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Shooting for the Stars and Failing: College Dropout and Self-Esteem*

Peter Hoeschler† and Uschi Backes-Gellner‡

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Abstract

We investigate the relationship between unfulfilled educational aspirations and self-esteem. Classifications of education relying on completed years of schooling or degree attainment are not able to distinguish between college dropouts with unfulfilled aspirations and graduates with fulfilled aspirations. To separate the two groups, we develop a classification of education combining the highest type of college enrolled in (aspiration) and the highest degree obtained (realization of aspiration). Using data spanning three decades from the National Longitudinal Survey of Youth, we find that four-year college dropouts compared to graduates have permanently lower self-esteem, whether dropouts obtain an associate's degree or not. However, associate's degree holders who had never enrolled in a four-year college do not experience this long-term negative effect. Therefore, finishing the highest type of college in which the student ever enrolled is critical for the formation of self-esteem. We discuss implications for college enrollment decisions.

Keywords: Self-esteem; Higher Education; Dropouts.

JEL Classification: I21, J13, J24.

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1 Introduction

That self-esteem is an important non-cognitive skill highly valued in the labor market is well known. Several economics studies show a significant positive, persistent, and partly causal effect of self-esteem—or an aggregate of self-esteem and other non-cognitive skills—on wages (Drago, 2011; Goldsmith, Veum, & Darity, 1997; Heckman, Stixrud, & Urzua, 2006; Murnane, Willett, Braatz, & Duhaldeborde, 2001; Waddell, 2006). These findings underscore the importance of learning how individuals maintain and develop self-esteem. Life experiences might affect self-esteem. According to Bénabou and Tirole (2002), rational individuals—at least to some extent—recall "bad news" to infer their self-beliefs. Thus, some empirical studies have shown that negative life experiences result in lower levels of self-esteem (e.g., see Goldsmith, Veum, & Darity, 1996, for the negative effects of joblessness on self-esteem, or Prevoo & ter Weel, 2015, for the negative effects of family disruptions on self-esteem). To better understand the effect of adverse experience during education, we study the impact of dropping out of college, one very concrete and widespread life experience, on self-esteem.

Dropouts aspire an educational degree which they fail to attain. We investigate the relationship between these unfulfilled educational aspirations and self-esteem. For this purpose, we develop an educational classification, which enables us to separate college dropouts and graduates. In this classification we use college enrollment as a measure for revealed educational aspirations. Empirical research on whether and through what mechanisms education affects self-esteem does not take into account educational aspirations. For example, studies using grade point average (Himmler & Koenig, 2012) or completed years of schooling (De Araujo & Lagos, 2013) as the educational variable find no causal effect of academic achievement on self-esteem. However, a classification of education based on completed years of schooling does not provide clear information on college enrollment and degree obtainment, information critical to investigate the role of educational aspirations.[1]

Therefore, Heckman, Humphries, Veramendi, and Urzua (2014) use degree obtainment and college enrollment to classify final schooling outcomes. With their classification they are able to show that college enrollment (versus no college enrollment, conditional on the individual being a high school graduate) and earning a four-year degree (versus some college) causally improve self-esteem. However,

[1] First, the completed years of schooling differ from the typical years of schooling attributed to a degree for a significant share of college degree holders (Jaeger & Page, 1996). Thus, years of schooling is not a clear measure for differentiating college dropouts from graduates. Second, individuals who enroll in college but never finish their first year of studies—a group that clearly consists of college dropouts—have completed 12 years of schooling and therefore, have completed the same years of schooling as high school graduates who never have enrolled in college (Park, 1996).

they still do not fully take into account educational aspirations. Given that educational decisions in a system with two- and four-year colleges can be more complex, a classification based only on four-year college degrees cannot fully capture college completion and non-completion patterns, particularly, as college-enrolled individuals without a four-year college degree could still have graduated from a two-year college. Therefore, more detailed classifications of college education are necessary for estimating the relationship between unfulfilled educational aspirations and self-esteem.

Such detailed classifications of college education are well established in other study fields, and they have shown the fruitfulness of clearly distinguishing between college graduates and dropouts. For example, more detailed classifications of college education are used for estimating the heterogeneous labor-market returns to enrollment in and graduation from different types of colleges. In particular, this literature shows substantial returns to graduating from a two-year college with an associate's degree (Belfield & Bailey, 2011; Jepsen, Troske, & Coomes, 2014; Kane & Rouse, 1995; Liu, Belfield, & Trimble, 2015; Zeidenberg, Scott, & Belfield, 2015). These returns actually appear to outperform the returns of merely attending a four-year college without receiving any degree (Kane & Rouse, 1995). Thus these findings indicate the importance of applying a detailed classification of final schooling outcomes, a classification that distinguishes between two- and four-year colleges, for studying the consequences for labor market or other outcomes.

In this paper, we develop an educational classification that provides us with a clear-cut definition of college dropouts, which enables us to investigate the relationship between unfulfilled educational aspirations and self-esteem. Taking into account the complexity of post-secondary educational decisions, we use educational paths, i.e. we combine college attendance as a measure for educational aspirations and degree obtainment as a measure for educational attainment, to distinguish among different final college outcomes. We classify individuals by their combination of the highest type of college ever attended (two- or four-year college) and the highest degree ever received (high school degree, associate's degree, or bachelor's degree). In this framework, we define individuals as dropouts whenever the highest degree they received (attainment) is lower than the degree that the highest type of college they ever attended would usually grant (aspiration). Therefore, our classification of education gives us a traceable definition of dropouts, one that enables us to investigate the relationship between dropping out of college, i.e. unfulfilled educational aspirations, and self-esteem.

