	0.070 (4.55)***	0.080 (5.32)***	0.078 (5.17)***	0.070 (4.54)***	0.077 (5.12)***
Tenure ²	-0.004 (2.74)***	-0.003 (1.91)*	-0.005 (2.80)***	-0.004 (2.75)***	-0.003 (1.94)*	-0.005 (2.75)***	-0.005 (2.79)***	-0.003 (1.97)**	-0.005 (3.02)***	-0.005 (2.76)***	-0.003 (1.94)*	-0.005 (2.77)***
Age	-0.001 (0.00)	1.197 (1.18)	0.025 (0.03)	0.000 (0.00)	1.178 (1.16)	-0.009 (0.01)	-0.043 (0.05)	1.169 (1.15)	-0.044 (0.05)	-0.015 (0.02)	1.161 (1.14)	-0.103 (0.12)
Age ²	-0.001 (0.05)	-0.019 (1.22)	-0.001 (0.07)	-0.001 (0.05)	-0.019 (1.20)	-0.000 (0.04)	0.000 (0.00)	-0.019 (1.19)	0.000 (0.01)	-0.000 (0.03)	-0.018 (1.18)	0.001 (0.08)
Married	0.023 (0.41)	-0.014 (0.23)	0.023 (0.41)	0.026 (0.46)	-0.010 (0.16)	0.027 (0.49)	0.024 (0.43)	-0.013 (0.22)	0.026 (0.48)	0.026 (0.46)	-0.010 (0.17)	0.025 (0.45)
Male × Married	-0.049 (0.53)	0.049 (0.50)	-0.054 (0.60)	-0.048 (0.53)	0.046 (0.47)	-0.052 (0.57)	-0.053 (0.58)	0.047 (0.48)	-0.051 (0.58)	-0.046 (0.50)	0.048 (0.49)	-0.050 (0.55)
Resided in central city, 1986	0.029 (1.56)	-0.011 (0.41)	0.029 (1.57)	0.030 (1.63)	-0.010 (0.37)	0.030 (1.66)*	0.029 (1.59)	-0.013 (0.46)	0.030 (1.66)*	0.029 (1.60)	-0.010 (0.38)	0.031 (1.70)*
Participant in athletics	-0.000 (0.02)	0.012 (0.69)	-0.000 (0.00)	0.003 (0.18)	0.014 (0.78)	0.002 (0.10)	-0.002 (0.13)	0.011 (0.62)	-0.003 (0.17)	0.003 (0.19)	0.015 (0.86)	0.001 (0.08)
Missing athletic participation ^b	-0.021 (0.20)	0.042 (0.30)	-0.038 (0.34)	-0.033 (0.30)	0.037 (0.26)	-0.042 (0.38)	-0.015 (0.14)	0.051 (0.35)	-0.031 (0.28)	-0.037 (0.34)	0.030 (0.21)	-0.037 (0.36)
Missing 1979 Attitude Index ^b			-0.083 (2.62)***			-0.082 (2.59)***			-0.080 (2.52)**			-0.079 (2.48)**
Constant	5.354 (0.38)	-14.581 (0.88)	5.023 (0.36)	5.248 (0.37)	-14.325 (0.87)	5.410 (0.39)	6.013 (0.43)	-14.124 (0.86)	6.074 (0.43)	5.477 (0.39)	-14.065 (0.85)	6.932 (0.50)
R ²	0.29	0.28	0.30	0.29	0.28	0.29	0.29	0.28	0.30	0.29	0.28	0.30
Observations/groups	4361	4361/889	4361	4361	4361/889	4361	4361	4361/889	4361	4361	4361/889	4361

Notes: The dependent variable is Log[respondent's reported weekly earnings]. The within-sample mean of the dependent variable is \$410.98. Absolute values of *t*-statistics are in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%. Results are robust to the inclusion of controls for high school quality/resources such as faculty-to-student ratios and the number of library books per student.

^aErrors are assumed to be independent across observations from different high schools but not necessarily across observations within each high school.

^bMissing observations are controlled for with an indicator variable whenever the intermediate measure is missing. However, results are robust to the sample of observations for which this information is available.

4,992 provide responses to survey questions regarding the time they spend on four different categories of activities in an average work day.¹⁶ Further, 5,076 respondents provide responses to a question regarding the supervision they are under and the discretion they are given in their position.

Considering these responses in turn, note that in both cases, responses are ordinal. For example, when asked about the time spent on different activities in an average work day, possible responses are ordered as “none,” “very little,” “some,” or “a great deal.” When respondents were asked to think about their supervisor or the person who had most control over what they did on the job, the ordinal response is according to how closely they were supervised: “There was no such person,” “I was more or less my own boss within the general policies of the organization,” “My supervisor gave me some freedom in deciding what I did and how I did it,” “My supervisor decided what I did, but I decided how I did it,” and “My supervisor decided both what I did and how I did it.” Given the nature of these responses, it is appropriate for one to estimate a series of ordered logit models.¹⁷

These estimation results are reported in Tables 7 and 8, and together indicate that the attitude and self-esteem measure constructed in this analysis is picking up individual attributes that, later in life, correlate with more than just lower employment rates, higher unemployment rates, and lower earnings. However, caution is always warranted when interpreting coefficients from models of ordered dependent variables.¹⁸ Relying, then,

16. These categories are as follows: “Working with things (machinery, apparatus, art materials, etc.),” “Doing paperwork (administration, clerical, computational, etc.),” “Working with ideas and thinking,” and “Dealing with people (as part of the job).”

17. Multinomial logit would not be an efficient method of estimation as the information provided by the ordinal ranking of the dependent variable would be not be taken into account. Furthermore, ordinary least squares would impose too much structure on the dependent variable. That is, one would not want to impose a priori that the difference between a 1 and 2 be equivalent to the difference between a 4 and 5.

18. Recall that it is only for the categories corresponding to the lowest and highest values of the dependent variable for which an estimated coefficient unambiguously determines the direction of change from a change in an independent variable. As such, for all interior categories, the sign of the effect of any independent variable on the probability of a particular outcome is ambiguous and must be determined by numerical methods.

on the latent propensities, the results reported in Table 7 reveal a significant tendency for those with poor attitude and self-esteem in high school to spend more time “working with things” than in any other category of activity, even when the intermediate attitude measures are included among the controls, which also include such characteristics as gender, race, ability, and job tenure. Using the estimated coefficients from column (1) of Table 7, moving from the median of the lower quartile to the median of the upper quartile of *ASE* increases the probability of responding that one “works with *things* a great deal” by 9.7%. On the other hand, this same movement decreases the probability of responding that one “works with *people* a great deal” by 5% (column 7). Over the same range, the probability of responding that one spends “no time working with things” decreases by 13% and the probability of responding that one spends no time working with people increases by 26.1%. These individuals clearly exhibit a latent propensity to spend less time doing administrative, clerical, or computational paperwork and less time working “with ideas” and “thinking.” Having demonstrated a negative relationship between *ASE* and wages, it is interesting to further note here that separate specifications reveal no evidence that those with poor attitudes and self-esteem suffer incrementally lower wages where they are mismatched into positions where they spend most of their time working with people, paper, or ideas.

Adopting the same set of controls, there is also a significant tendency for these individuals to be more closely supervised on the job and to have less discretion in their activities. For example, from the estimated coefficients from column (2) of Table 8 that also control for an intermediate measure of attitude and self-esteem, movement from the median of the lower quartile to the median of the upper quartile of the pre-labor market *ASE* index increases the probability of responding that one’s supervisor decided “both what [one] did and how [one] did it” by 14.6%. Over the same range, the probability of responding that there was “no such person” supervising the individual decreases by 12.5%. In short, where attitude and self-esteem are deficient in high school, individuals are later given less discretion and are under closer supervision in their places of employment. As in the wage equations, separate estimations reveal no significant

difference across race or gender in the effect of attitude and self-esteem on the degree of supervision under which the individual works.

So How Important Is Attitude and Self-Esteem?

The pre-labor market measures of attitude and self-esteem constructed are largely significant in explaining observed heterogeneity in future education and labor-market outcomes. Furthermore, as suggested throughout, estimated magnitudes are economically meaningful and suggest that important benefits are likely to be associated with assisting those individuals who reveal such psychological traits. Table 9 reports how predicted outcomes from the analysis above respond to changes in key variables and overall suggests that the effects of attitude are indeed meaningful. Adopting the respective specifications with the “narrow definition—at-least-weak position” index of attitude and self-esteem, regressors are adjusted from the median of the lowest quartile to the median of the upper quartile. Largely, the impression from such comparisons is that attitude and self-esteem, as measured, have economically significant effects on employment and wage outcomes on the same order of magnitude as other common characteristics.

Separate Attitude and Self-Esteem Indices

Over all specifications, additional analysis was undertaken that separated the survey questions pertaining to individual attitudes from those pertaining to self-esteem, constructing two separate indices instead of one. In the end, although there are no generally consistent patterns revealed by such additional analysis, there are certain specifications where attitude and self-esteem do seem to matter differently.¹⁹ For example, including separate attitude and self-esteem indices in the model of wage determination suggests that self-esteem in youth may be the more significant determinant of subsequent wages. However, such depends on the particular content of the indices, as noted in the narrow-definition results of columns (7) and (8) of Table 10, where point estimates suggest that attitude is the stronger predictor of wages. Furthermore, as shown in Table 10, allowing interactive effects between the two separate indices reveals no significant influ-

ence of one on the marginal effect of the other and, moreover, yields insignificant estimates of the broad definitions of both attitude and self-esteem indices in columns (1) through (6).