We extract a sample of college-enrolled individuals from the U.S. National Longitudinal Survey of

Youth 1979 (NLSY79), allowing us to conduct an investigation of the relationship between dropping out of college and self-esteem over a long period. By exploiting the panel structure of the NLSY79, we find that among individuals who enrolled at any point in a four-year college, dropping out—compared to graduating—results in significantly lower self-esteem. When considering all college-enrolled individuals, we find that two- and four-year college dropouts have significantly lower self-esteem than four-year college graduates. This finding also holds for four-year college dropouts who moved between two- and four-year colleges but received only an associate's degree. In contrast, two-year college graduates who never enrolled in a four-year college have no lower self-esteem. In sum, all dropouts—i.e. all students with unfulfilled educational aspirations—have lower levels of self-esteem. Given the labor market relevance of self-esteem, we show that these differences in self-esteem can be linked to wage differences. Overall, our results imply that students should aim at forming realistic educational aspirations and enrolling only in colleges from which they can reasonably expect to graduate.

2 Background

It is well-established that self-esteem develops over the life-cycle (e.g., see Orth, Robins, & Widaman, 2012; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002; Trzesniewski, Donnellan, & Robins, 2003). Moreover, several studies show that academic achievement influences the formation of self-esteem. Baumeister, Campbell, Krueger, and Vohs (2003) intensively survey the non-economics literature on the relation of self-esteem and education. They conclude that high self-esteem is the result of school performance and that any existing causal relationship goes from academic achievement to self-esteem.

More recently, economists have also started to investigate the relationship between schooling and self-esteem. While we argue that differences between educational aspiration and attainment affect self-esteem, these studies focus on the effects of other educational variables. Heckman et al. (2006) show that discrete schooling outcomes causally increase self-esteem. For example, individuals with 13 or more completed years of schooling score higher on self-esteem than individuals who have just completed 12 years, that is, who merely finish high school. However, other studies—using only completed years of schooling as a continuous variable (De Araujo & Lagos, 2013) or grade point average (Himmler & Koenig, 2012) as the educational variable in an instrumental variable estimation—find no positive causal effect of education on self-esteem. These different findings show the importance of applying a

detailed classification of education, one that allows to observe educational aspiration and attainment, to investigating the formation of self-esteem.

To investigate the effect of educational decisions on labor market, health, and social outcomes, Heckman et al. (2014) develop a sequential model of educational decisions, including four decision nodes: high school graduation, GED obtainment, college enrollment, and college graduation. For self-esteem (measured when the individuals are in their 40s), final outcomes of education do not causally increase self-esteem when Heckman et al. (2014) compare the final outcomes to the base group of high school dropouts. When they focus on a specific decision node in the sequential educational decision model, their estimates are more precise, and they find two significant results: First, enrollment in college, compared with not having enrolled in college after high school graduation, increases self-esteem; second, earning a four-year college degree compared with only enrolling in college without a four-year college degree (some college) increases self-esteem. Thus, focusing on educational decisions in detail, Heckman et al. (2014) show causality from college education to self-esteem. However, Heckman et al. (2014) do not investigate the role of educational aspirations.

Using a differently detailed classification of educational outcomes, one that enables us to differentiate between college dropouts and graduates, we build on Heckman et al. (2014) to investigate the effect of educational aspiration and attainment on self-esteem. We specifically target a group that Heckman et al. (2014) do not differentiate: the highly diverse group of college-enrolled individuals who do not graduate from a four-year college—a group commonly lumped together as "some college." We add to Heckman et al. (2014) by investigating this group in greater detail. Therefore, we distinguish between dropouts and graduates because we argue that the different tracks chosen and finished—two- or four-year college attendance (aspiration) and completion or non-completion (attainment)—may result in different effects on self-esteem.

We build on Kane and Rouse (1995), who investigate the labor market relevance of various educational outcomes by dividing the group of "some college" into four sub-groups, depending on the type of college enrolled in and type of degree received: "only attended two-year college (no degree), only attended four-year college (no degree), attended both two- and four-year college (no degree), A.A. (highest degree)." However, Kane and Rouse (1995) investigate college enrollment and degree attainment separately, i.e., their group "A.A." includes both two-year college graduates who never attended a four-year college and students transferring between two- and four-year colleges without

obtaining a bachelor's degree. Kane and Rouse (1995) show considerable labor market payoffs for only attending two- and four-year colleges, with an additional wage premium for completing an associate's degree. These differences in outcomes for the subgroups with some college experience but no bachelor's degree again show the importance of using a detailed classification when investigating the effect of education on various outcomes.

3 Data and method

3.1 Classification of education

Our framework for classifying final post-secondary schooling outcomes, our main explanatory variable, distinguishes among five college outcomes. Building on Kane and Rouse (1995), we focus on different educational paths: types of colleges attended in connection with final degree attainment.[2] To investigate the relationship between dropping out of college and self-esteem, we rely directly on reported degrees and connect them to the types of college. Using this approach, we determine five college outcomes.[3]

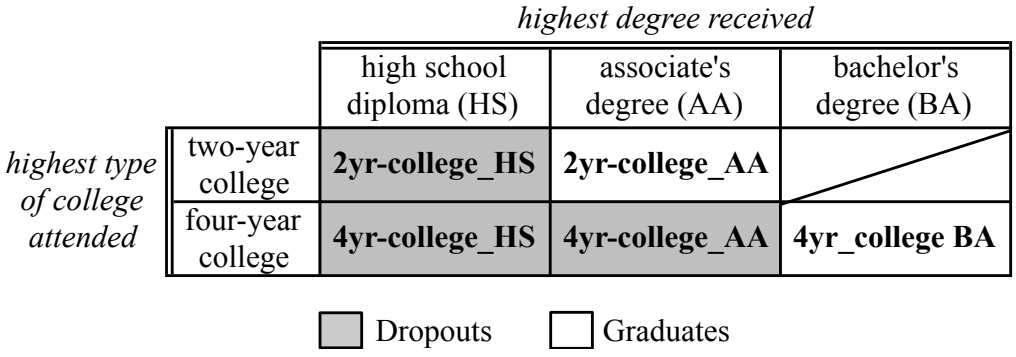

Figure 1: College outcomes using attendance and degrees

[2]For a less aggregated version of a similar approach fully relying on educational paths, see Agan (2014).