Summarizing the potential for differential effects more generally, the only outcome for which there is a consistent pattern of asymmetry between the correlation of attitude and self-esteem measures with subsequent outcomes is that revealed in the relationship between poor self-esteem and higher likelihoods of subsequent unemployment. Furthermore, subsequent analysis reveals that in no specification are the estimated effects of poor attitude and low self-esteem of opposite sign, suggesting that reported results are more consistent with outcomes being driven similarly by both attitude and self-esteem.²⁰ Overall, drawing broad conclusions regarding differential effects may be unwarranted.

Omitted Variables

An area of related literature not explicitly addressed above regards the labor-market effects of noncognitive “skills”—which may or may not constitute aspects of general human capital. For example, Hamermesh and Biddle (1994) introduce physical appearance and beauty to the literature as potential factors in wage determination, estimating a 5–10% wage penalty to perceived “plainness.” As one may reasonably expect, a priori, that attitude and self-esteem are correlated with physical appearance (e.g., people of better-than-average appearance tend to have a better attitude and/or self-esteem), estimates of the effect of beauty or the effect of attitude may each proxy for general human capital that is of some value to the average employer.²¹ Measures of physical appearance are not commonly available, however, which often precludes researchers from separating their potential influence from other correlates. Unfortunately, this remains the case in the

19. All unreported results available on request.

20. Allowing for interactions by gender and by race reveals no significant differences in the effect of separate attitude and self-esteem indices. However, caution would be advantageous across these various specifications as subdividing the sample in this way can quickly yield very small cell sizes. For example, only 13 black men register positive values for a narrowly-strong attitude-only index in the sample of 6,533.

21. Of course, feedback effects may also exist (e.g., less attractive people invest less in human capital as they expect a lower return).

TABLE 7
The Effect of Poor Attitude and Self-Esteem in High School (1972) on Subsequent Job-Type (1986)

Independent Variable	Degree to which Respondent Works with Things		Degree to which Respondent Does Paperwork		Degree to which Respondent Works with Ideas or Thinks		Degree to which Respondent Deals with People	
	Broad/ At-Least-Weak (1)	Narrow/ At-Least-Weak (2)	Broad/ At-Least-Weak (3)	Narrow/ At-Least-Weak (4)	Broad/ At-Least-Weak (5)	Narrow/ At-Least-Weak (6)	Broad/ At-Least-Weak (7)	Narrow/ At-Least-Weak (8)
	Ln[1 + <i>ASE</i> Index], 1972	0.195 (3.23)***	0.136 (2.90)***	-0.131 (2.04)**	-0.129 (2.66)***	-0.232 (3.21)***	-0.143 (2.67)***	-0.270 (3.30)***
Ln[1 + <i>ASE</i> Index], 1979	0.067 (0.93)	0.020 (0.38)	-0.435 (5.34)***	-0.257 (4.55)***	-0.578 (6.56)***	-0.382 (6.20)***	-0.673 (6.96)***	-0.351 (5.23)***
Male	0.103 (1.80)*	0.111 (1.94)*	-0.663 (10.70)***	-0.676 (10.91)***	0.120 (2.02)**	0.095 (1.60)	-0.518 (7.15)***	-0.536 (7.45)***
Race: Black	0.224 (2.03)**	0.206 (1.88)*	0.401 (3.10)***	0.416 (3.23)***	0.049 (0.36)	0.074 (0.55)	0.244 (1.59)	0.277 (1.81)*
Race: Other	0.120 (1.12)	0.120 (1.12)	0.375 (3.26)***	0.379 (3.30)***	0.122 (1.10)	0.115 (1.02)	0.037 (0.28)	0.031 (0.23)
Ln[Cognitive ability test]	0.166 (1.01)	0.177 (1.08)	0.537 (3.10)***	0.510 (2.93)***	0.709 (3.82)***	0.677 (3.68)***	0.244 (1.15)	0.228 (1.08)
Aptitude: High	-0.148 (2.52)**	-0.147 (2.51)**	-0.178 (2.67)***	-0.183 (2.74)***	-0.098 (1.49)	-0.106 (1.62)	-0.219 (2.65)***	-0.228 (2.75)***
Aptitude: Low	0.048 (0.51)	0.062 (0.66)	-0.269 (2.85)***	-0.294 (3.10)***	0.137 (1.42)	0.098 (1.01)	0.030 (0.27)	-0.013 (0.12)
Ln[Percentile rank in class]	-0.112 (2.22)**	-0.112 (2.23)**	0.170 (3.48)***	0.167 (3.42)***	-0.030 (0.59)	-0.029 (0.57)	-0.073 (1.32)	-0.073 (1.32)

Ln[1 + Yrs of education post high school, 1979]	-0.583 (12.21)***	-0.593 (12.42)***	0.364 (7.59)***	0.372 (7.74)***	0.640 (13.97)***	0.654 (14.35)***	0.513 (9.76)***	0.529 (10.11)***
Tenure	-0.069 (1.52)	-0.069 (1.51)	0.110 (2.23)**	0.111 (2.25)**	0.066 (1.28)	0.065 (1.27)	0.048 (0.79)	0.046 (0.75)
Tenure ²	0.011 (2.08)**	0.010 (2.08)**	-0.009 (1.64)	-0.009 (1.69)*	-0.005 (0.82)	-0.005 (0.86)	-0.001 (0.16)	-0.001 (0.15)
Age	4.259 (1.10)	4.280 (1.11)	7.419 (2.01)**	7.502 (2.07)**	2.692 (0.77)	2.850 (0.83)	1.270 (0.35)	1.556 (0.43)
Age ²	-0.066 (1.11)	-0.066 (1.11)	-0.114 (2.01)**	-0.115 (2.07)**	-0.043 (0.80)	-0.045 (0.86)	-0.019 (0.34)	-0.024 (0.43)
Missing 1979 Attitude Index ^a	-0.063 (0.51)	-0.066 (0.54)	-0.237 (1.76)*	-0.228 (1.70)*	-0.335 (2.56)**	-0.320 (2.45)**	0.167 (1.03)	0.189 (1.16)
	chi2(15) = 340.1	chi2(15) = 336.2	chi2(15) = 351.9	chi2(15) = 339.8	chi2(15) = 357.0	chi2(15) = 354.6	chi2(15) = 245.3	chi2(15) = 214.6
Observations	4992	4992	4992	4992	4992	4992	4992	4992

Notes: Coefficients are from the estimation of ordered-logit models with errors assumed to be independent across observations from different high schools but not necessarily across observations within each high school. Respondents were asked the following question: “The following are some general things that people do on their jobs. About how much time did you spend on each in the average work day at your present or most recent job? Working with things (machinery, apparatus, art materials, etc.). Doing paperwork (administration, clerical, computational, etc.). Working with ideas, thinking. Dealing with people (as part of the job).” Responses are ordered according to the following key: “None” (= 1), “Very little,” “Some,” “A great deal” (= 4). Absolute values of z-statistics are in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%. Results are robust to the inclusion of controls for high school athletic participation. Results also robust to *ASE* entered linearly and to permutations of *ASE* in terms of content.

^aMissing observations are controlled for with an indicator variable whenever the intermediate measure is missing. However, results are robust to the sample of observations for which this information is available. For all attitude measures, the 1972 measure is insignificant in predicting a missing 1979 measure.

TABLE 8

The Effect of Poor Attitude and Self-Esteem in High School (1972) on the Degree of On-the-job Supervision or Lack of Own Discretion (1986)

Independent Variable	Broad Attitude and Self-Esteem Index				Narrow Attitude and Self-Esteem Index			
	At-Least-Weak Positions		Strong Positions		At-Least-Weak Positions		Strong Positions	
	Ordered Logit (1)	Control for Intermediate Measure of <i>ASE</i> (2)	Ordered Logit (3)	Control for Intermediate Measure of <i>ASE</i> (4)	Ordered Logit (5)	Control for Intermediate Measure of <i>ASE</i> (6)	Ordered Logit (7)	Control for Intermediate Measure of <i>ASE</i> (8)
Ln[1 + <i>ASE</i> Index], 1972	0.236 (3.81)***	0.166 (2.55)**	0.184 (3.57)***	0.157 (2.91)***	0.165 (3.40)***	0.128 (2.56)**	0.158 (1.65)*	0.152 (1.57)
Ln[1 + <i>ASE</i> Index], 1979		0.333 (4.31)***		0.119 (2.12)**		0.222 (3.97)***		0.128 (1.07)
Male	-0.254 (4.69)***	-0.241 (4.45)***	-0.254 (4.71)***	-0.250 (4.63)***	-0.245 (4.54)***	-0.227 (4.21)***	-0.253 (4.70)***	-0.250 (4.62)***
Race: Black	0.556 (5.61)***	0.563 (5.65)***	0.550 (5.50)***	0.555 (5.50)***	0.542 (5.45)***	0.545 (5.47)***	0.532 (5.32)***	0.525 (5.20)***
Race: Other	0.215 (1.98)**	0.225 (2.08)**	0.210 (1.93)*	0.219 (2.01)**	0.219 (2.02)**	0.228 (2.11)**	0.218 (2.01)**	0.217 (2.00)**
Ln[Cognitive ability test]	-0.545 (3.49)***	-0.538 (3.42)***	-0.551 (3.50)***	-0.546 (3.46)***	-0.524 (3.36)***	-0.509 (3.26)***	-0.544 (3.49)***	-0.543 (3.48)***
Aptitude: High	0.046 (0.73)	0.025 (0.40)	0.050 (0.79)	0.039 (0.62)	0.041 (0.65)	0.029 (0.46)	0.052 (0.83)	0.051 (0.80)
Aptitude: Low	0.049 (0.59)	0.042 (0.50)	0.058 (0.69)	0.058 (0.69)	0.066 (0.78)	0.076 (0.91)	0.057 (0.68)	0.054 (0.64)