[3]Scholars commonly use completed years of schooling to determine two groups having at least some college experience (some college and college graduate). For example, see Wolpin (2005) for an explanation of this procedure for the NLSY79. However, in general this linear approach is not able to separate two-year college graduates and four-year college dropouts, as both can have the same number of years of schooling completed. Moreover, neither can the reverse approach—using actual degree obtainment to assign typical completed years of schooling (e.g., Park, 1996)—be used to classifying the un-ordered set of educational outcomes that allows for two- and four-year college enrollment and graduation. Later, we also estimate models with the conventional measure of education derived from completed years of schooling, to find similarities and differences in the results from using the conventional approach compared to the results from using our approach.

Figure 1 shows our five college outcomes. We classify each group by the highest type of college ever attended, i.e., two-year college (2yr-college) or four-year college (4yr-college), and by the highest degree ever received, i.e., high school diploma (HS), associate's degree (AA), bachelor's degree or higher (BA). By combining an individual's highest type of college ever attended and highest college degree ever received, we generate the following five groups: 2yr-college_HS, 2yr-college_AA, 4yr-college_HS, 4yr-college_AA, and 4yr-college_BA. By imposing a strict ranking for the types of college ($2yr-college < 4yr-college$) and degrees ($HS < AA < BA$), and by only using each individual's highest type of college attended and highest degree received,[4] we generate five mutually exclusive groups. From this classification of educational outcomes we can derive a traceable definition of dropouts: individuals for whom the highest degree received is lower than the degree that is granted by the highest type of college ever attended. Overall, we investigate three groups of dropouts: 2yr-college_HS, 4yr-college_HS, and 4yr-college_AA.

Our classification of education enables us to define dropouts without directly modeling the dropout decision. Thus our approach requires no further assumptions while still clearly defining mutually exclusive educational groups. In the same manner, our approach is highly flexible and does not impose a strict time structure on the decision to drop out of college. More generally, our approach does not impose any restrictions on an individual's educational path: He or she can take any number of years to finish a specific degree,[5] can stop his or her college education, continue it at some later point in time, and finish with or without a degree,[6] or can switch between multiple institutions. Given this complexity of educational decisions, our classification of education provides us with a simplified yet clear-cut definition of dropouts.[7]

[4]For example, someone who went to several different two- and four-year colleges and who finally graduated with a BA would be labeled as "4yr-college_BA." If this same individual finally finished with only an AA, he or she would be labeled as "4yr-college_AA."

[5]For example, finishing a bachelor's degree within four years is far from being the U.S. norm (Jaeger & Page, 1996; Stratton & Wetzel, 2013).

[6]Arcidiacono, Aucejo, Maurel, and Ransom (2013) show that stopping-out of college (i.e. leaving college only temporarily) is a frequent occurrence, particularly at two-year colleges. Further, when investigating dropout behavior, Stratton, O'Toole, and Wetzel (2008) show the importance of using a classification of education that clearly does not include short-term "stopouts" in the group of long-term dropouts.

[7]However, our classification of education does not enable us to use regional or time variation for further analyses. Given the complexity of the dropout decision stretching over a long period of time and several colleges, we cannot attach each dropout to a certain year or a certain college. Including region or time information, we would be able to use random variation in dropout rates over region and time to estimate the causal effect of dropping out of college on self-esteem. However, as we can not base our identification strategy on regional or time variation, we can only utilize the panel structure of our data to identify our effects.

3.2 Measure of self-esteem

To measure self-esteem, we rely on the Rosenberg scale (RS), a ten item measure of global self-esteem (Rosenberg, 1965). Although the RS is relatively short, it has proven to be valid and reliable, making it an efficient tool for measuring global self-esteem (for an overview, see Goldsmith et al., 1996). Indeed, the RS is the most popular measure of global self-esteem among researchers in psychology and sociology (Baumeister et al., 2003; Blascovich & Tomaka, 1991; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). Starting in the early 2000s, economists began to widely use both the RS and various adaptations of it (Bowles, Gintis, & Osborne, 2001; De Araujo & Lagos, 2013; Drago, 2011; Goldsmith et al., 1996, 1997; Heckman, Humphries, Urzua, & Veramendi, 2011; Heckman & Kautz, 2012; Heckman et al., 2006; Murnane et al., 2001; Persico, Postlewaite, & Silverman, 2004; Waddell, 2006).

The RS is a 10-item Likert scale (0=strongly disagree, 4=strongly agree) designed for measuring feelings of self-worth and self-acceptance (Blascovich & Tomaka, 1991). The statements are as follows: (1) I feel that I am a person of worth, at least on an equal basis with others; (2) I feel that I have a number of good qualities; (3) All in all, I am inclined to feel that I am a failure; (4) I am able to do things as well as most other people; (5) I feel I do not have much to be proud of; (6) I take a positive attitude toward myself; (7) On the whole, I am satisfied with myself; (8) I wish I could have more respect for myself; (9) I certainly feel useless at times; (10) At times I think I am no good at all.[8] Given various approaches for deriving the overall score, this paper follows the most common procedure—that of taking the sum of the items (Blascovich & Tomaka, 1991). This number ranges from 0 to 40,[9] i.e. the higher the score, the higher the self-esteem of the individual.

3.3 Data

Our data comes from the NLSY79, a sample of 12,686 individuals born between 1957 and 1964 and first interviewed in 1979. The NLSY79 provides both the RS for 1980, 1987, and 2006, and detailed information on educational attainment. We construct a sample to empirically investigate the relationship between college enrollment and dropping out or graduating and self-esteem. This sample enables us to investigate the long-term effects of dropping out of college on self-esteem in 2006, when

[8] These items are developed in Rosenberg (1965). Items 3, 5, 8, 9, 10 are reverse-scored, for building the sum of the items.

[9] For our regression models we standardize all self-esteem scores to have a mean of 0 and a standard deviation of 1.

the individuals are in their 40s. Moreover, by giving individuals until 2006 to finish their education, we make our setting highly flexible, without strong restrictions on years in college or on leaving college and returning later. Therefore, we are able to observe individuals who have had sufficient time to finish all their post-high school education (for similar argumentation, see Kane & Rouse, 1995).