Ln[Percentile rank in class]	-0.019 (0.39)	-0.025 (0.51)	-0.019 (0.39)	-0.018 (0.38)	-0.020 (0.42)	-0.023 (0.48)	-0.027 (0.55)	-0.024 (0.49)
Ln[1 + Yrs of education post high school, 1985]	-0.272 (6.12)***	-0.260 (5.82)***	-0.274 (6.16)***	-0.264 (5.87)***	-0.281 (6.36)***	-0.269 (6.10)***	-0.285 (6.45)***	-0.283 (6.40)***
Tenure	-0.110 (2.35)**	-0.113 (2.42)**	-0.109 (2.36)**	-0.112 (2.40)**	-0.109 (2.36)**	-0.111 (2.40)**	-0.106 (2.29)**	-0.105 (2.28)**
Tenure ²	0.007 (1.37)	0.007 (1.45)	0.007 (1.34)	0.007 (1.39)	0.007 (1.37)	0.008 (1.47)	0.006 (1.27)	0.006 (1.26)
Age	-1.015 (0.36)	-0.993 (0.35)	-0.845 (0.30)	-0.777 (0.27)	-0.989 (0.35)	-1.024 (0.36)	-1.075 (0.38)	-1.078 (0.38)
Age ²	0.016 (0.37)	0.016 (0.37)	0.014 (0.31)	0.013 (0.29)	0.016 (0.36)	0.016 (0.37)	0.017 (0.39)	0.017 (0.40)
Missing 1979 Attitude Index ^a		0.088 (0.75)		0.089 (0.76)		0.081 (0.69)		0.082 (0.70)
Observations	5076	5076	5076	5076	5076	5076	5076	5076
	chi2(13) = 228.2	chi2(15) = 246.4	chi2(13) = 232.3	chi2(15) = 240.3	chi2(13) = 222.3	chi2(15) = 238.1	chi2(13) = 216.6	chi2(15) = 220.3

Notes: Coefficients are from the estimation of ordered logit models with errors assumed to be independent across observations from different high schools but not necessarily across observations within each high school. Respondents were asked the following question: “Please think about your supervisor or the person who had most control over what you actually did on the job. Which of the following best describes how closely this person supervised you?” Responses are ordered according to the following key: “There was no such person” (= 1), “I was more or less my own boss within the general policies of the organization,” “My supervisor gave me some freedom in deciding what I did and how I did it,” “My supervisor decided what I did, but I decided how I did it,” and, “My supervisor decided both what I did and how I did it” (= 5). Absolute values of *z*-statistics are in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%. Results are robust to the inclusion of controls for high school athletic participation. Results also robust to *ASE* entered linearly and to permutations of *ASE* in terms of content.

^aMissing observations are controlled for with an indicator variable whenever the intermediate measure is missing. However, results are robust to the sample of observations for which this information is available.

TABLE 9

The Economic Significance of Poor Attitude and Self-Esteem in High School (1972) on Outcomes

	Predicted Outcome			
	Worst At Median of 1st Quartile	→	Best At Median of 4th Quartile	Movement
Effects on subsequent work status: Table 4(5)				
Ability ^a	.802	→	.818	= 1.97%
Education ^b	.769	→	.844	= 9.65%
Rank in class ^c	.802	→	.816	= 1.74% ^e
Attitude and self-esteem ^d	.787	→	.834	= 5.59%
Effects on subsequent unemployment status: Table 5(5)				
Ability ^a	.045	→	.036	= -19.73%
Education ^b	.068	→	.024	= -64.84%
Rank in class ^c	.044	→	.040	= -8.81% ^e
Attitude and self-esteem ^d	.052	→	.032	= -38.97%
Effects on subsequent weekly wages: Table 6(7)				
Ability ^a	\$398.27	→	\$421.91	= 5.94%
Education ^b	\$332.96	→	\$478.04	= 43.57%
Rank in class ^c	\$408.57	→	\$411.53	= 0.72% ^e
Attitude and self-esteem ^d	\$393.85	→	\$427.53	= 8.55%
Effects on likelihood of being “most closely” supervised on the job: Table 8(5)				
Ability ^a	.056	→	.048	= -14.29%
Education ^b	.068	→	.041	= -39.71%
Rank in class ^c	.053	→	.051	= -3.77% ^e
Attitude and self-esteem ^d	.058	→	.046	= -20.69%

Notes: Knowing the signs of all characteristics from prior results, in all cases here, the predicted outcomes are compared by adjusting a single regressor, assuming that all other variables are equal to their respective within-sample mean values. In particular, the results adopting the “Narrow definition—at-least-weak position” index of attitude are compared. To give some idea of the degree of variation in outcomes predicted by each characteristic, regressors are adjusted from a “less favorable” level to a “more favorable” level, where “less favorable” is captured by the median of the lowest quartile and “more favorable” is captured by the median of the upper quartile.

^aAbility measured by performance on a cognitive ability test.

^bEducation measured by years of education beyond high school.

^cRank in class measured by percentile rank in graduating high school class.

^dAttitude and self-esteem in high-school measured by the “Narrow definition—at-least-weak position” index (details in Table 2).

^eMarginal change in outcome due to change in rank in class is not statistically significant.

data analyzed here.²² Likewise, the data do not include a measure of height, which has also been shown to contribute to earnings. However, where evidence of a wage premium for height does exist, controlling for self-esteem has been shown to render height insignificant (Persico et al. 2004), which suggests

22. This does suggest, however, that to the extent that one’s perception of an individual’s beauty is inseparable from one’s perception of an individual’s self-esteem, studies of appearance that rely on the evaluation of a picture (Hatfield and Spretcher 1986; Frieze et al. 1991; Hamermesh and Parker 2003) may more directly measure true physical appearance than those that rely on data generated out of personal interviews (Straus et al. 2001).

that conditional on self-esteem, the omission of height from the current analysis may be of less concern.²³

23. Persico et al. (2002) focus in part on the predictive power of youth versus adult height, so, from among the literature that has documented a height premium, their work is of particular interest here. They conclude that “esteem and participation in social activities affect wages through largely independent channels,” but I control for such participation in estimating education, wages, and other outcomes. See Mobius and Rosenblat (2005) for discussion of specific transmission mechanisms through which beauty premiums may evolve. Among other summary statistics, they report that 20% of the beauty premium is due to the subject’s confidence.

TABLE 10
The Differential Effect of Poor Attitude and Self-Esteem in High School (1972) on Subsequent Weekly Wages (1986)

Independent Variable	Broad Index						Narrow Index					
	At-Least-Weak Positions			Strong Positions			At-Least-Weak Positions			Strong Positions		
	OLS ^a	Control for School-Specific Unobserved Heterogeneity	Control for Intermediate Measure of ASE	OLS ^a	Control for School-Specific Unobserved Heterogeneity	Control for Intermediate Measure of ASE	OLS ^a	Control for School-Specific Unobserved Heterogeneity	Control for Intermediate Measure of ASE	OLS ^a	Control for School-Specific Unobserved Heterogeneity	Control for Intermediate Measure of ASE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
A: Attitude and self-esteem together												
Attitude and self-Esteem (i.e. Table 6 results)	-0.054 (3.02)***	-0.044 (2.25)**	-0.038 (2.04)**	-0.023 (1.59)	-0.025 (1.51)	-0.020 (1.32)	-0.059 (4.36)***	-0.051 (3.33)***	-0.041 (2.97)***	-0.064 (2.63)***	-0.050 (1.86)*	-0.051 (2.10)**
B: Attitude and self-esteem separate												
Attitude	-0.016 (0.86)	-0.012 (0.57)	0.002 (0.09)	-0.014 (0.81)	-0.022 (1.19)	-0.008 (0.49)	-0.049 (2.77)***	-0.045 (2.36)**	-0.025 (1.41)	-0.050 (1.24)	-0.042 (0.96)	-0.027 (0.66)
Self-esteem	-0.049 (3.64)***	-0.041 (2.78)***	-0.044 (3.24)***	-0.043 (2.03)**	-0.035 (1.50)	-0.043 (1.99)**	-0.045 (2.97)***	-0.034 (2.01)**	-0.036 (2.40)**	-0.074 (2.49)**	-0.060 (1.83)*	-0.068 (2.32)**
C: Attitude and self-esteem with interaction												
Attitude	-0.010 (0.32)	-0.005 (0.17)	0.009 (0.29)	-0.005 (0.24)	-0.007 (0.36)	0.001 (0.05)	-0.062 (2.45)**	-0.066 (2.50)**	-0.034 (1.33)	-0.029 (0.66)	-0.010 (0.21)	-0.004 (0.08)
Self-esteem	-0.038 (0.91)	-0.030 (0.67)	-0.030 (0.73)	-0.019 (0.67)	0.006 (0.17)	-0.017 (0.61)	-0.054 (3.02)***	-0.049 (2.29)**	-0.042 (2.37)**	-0.062 (1.98)**	-0.042 (1.23)	-0.055 (1.78)*
Attitude × self-esteem	-0.009 (0.27)	-0.009 (0.27)	-0.011 (0.33)	-0.047 (1.20)	-0.077 (1.70)*	-0.049 (1.24)	0.026 (0.72)	0.042 (1.14)	0.018 (0.49)	-0.134 (1.19)	-0.197 (1.62)	-0.148 (1.29)