We impose several sample restrictions that enable us to classify an individual's college education in detail (see table A1 for more details). We restrict our sample to individuals still in the panel in 2006 and having reported a self-esteem score in 1980 and 2006. Moreover, we drop all individuals not enrolled in college at some point or for whom we do not have valid information on the type of college enrolled in or the highest degree obtained.[10] Finally, we remove observations with missing values on control variables. Our final sample consists of 2,836 observations.

Table 1 shows summary statistics for the main sample. The educational composition of the sample shows that the different college outcomes occur at very different rates: the three larger groups are 2yr-college_HS (=dropout), 4yr-college_HS (=dropout), and 4yr-college_BA with 22, 25, and 38 percent of the individuals ending up in these groups. In the remaining two groups 2yr-college_AA and 4yr-college_AA (=dropout) are 7 and 8 percent of the individuals. Overall, 71 percent of the students attend a four-year college at one point, and 46 percent of these students never graduate from it.[11]

Table 1 shows that self-esteem increases on average from 1980 to 2006 for all college outcomes. Overall, the descriptive results support our later findings on the negative effect of dropping out of college on self-esteem. In 1980 the ranking of the self-esteem score and the AFQT score for the different college outcomes are the same and correspond to a typical ranking of educational outcomes, which puts a strong emphasis on four-year college enrollment ($2yr-college\_HS < 2yr-college\_AA < 4yr-college\_HS < 4yr-college\_AA < 4yr-college\_BA$). However, in 2006 the group 2yr-college_AA ends up at a higher level of self-esteem than both types of four-year college dropouts (4yr-college_HS

[10] For this reason, we also have to drop all individuals with the highest degree specified as "other" as long as they do not have indicated another highest degree in preceding or succeeding years.This restriction will most likely affect two-year college students holding a diploma or certificate, as these categories are not part of the questionnaire. However, as we cannot drop the individuals who do not complete these programs, our group 2yr-college_HS may also include individuals who have only been enrolled in two-year college programs that do not grant an AA. In summary, we drop the graduates of these programs but have to keep the dropouts, and, therefore, we will most likely underestimate the dropout effect for two-year college-enrolled individuals.

[11] Although Light and Strayer (2000) report a dropout rate for four-year college students of 58 percent in their sample of the NLSY79, they only allow each individual to attend one college. Our approach does not restrict the number of colleges to which individuals might transfer, thereby resulting in a lower dropout rate. While our approach of classifying educational outcomes does not allow us to estimate a precise two-year college dropout rate, we can still provide a lower bound for this rate. By definition, the group 4yr-college_AA graduates from a two-year college at one point, and therefore the two-year college dropout rate in our sample must be at least 59 percent. We calculate this rate by dividing the number of individuals in the group 2yr-college_HS by the sum of the number of individuals in the groups 2yr-college_HS, 2yr-college_AA, and 4yr-college_AA.

and 4yr-college_AA). This finding already indicates that even merely entering but not completing a four-year college might have negative effects on the development of self-esteem.[12]

Table 1: Summary statistics

	2yr-college_HS	2yr-college_AA	4yr-college_HS	4yr-college_AA	4yr-college_BA	Total
N	618	196	698	229	1,095	2,836
Self-esteem score in 1980	22.23	22.99	23.03	23.38	23.94	23.23
	(3.85)	(3.84)	(4.02)	(4.15)	(3.88)	(3.98)
Self-esteem score in 2006	23.68	24.30	24.10	24.21	24.96	24.36
	(4.47)	(4.31)	(4.40)	(4.30)	(4.03)	(4.29)
AFQT score	59.92	66.18	65.85	68.69	83.31	71.55
	(18.37)	(17.87)	(18.93)	(18.92)	(15.99)	(20.11)
Age (in 1979)	17.34	17.55	17.48	17.60	17.53	17.48
	(2.23)	(2.19)	(2.23)	(2.23)	(2.27)	(2.24)
Female	0.57	0.62	0.54	0.56	0.53	0.55
	(0.50)	(0.49)	(0.50)	(0.50)	(0.50)	(0.50)
Black	0.30	0.22	0.36	0.29	0.19	0.27
	(0.46)	(0.41)	(0.48)	(0.46)	(0.39)	(0.44)
Hispanic	0.22	0.20	0.19	0.21	0.12	0.17
	(0.42)	(0.40)	(0.40)	(0.41)	(0.32)	(0.38)
Parents' Education	11.58	11.57	12.19	11.91	14.05	12.71
	(3.04)	(3.29)	(3.07)	(3.04)	(3.13)	(3.28)
Family income (in 1979)	15.66	16.03	16.90	16.95	24.20	19.39
	(11.19)	(10.87)	(11.95)	(12.93)	(16.21)	(14.15)
Number of siblings (in 1979)	3.64	3.89	3.59	3.75	2.87	3.35
	(2.36)	(2.77)	(2.56)	(2.49)	(2.05)	(2.37)
Urban area resident (in 1979)	0.79	0.78	0.81	0.79	0.81	0.80
	(0.41)	(0.41)	(0.39)	(0.40)	(0.40)	(0.40)

Notes: Reported are mean coefficients and standard deviations in parentheses. Region of residence in 1979 (Northeast, North Central, South or West) is not reported. The family income is divided by 1,000. The AFQT score is the sum of the scores on the Armed Forces Qualification Test conducted in 1980 (including tests on paragraph comprehension, word knowledge, mathematics knowledge, and arithmetic reasoning). The AFQT score was collected, as a part of the Armed Services Vocational Aptitude Battery, for all survey participants in the same year. The parents' education is equal to the father's or the mother's education, whichever is higher.

[12]The correlation between the self-esteem score in 1980 and 2006 is 0.275. Thus, at least to some extent, self-esteem appears to develop differently across individuals.