Notes: The dependent variable is Log[respondent's reported weekly earnings]. The within-sample mean of the dependent variable is \$410.98. Indices are defined as Ln[1 + Attitude + Self-Esteem], Ln[1 + Attitude] and Ln[1 + Self-Esteem]. In all cases, the estimating equation includes all controls in Table 6, which includes Male; Race: Black; Race: Other; Ln[Cognitive ability test]; Aptitude: High; Aptitude: Low; Ln[Percentile rank in class]; Ln[1+Yrs of education post high school, '85]; Tenure at job; Tenure²; Age; Age²; Married; Male × Married; Resided in central city, 1986; Participant in athletics. Full results are available on request. Absolute values of *t*-statistics are in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%. Results are robust to the inclusion of controls for high school quality/resources such as faculty-to-student ratios and the number of library books per student.

^aErrors are assumed to be independent across observations from different high schools but not necessarily across observations within each high school.

^bMissing observations are controlled for with an indicator variable whenever the intermediate measure is missing. However, results are robust to the sample of observations for which this information is available.

IV. DISCUSSION AND CONCLUSION

In this article, I assess the role of attitude and self-esteem in explaining observed heterogeneity in a sample of high school graduates and demonstrate important economic implications of poor attitude and self-esteem in youth. Using data from the NLS-72, I find that pre-labor market attitude and self-esteem are significantly correlated with future educational attainment, employment status, and wages. To the extent that graduating high school students exhibit poor attitude and self-esteem, they attain fewer years of postsecondary education relative to their high school cohorts, are less likely to be employed for pay 14 years following graduation, are more likely to be unemployed conditional on labor force participation, and where working for pay, realize lower earnings on average. Furthermore, they tend to be given less discretion and be under closer supervision at work. Across all outcomes, the analysis reveals no interdependence between attitude and self-esteem and race or gender.

In each case analyzed, a pre-labor market measure of attitude and self-esteem is significant in explaining observed heterogeneity in future education and labor market outcomes, and, consistent with attitude in high school having long-lasting effects, the significance of this early measure largely remains when one controls for later measures of attitude and self-esteem. It is apparent, then, that the consequences of early attitude and self-esteem deficiencies are long lived.²⁴ However, because the later attitude measure is itself often significant, one cannot rule out that corrective action may positively influence labor market outcomes later in life. In some sense, though long-lived, the damaging effects of poor attitude and self-esteem in high school are reversible.

Although results are reported across four alternative indices, varying both the question content of the index and the intensity of survey responses necessary for the index to register the response as indicative of attitude or self-esteem deficiencies, the inherent difficulty in quantifying such noncognitive attributes

must be acknowledged. To the extent that these composite indices are noisy measures of true attitude and self-esteem, however, the relationships reported here are all the more noteworthy. At the very least, evidence is provided that strongly suggests that those who systematically separate themselves from others by their responses to these questions suffer with respect to education and labor market outcomes later in life, while controlling for the usual collection of other contributing factors.

To the extent that attitude and self-esteem is simply picking up in the way of omitted variable bias a degree of unobserved nonpsychological ability, rather than a true psychological attribute with specific returns in the labor market, it must do so holding constant cognitive ability, aptitude, class rank, and parent education levels. Whether responses are accurate perceptions of some underlying ability or are directly, in and of themselves, additional facets of ability, their inclusion reveals important relationships that extend our capacity to explain variation in outcomes in important ways. Furthermore, as the analysis includes a full set of controls for ability, demonstrating that students who reveal poor attitude and self-esteem prior to entering the labor market are systematically different in outcome over multiple dimensions is strong evidence that there are aspects of attitude and self-esteem that are direct inputs into one's productivity with direct implications. Nonetheless, as the value of targeting resources toward those who exhibit attitude and self-esteem deficiencies is likely determined in large part by the extent to which deficiencies are directly valued, this suggests the need for further analysis that separates whether attitude and self-esteem are direct inputs in production or merely indirect indications of unobserved ability. By considering the relationship between attitude and self-esteem and future labor market outcomes, this article suggests that real economic consequence may exist in the targeting of resources toward individuals who reveal these traits. In fact, the potential warning signs included in Dwyer et al. (1998) are not unlike those analyzed here. Because most students advance through school without experiencing violence, the benefits of such policy proposals may lie largely in individuals' subsequent labor market experiences.

24. This may also be viewed in the spirit of what Persico et al. (2002) refer to as "early social discrimination rather than contemporaneous market discrimination" being at the root of the disparities in these outcomes.