3.4 Method

Given our data, we run OLS regressions. To estimate the relationship between college outcomes and self-esteem, we use the following equation:

$$SE\_After_i = \alpha + \beta \cdot SE\_Before_i + \boldsymbol{\gamma_\eta} \cdot \mathbf{College\_outcome_i} + \boldsymbol{\delta_\lambda} \mathbf{X_i} + \varepsilon_i \quad (1)$$

We estimate the final level of self-esteem and control for the lagged measure. This is computational equal to estimating the change while controlling for the lagged measure (for a discussion of different model specifications, see Allison, 1990). The variable SE_After_i represents the self-esteem score in 2006 (and 1987, for some additional analysis). SE_Before_i represents the lagged self-esteem score, measured in 1980. X_i is a vector of background variables measured in 1979 and 1980 (see table 1 for details). These baseline characteristics include parents' education; the Armed Forces Qualification Test (AFQT) score, which is generally viewed as a measure of skills that are important both in college and in the workplace (Light & Strayer, 2000);[13] and other time invariant reasons for dropping out of college. $\mathbf{College\_outcome_i}$ is a vector of η dummy variables, indicating the college outcome (see figure 1). $\boldsymbol{\gamma_\eta}$ is the vector of the main coefficients of interest.

We make no strong argument about the causality of our results. Nonetheless, to account for the influence of unobservable factors on the decision to drop out of college and on current self-esteem, we include lagged self-esteem and various control variables (including an ability measure) in our model. To interpret our results as causal, one thus needs to assume that dropouts and graduates would have the same increase in self-esteem over time, had the dropouts never dropped out. The main identifying assumption of our regression equation is independence of treatment status and self-esteem in 2006 conditional on self-esteem in 1980 and control variables. Specifically, all time invariant unobservable factors affecting both the self-esteem 2006 and education decisions are already captured in the 1980 self-esteem score and in the control variables. In sum, dropouts only differ from graduates in 1980 self-esteem and in control variables. The degree to which this assumption is fulfilled determines the causality of our results.

[13] Herrnstein and Murray (1994) view the AFQT score as an intelligence test, as it is a good measure of general cognitive ability. See also the discussion in Almlund, Duckworth, Heckman, and Kautz (2011). We follow Drago (2011) and standardize the score to have a mean of 0 and a standard deviation of 1 within each age group.

4 Results

4.1 Main results

Table 2 presents evidence on a persistent negative effect of dropping out of college on self-esteem. Therefore, having unfulfilled educational aspirations is detrimental for self-esteem. Column (1) gives the results for the subsample of four-year college-enrolled students. The coefficient of the dummy variable 4yr-college_HS indicates that four-year college dropouts with only a high school degree score on average -.19*** standard deviations less on the self-esteem score in 2006 than four-year college graduates (4yr-college_BA), even when we control for differences in lagged self-esteem, various background variables, and cognitive ability. A similar effect applies to four-year dropouts who receive an associate's degree (4yr-college_AA).[14] In terms of self-esteem, obtaining an associate's degree is not a helpful strategy for preventing damage to self-esteem from dropping out of a four-year college.

In column (2) we show a similar pattern for the full sample, including also the students who enrolled exclusively in two-year colleges but never in a four-year college. The negative effect of two-year college dropouts (2yr-college_HS) is similar to the other dropout effects.[15] Furthermore, using one dummy variable indicating all kinds of dropouts (2yr-college_HS, 4yr-college_HS, and 4yr-college_AA), we find a coefficient for dropouts of -.16*** standard deviations. However, that two-year college graduates who never enrolled in a four-year college (2yr-college_AA) experience no such negative effect is striking.[16] Overall, these results may indicate that merely obtaining any degree is not enough. The most important factor is not dropping out of the highest type of college ever enrolled in. More specifically, the differences between the group 2yr-college_AA and 4yr-college_AA show that self-esteem formation is not driven solely by the highest degree the student received but primarily by the highest type of college he or she enrolled in and whether he or she obtained a degree from that college. In this sense, our results are an indication of a dropout effect, not a graduation effect.

Table 2 also sheds light on the differences between our approach, which focuses on college atten-

[14] In column (1), we cannot reject the hypothesis that the coefficients of 4yr-college_HS and 4yr-college_AA are equal, with the probability value of the corresponding F-test being equal to .8384.

[15] Again, in column (2), we cannot reject the hypothesis that the coefficients of 2yr-college_HS, 4yr-college_HS, and 4yr-college_AA are equal, with the probability value of the corresponding F-test being equal to .8565. The hypothesis that all significant negative effects are equal cannot be rejected for all further tables, unless we report otherwise.

[16] This result is driven not by large standard errors but by a relatively smaller coefficient. Moreover, when we use the non-standardized self-esteem score in 2006 as the dependent variable, the OLS estimations of the models in columns (1) and (2) in Table 2 make no predictions outside of the logical range of values. Furthermore, the general result of a negative coefficient of the dummy variables indicating dropouts (2yr-college_HS, 4yr-college_HS, and 4yr-college_AA) holds when we use an ordered-probit specification to estimate the models of column (1) and (2) in Table 2.

dance and degrees, and the more common approach of using completed years of schooling to classify college outcomes.[17] In column (3) we repeat our analysis using three college outcomes, derived by using not attendance and degrees but completed years of schooling: four-year college graduate, some college, and only started the first year of college without finishing it.[18] We find a strong negative effect for individuals with some college education (between 13 and 15 completed years of schooling). We also find a similar effect for the additional group of individuals who only started the 13th year of education. Our approach to classifying college outcomes generates qualitatively similar results. However, from comparing column (2) with column (3), we gain the additional insight that dropouts drive the effect for "some college," not two-year college graduates (2yr-college_AA). Compared to the models based on years of schooling, our approach of using discrete college outcomes based on attendance and degrees has three advantages. First, we can include college dropouts who never finished their first year of college education. Second, we can test whether the effects for two-year college graduates and two- or four-year college dropouts are different (see table 2, column 2). Third, our approach enables us to make precise and detailed estimations of the effects for four-year college students (see table 2, column 1).

Although the magnitude of the effect for the dropouts is not particularly large, the magnitude becomes of interest because self-esteem appears to be a trait-like characteristic that does not change much over the course of an individual's adult life. For example, one might interpret the coefficient of the self-esteem score in 1980 as the share of each standard deviation of the self-esteem score in 1980, which factors into the score in 2006. In columns (2) and (3) one additional standard deviation in 1980 results in about 0.26 standard deviations more in 2006, even when we control for a rich set of background variables that potentially could have already influenced self-esteem in 1980.

[17] A similar argument applies when we use actual degree obtainment to assign typical completed years of schooling to the various outcomes.

[18] The last group cannot be identified when only using completed years of schooling to classify educational outcomes.

Table 2: Explaining self-esteem score in 2006 (OLS)

	4yr-college	Full	
	(1)	(2)	(3)
Self-esteem score in 1980	0.2404***	0.2628***	0.2617***
	(0.0223)	(0.0193)	(0.0194)
2yr-college_HS	-	-0.1772***	-
	(-)	(0.0548)	(-)
2yr-college_AA	-	-0.0726	-
	(-)	(0.0773)	(-)
4yr-college_HS	-0.1912***	-0.1512***	-
	(0.0527)	(0.0510)	(-)
4yr-college_AA	-0.1761**	-0.1398**	-
	(0.0723)	(0.0712)	(-)
Started only first year of college	-	-	-0.1926***
	(-)	(-)	(0.0590)
Some college	-	-	-0.1184***
	(-)	(-)	(0.0427)
Female	-0.1271***	-0.0987***	-0.1010***
	(0.0429)	(0.0364)	(0.0365)
Family income (in 1979)	-0.0030*	-0.0019	-0.0019
	(0.0016)	(0.0014)	(0.0014)
AFQT score	0.0126	0.0353	0.0358
	(0.0308)	(0.0256)	(0.0252)
Additional background variables	YES	YES	YES
Constant	2.8902**	2.3826**	2.3649**
	(1.3843)	(1.1935)	(1.1932)
R-squared	0.088	0.095	0.095
Observations	2,022	2,836	2,836

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Coefficients are indicated. Robust standard errors are in parentheses. Additional background variables are age (in 1979), age (in 1979) squared, dummy variables for race, dummy variables for region of residence in 1979, number of siblings, urban area resident (in 1979).

4.2 Additional results and robustness checks

This subsection presents additional results showing the robustness of our findings. First, we discuss selection issues in education and show the robustness of our results with regard to these issues. Second, we show when the effects emerge and how they potentially fade out over time. Third, we show that our results are not purely driven by different labor market outcomes or other confounding factors for dropouts and graduates.

We apply further strategies to deal with the selection bias in educational decisions. A selection bias arises because college outcomes are not randomly assigned: Instead, individuals decide to enroll in certain types of colleges, from which they can choose to graduate or to drop out. To deal with this bias, we apply three strategies. First, by focusing only on college-enrolled individuals, we limit the number of potential educational decisions and receive a more homogenous sample, i.e. this restriction reduces the heterogeneity between the groups with different college outcomes. Second, in addition to the lagged self-esteem measure, we include in our estimation other time invariant potential reasons for dropping out. An established reason for dropping out of college is family background (i.e., see Manski, 1992, for the effect of family income and parents' education, see Stinebrickner & Stinebrickner, 2008, for the effect of credit constraints on dropping out of college, and, see Light & Strayer, 2000, for the effect of mother's education on dropping out of college). Other reasons include general ability (AFQT), race, and gender (Light & Strayer, 2000).

Third, we test the robustness of our results for a subsample of college students whose lagged self-esteem score was measured while they were still enrolled in high school. Doing so ensures that the self-esteem measure in 1980 is not affected by prior or current schooling decisions. To ensure that the lagged self-esteem is not already affected by educational outcomes, we restrict our sample to individuals who are still enrolled in high school in 1980. Our identification relies on the assumption that the lagged self-esteem measure in 1980 is not affected by educational outcomes. In 1980, some individuals might still be enrolled in high school while others have graduated, and started college, or even finished college. Restricting our sample to individuals who were still enrolled in high school in 1980 reduces the effect of current or past education on self-esteem. Therefore, we construct a subsample in which all individuals are still enrolled in high school in 1980. This restriction decreases our sample size from 2,836 to 1,227 observations. Overall, our results are similar to our main findings for both only four-year college students and for the full sample (table A2). We find a persistent gap

in self-esteem between college dropouts and four-year college graduates. Again, we find no negative effect for the group 2yr-college_AA. In magnitude, our results are larger than those for our primary investigation in Table 2. Although, the differences in magnitude might be driven by the different sample composition, our primary results are not qualitatively affected by the sample composition.

Given the long time period between our two self-esteem measures (26 years), we investigate the time structure in more detail. We provide evidence on the early emergence and fading out of our effects by explaining the self-esteem score measured in 1987; seven years after our initial self-esteem measure. In 1987 many individuals in our sample were still enrolled in college. Therefore, to ensure that ongoing education does not affect the self-esteem score, we include a subsample analysis restricted to individuals who finished their education by 1987 and did not enroll in college until at least 2006. This restriction decreases our sample size from 2,836 to 1,501 observations.

Using the self-esteem score in 1987, we find very similar results for four-year college students: dropping out of a four-year college reduces self-esteem, regardless of whether the dropouts received an associate's degree or not (table A3, columns 1 and 3). However, the magnitude of the effects is bigger than in Table 2. In particular, the results for the subsample analysis in Table A3 column (3) reveal much higher negative effects of dropping out of college on self-esteem when self-esteem is measured close to the time that college education ends. However, while the negative effect of dropping out of college might fade out over time, we know that it remains still negative and significant at least until 2006 (see table 2). In the sample that includes also two-year college students, the patterns become less clear. While the group 2yr-college_HS still experiences a negative effect of a similar magnitude, the group 2-yr-college_AA now also experiences a significant negative effect (in contrast to our results in table 2). While this result appears puzzling, it could represent yet another facet of the broader idea that the effects of educational experience on self-esteem fade over time. When we look at the summary statistics in Table 1, we see that self-esteem scores for all groups seem to converge between 1980 and 2006, that is, the spread between the respective group with the highest and the lowest self-esteem score decreases from 1 to .68 points on the self-esteem scale. In some sense this reduced range could also explain the observed differences between our results in Tables 2 and A3: Differences between the groups appear to decrease over time (regression to the mean). Not only the negative effects for the dropouts but also the positive effects for the base group, 4yr-college_BA, decrease. This development may explain why we observe a significant negative effect for two-year college graduates

when we investigate the self-esteem score in 1987 but not when we investigate it in 2006.