REFERENCES

- Ajzen, I., and M. Fishbein. *Understanding Attitude and Predicting Social Behavior*. Prentice-Hall, Englewood Cliffs, NJ, 1980.
- Barron, J. M., B. T. Ewing, and G. R. Waddell. "The Effects of High School Athletic Participation on Education and Labor Market Outcomes." *Review of Economics and Statistics*, 82, 2000, 1–13.
- Bartel, A., and P. Taubman. "Health and Labor Market Success." *Review of Economics and Statistics*, 61, 1979, 1–8.
- . "Some Economics and Demographic Consequences of Mental Illness." *Journal of Labor Economics*, 4, 1986, 243–56.
- Bertrand, M., and S. Mullainathan. "Do People Mean What They Say? Implications for Subjective Survey Data." *AER Papers and Proceedings*, 91, 2001, 67–72.
- Bowles, S., H. Gintis, and M. Osborne. "The Determinants of Earnings: A Behavioral Approach." *Journal of Economic Literature*, 39, 2001, 1137–76.
- Cawley, J., J. Heckman, and E. Vytlačil. "Three Observations on Wages and Measured Cognitive Ability." *Labor Economics*, 8, 2001, 419–42.
- Coleman, M., and T. DeLeire. "An Economic Model of Teenagers' Locus of Control and High School Graduation Decisions." *Journal of Human Resources*, 38, 2003, 701–21.
- Dwyer, K., D. Osher, and C. Warger. *Early warning, timely response: A guide to safe schools*. U.S. Department of Education, Washington, DC, 1998.
- Frank, R. G., and P. J. Gertler. "Assessment of the Measurement Error Bias for Estimating the Effect of Mental Distress on Income." *Journal of Human Resources*, 26, 1991, 154–64.
- Freeman, R. B. "Job Satisfaction as an Economic Variable." *American Economic Review*, 68, 1978, 134–41.
- Frieze, I. H., J. E. Olson, and J. Russell. "Attractiveness and Income for Men and Women in Management." *Journal of Applied Social Psychology*, 21, 1991, 1039–57.
- Goldsmith, A. H., J. R. Veum, and W. Darity Jr. "Are Being Unemployed and Being out of the Labor Force Distinct States? A Psychological Approach." *Journal of Economic Psychology*, 16, 1995, 275–95.
- . "The Impact of Labor Force History on Self-Esteem and Its Component Parts, Anxiety, Alienation and Depression." *Journal of Economic Psychology*, 17, 1996a, 183–220.
- . "The Psychological Impact of Unemployment and Joblessness." *Journal of Socio-Economics*, 25, 1996b, 333–58.
- . "The Impact of Psychological and Human Capital on Wages." *Economic Inquiry*, 35, 1997a, 815–29.
- . "Unemployment, Joblessness, Psychological Well-Being and Self-Esteem: Theory and Evidence." *Journal of Socio-Economics*, 26, 1997b, 133–58.
- . "Motivation and Labor Market Outcomes," in *Research in Labor Economics*. JAI/Elsevier Sciences, New York, 2000, pp. 109–46.
- Greene, W. H. *Econometric Analysis*, 5th ed. Prentice Hall, New York, 2003.
- Hamermesh, D. S. "Subjective Outcomes in Economics." NBER Working Paper no. 10361, 2004.
- Hamermesh, D. S., and J. Biddle. "Beauty and the Labor Market." *American Economic Review*, 84, 1994, 1174–94.
- Hamermesh, D. S., and A. M. Parker. "Beauty in the Classroom: Professors' Pulchritude and Putative Pedagogical Productivity." NBER Working Paper no. 9853, 2003.
- Hatfield, E., and S. Sprecher. *Mirror, Mirror . . . : The Importance of Looks in Everyday Life*. Albany: State Univ. of New York Press, 1986.
- Holzer, H., and D. Wissoker. "Non-Cognitive Skills and Employer Hiring Behavior in the Low-Wage Labor Market: A Preliminary Exploration." Working Paper, Joint Center for Poverty Research, 2000.
- Kuhn, P., and C. Weinberger. "Leadership Skills and Wages." *Journal of Labor Economics*, 23, 2005.
- Mobius, M. M., and T. S. Rosenblat. "Why Beauty Matters." Working Paper, Wesleyan University, 2005.
- Mullahy, J., and J. L. Sindelar. "Alcoholism, Work, and Income." *Journal of Labor Economics*, 11, 1993, 494–520.
- Osborne, M. "Personality and Labor Market Success." Working Paper, University of Massachusetts–Amherst, 1999.
- Persico, N., A. Postlewaite, and D. Silverman. "The Effect of Adolescent Experience on Labor Market Outcomes: The Case of Height." *Journal of Political Economy*, 112, 2004, 1019–53.
- Rosenberg, M. *Society and Me Adolescent Self-Image*. Princeton, NJ: Princeton University Press, 1965.
- Straus, S. G., J. A. Miles, and L. L. Levesque. "The Effects of Videoconference, Telephone and Face-to-Face Media on Interviewer and Applicant Judgments in Employment Interviews." *Journal of Management*, 27, 2001, 363–81.