Dropouts and graduates might also differ in various other dimensions which might confound our results. To understand how self-esteem emerges over time and through what channels dropping out has a negative effect on self-esteem, we investigate whether our effects disappear after we control for (intermediate) outcomes of education. We therefore estimate a more direct model, compared to the reduced form model that we report in Table 2. In this direct model we include several potential outcomes of college education or other confounding factors measured in 2006 in our model: income, labor force status, number of children, and martial status.

When we include these additional variables measured in 2006, the effect of dropping out on self-esteem remains significant for four-year college students (table A4, column 1). Moreover, the effect remain similar in magnitude to the results in Table 2. In Table A4 column (2) we run the same regression for the full sample. For the groups 2yr-college_HS and 4yr-college_HS the negative effect still exists. However, the group 4yr-college_AA no longer experiences the negative effect on self-esteem. If the group 4yr-college_AA had the same labor market outcomes as the group 4yr-college_BA (hypothetical), they would not experience any negative effect on self-esteem. This finding appears to suggest that wage expectations and reference group effects might be important for the group 4yr-college_AA. In sum, had they been able to offset the effect of a bachelor's degree on the intermediate outcomes we control for, they would not experience a reduction in self-esteem. However, overall, the effect of dropping out of college on self-esteem is not entirely driven by the fact that dropouts and graduates differ in outcome variables measured in 2006. In other words, an additional effect of dropping out on self-esteem exists, beyond the potential effect of different labor and non-labor market outcomes for dropouts and graduates.

4.3 Economic importance of results

To attach an economic value to our results, we perform a back-of-the-envelope calculation of the effect of self-esteem on wages.[19] Table A5 shows the results for typical regressions of self-esteem on wages. The returns to a one standard deviation increase in self-esteem 2006 range between 5.3 and 11.0 percent and are thus in line with the results of an IV estimation by Drago (2011). Column (4) shows that self-esteem is valued in the labor market, even when controlling for a large set of controls,

[19]For this calculation we restrict the sample to individuals with valid data on wages and tenure in 2006.

including education. Therefore, to derive a rough estimate of the economic value of our results, we use the returns of 6.9 percent in Table A5 column (3) because this model represents as closely as possible our main model for the development of self-esteem.

The estimates in Table A5 show that self-esteem has a significant effect on wages. We combine these returns (6.9 percent) with our main effects on self-esteem of being a dropout, which range between -.14 and -.18 standard deviations (table 2, column 2), with the effect for the entire group of dropouts being -.16 standard deviations. Using the returns of 6.9 percent and the effect size of -.16 standard deviations, our effect of dropping out is equal to -1.1 percent, that is, the wages of dropouts and graduates differ by about 1.1 percent due to their different levels of self-esteem. However, these differences are part of observed differences in traditional returns to education. In this sense we provide an insight into exactly what constitutes returns to education. As self-esteem is valued in the labor market, and as dropping out of college results in significantly lower levels of self-esteem, the observed wage differences between dropouts and graduates can be explained to some extent by differences in self-esteem.

5 Conclusion

Using the NLSY79, our paper investigates the long-term relationship between unfulfilled educational aspirations and self-esteem. Therefore, we develop a classification to separate college dropouts with unfulfilled aspirations and graduates with fulfilled aspirations. Compared to graduating, attending a four-year college and not finishing it results in a significant lower level of self-esteem. Similarly, attending a four-year college but ending up only with an associate's degree results in lower self-esteem, just as attending a two-year college but not finishing it. However, those who both exclusively attend and finish a two-year college with an associate's degree do not experience any such effect on self-esteem. Thus our results suggest that in terms of developing self-esteem, avoiding dropping out of any education is most critical as ending up with unfulfilled educational aspirations has long-term negative effects. Therefore, aiming for an education that has a high likelihood of success could be a good strategy for avoiding damage to a student's self-esteem.

The results in this paper are limited in at least two ways, both of which provide potentials for future research. First, by including the possibility of dropping out of college several times in the construction of our college outcomes, we are not able to use information on individual colleges that

include information about either college quality, or differences in dropout rates over regions, or over time, or over both. Dropping out of a low-quality college might affect an individual's self-esteem less than dropping out of a high-quality one, although the opposite might also hold true. However, as these effects might differ over the distribution of college quality, further analysis in this direction could be beneficial.

The second limitation results from data constraints, based on the timing of the survey interviews. The periods between our self-esteem measures might be sufficiently long that several events, unrelated to schooling, might also systematically alter self-esteem. Having data on self-esteem at the college enrollment date, at a date closely following either the dropping out or the graduating, and long-run follow-ups, researchers would be able to address this issue more closely. Self-esteem assessments more closely following the end of college education might particularly provide a good opportunity for estimating the immediate effects more precisely. Doing so, however, calls for future cohorts and survey waves.

Our research, using college outcomes based on attendance and degree attainment, implies that associate's degrees are an efficient means of developing self-esteem. A student's completion of a two-year college, when he or she has never been enrolled in a four-year college, yields an increase in self-esteem equal to the increase for students completing a four-year college. Dropouts from two- and four-year colleges miss out on this effect. Thus students need to form realistic educational aspirations and might well consider the strategy of enrolling only in institutions from which they can reasonably expect to graduate. For example, students, who are not sure whether they can succeed at a four-year college, could be advised to first enroll in a two-year college, from which they can expect to graduate. As a result of the two-year college experience, they will be able to make better-informed decisions about four-year college enrollment. Thus our findings have implications for both educators and students alike.

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Appendix

Table A1: Sample Construction

	N
Intial sample (NLSY79)	12,686
In panel in 2006	7,654
Self-esteem not missing	7,074
College enrolled with valid information	3,744
Controls 1979 not missing	2,942
Controls 2006 not missing	2,836
Final sample	**2,836**

Table A2: Explaining self-esteem score in 2006 for subsample being enrolled in high school in 1980 (OLS)

	4yr-college	Full
	(1)	(2)
Self-esteem score in 1980	0.2335***	0.2531***
	(0.0352)	(0.0298)
2yr-college_HS	-	-0.2686***
	(-)	(0.0787)
2yr-college_AA	-	-0.0845
	(-)	(0.1265)
4yr-college_HS	-0.2059**	-0.1797**
	(0.0827)	(0.0795)
4yr-college_AA	-0.3253***	-0.2975**
	(0.1183)	(0.1155)
Female	-0.1175*	-0.0918*
	(0.0663)	(0.0551)
Family income (in 1979)	-0.0039	-0.0037
	(0.0029)	(0.0026)
AFQT score	0.0010	0.0116
	(0.0471)	(0.0392)
Additional background variables	YES	YES
Constant	-5.0062	0.9905
	(6.6917)	(5.3271)
R-squared	0.095	0.095
Observations	849	1,227

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Coefficients are indicated. Robust standard errors are in parentheses. Additional background variables are age (in 1979), age (in 1979) squared, dummy variables for race, dummy variables for region of residence in 1979, number of siblings, urban area resident (in 1979).

Table A3: Explaining self-esteem score in 1987 (OLS)

	all		finished education in 1987	
	4yr-college	Full	4yr-college	Full
	(1)	(2)	(3)	(4)
Self-esteem score in 1980	0.3822***	0.3737***	0.3825***	0.3655***
	(0.0215)	(0.0187)	(0.0304)	(0.0255)
2yr-college_HS	-	-0.1335**	-	-0.1480**
	(-)	(0.0525)	(-)	(0.0700)
2yr-college_AA	-	-0.2567***	-	-0.3750***
	(-)	(0.0739)	(-)	(0.1042)
4yr-college_HS	-0.2662***	-0.2622***	-0.3242***	-0.3136***
	(0.0482)	(0.0468)	(0.0674)	(0.0647)
4yr-college_AA	-0.1729**	-0.1680**	-0.2742**	-0.2650**
	(0.0711)	(0.0700)	(0.1204)	(0.1185)
Female	-0.1111***	-0.1125***	-0.0642	-0.0717
	(0.0410)	(0.0350)	(0.0572)	(0.0473)
Family income (in 1979)	-0.0005	-0.0011	-0.0005	-0.0017
	(0.0015)	(0.0014)	(0.0020)	(0.0018)
AFQT score	0.1361***	0.1386***	0.1428***	0.1418***
	(0.0290)	(0.0243)	(0.0395)	(0.0325)
Additional background variables	YES	YES	YES	YES
Constant	2.4894*	1.5957	4.7514**	1.8913
	(1.2946)	(1.1287)	(1.8425)	(1.5589)
R-squared	0.212	0.202	0.232	0.205
Observations	1,956	2,752	978	1,501

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Coefficients are indicated. Robust standard errors are in parentheses. Additional background variables are age (in 1979), age (in 1979) squared, dummy variables for race, dummy variables for region of residence in 1979, number of siblings, urban area resident (in 1979).

Table A4: Explaining self-esteem score in 2006 with additional control variables measured in 2006 (OLS)

	4yr-college	Full
	(1)	(2)
Self-esteem score in 1980	0.2304***	0.2533***
	(0.0221)	(0.0191)
2yr-college_HS	-	-0.1289**
	(-)	(0.0547)
2yr-college_AA	-	-0.0258
	(-)	(0.0768)
4yr-college_HS	-0.1478***	-0.1013**
	(0.0522)	(0.0505)
4yr-college_AA	-0.1495**	-0.1090
	(0.0724)	(0.0712)
Female	-0.0753*	-0.0413
	(0.0446)	(0.0378)
Family income (in 1979)	-0.0033**	-0.0024*
	(0.0016)	(0.0014)
AFQT score	-0.0020	0.0178
	(0.0309)	(0.0257)
Additional background variables	YES	YES
Control variables and labor market outcomes (2006)	YES	YES
Constant	2.4300*	1.9697*
	(1.3773)	(1.1829)
R-squared	0.110	0.118
Observations	2,022	2,836

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Coefficients are indicated. Robust standard errors are in parentheses. Additional background variables are: age (in 1979), age (in 1979) squared, dummy variables for race, dummy variables for region of residence in 1979, number of siblings, urban area resident (in 1979). Control variables and labor market outcomes (2006) are income (in 2006), dummy variables for labor force status (in 2006), number of children (in 2006), dummy variables for martial status (in 2006).

Table A5: Explaining wages with self-esteem (OLS)

	(1)	(2)	(3)	(4)
Self-esteem score in 2006	0.1100***	0.0739***	0.0685***	0.0532***
	(0.0143)	(0.0130)	(0.0138)	(0.0130)
Self-esteem score in 1980	-	-	0.0563***	0.0432***
	(-)	(-)	(0.0149)	(0.0139)
Education, tenure, age, age squared	-	YES	-	YES
Background variables	-	-	YES	YES
R-squared	0.027	0.202	0.199	0.294
Observations	2,331	2,331	2,331	2,331

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Coefficients are indicated. Robust standard errors are in parentheses. Dependent variable is log of hourly wages in 2006. Background variables are dummy variable for gender, family income (in 1979), AFQT score, age (in 1979), age (in 1979) squared, dummy variables for race, dummy variables for region of residence in 1979, number of siblings, urban area resident (in 1979). Education is measured in years of finished education.