



Leaving school in an economic downturn and self-esteem across early and middle adulthood☆☆☆



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HIGHLIGHTS

- We examine the persistent self-esteem effects of leaving school in a bad economy.
- We exploit macroeconomic fluctuations from 1976–1987 to identify effects.
- Individuals who leave school in a bad economy have lower self-esteem.
- Effects do not emerge immediately.
- Instead, effects develop with potential labor market experience.

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ABSTRACT

In this study, we test whether leaving school in an economic downturn impacts self-esteem across early and middle adulthood. Self-esteem is of interest to economists because it is an established determinant of important socioeconomic outcomes such as wages, crime, marriage, health, and civic engagement. Previous research suggests that leaving school in a downturn can depress career trajectories, and social psychological theory predicts that career success is an important determinant of self-esteem. We model responses to a standard measure of self-esteem (the Rosenberg Self-esteem Scale) as a function of the state unemployment rate at school-leaving. We address the potential endogeneity of time and location of school-leaving with instrumental variables. Our results suggest that leaving school in an economic downturn can undermine self-esteem over time.

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1. Introduction

In this study we examine whether, and to what extent, leaving school in an economic downturn influences self-esteem through early and middle adulthood. Self-esteem refers to the positive or negative

evaluation of the self as an object (Rosenberg, 1965, 1981; Owens and King, 2001; Mruk, 2006). It is indicated by individual perceptions of worthiness and competence. A series of studies show that leaving school in an economic downturn can contribute to adverse labor market (Oyer, 2006, 2008; Kondo, 2007; Genda et al., 2010; Kahn, 2010; Hershbein, 2012; Oreopoulos et al., 2012; Altonji et al., 2014; Maclean, 2014) and marital (Hershbein, 2012; Maclean et al., 2015) trajectories. Moreover, there is evidence to suggest that the effects of leaving school in an economic downturn may reach beyond labor and marriage market outcomes to health and health-related behaviors. These studies show that individuals who leave school in an economic downturn tend to exhibit worse health (in particular, mental health) and health behaviors such as drinking practices (Maclean, 2013, 2015; Cutler et al., 2015).

Social psychological research demonstrates that self-esteem is supported by labor market success, strong marital relationships, and better

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health (Rosenberg and Pearlin, 1978; Haney, 2007; Waite et al., 2009). Thus, leaving school in an economic downturn could conceivably erode an individual's self-esteem by increasing the probability of unfavorable outcomes in labor and marriage markets, and poor health outcomes and behaviors.

Interestingly, the literature offers little insight on this possible relationship. In an extension to the main analysis of risky drinking practices, Maclean (2015) provides suggestive evidence that self-esteem is influenced by leaving school in an economic downturn. Although Maclean's work is interesting it leaves many questions unanswered. We attempt to address some of these open questions in this study. First, we study dynamics of the relationship. Maclean focuses on self-esteem at a single point in time and thus cannot speak to the evolution of self-esteem effects. Second, we combine social psychology and economic theory and empirical evidence to motivate why we might expect economic conditions experienced at school-leaving to influence self-esteem. Third, we study heterogeneity in self-esteem effects across worker type (i.e., skill, race/ethnicity), as suggested by previous literature on the career effects of leaving school in an economic downturn. Fourth, we attempt to shed light on whether self-esteem may be a consequence of poor outcomes attributable to leaving school in an economic downturn or if, instead, it exacerbates these poor outcomes. Fifth, we show that findings are highly robust to multiple sensitivity tests and, as a result, are better able to interpret the relationship as a causal effect rather than a simple correlation.

Understanding determinants of self-esteem is of interest to economists because self-esteem is an established predictor of labor market outcomes (earnings, wages, unemployment spells), financial stability, health and health behaviors, human capital accumulation, crime, marriage, and civic engagement (Rosenberg, 1981; Goldsmith et al., 1996, 1997a,b; Bowles et al., 2001; Markowitz, 2001; Murnane et al., 2001; Graham et al., 2004; Mruk, 2006; Trzesniewski et al., 2006; Waddell, 2006; Yang, 2006; Corneo and Jeanne, 2010; Neymotin, 2010; Drago, 2011; Oreopoulos and Salvanes, 2011; de Araujo and Lagos, 2013; Mendolia and Walker, 2014). Broadly, the economic literature suggests that individuals who possess higher levels of self-esteem have better outcomes across these domains than individuals with lower self-esteem.

In this study, we use data from the National Longitudinal Survey of Youth 1979 Cohort (NLSY79) to model self-esteem, as measured by the Rosenberg Self-esteem Score (Rosenberg, 1965), at various points across the adult life course as a function of the state unemployment rate at school-leaving. The Rosenberg Self-esteem Score is a standard measure of self-esteem within the economics literature (Heckman et al., 2006; Webber, 2014). To this end, we exploit variation generated by volatility in the United States economy between 1976 and 1987 to identify persistent self-esteem effects. We address the potential endogeneity of both the time and location of school-leaving with instrumental variables. Specifically, we follow the literature on the persistent effects of leaving school in an economic downturn and utilize instruments based on birth year and state of residence early in life (Oyer, 2006; Kondo, 2007; Kahn, 2010; Oreopoulos et al., 2012; Maclean, 2013, 2014, 2015).

Our results suggest that economic conditions experienced at school-leaving do affect self-esteem. The effects do not emerge immediately at labor market entry; instead they emerge over time. Analysis of heterogeneity in treatment effects reveals that the effects are particularly strong for high skill individuals. As such, our core findings contribute to the broader literature on the persistent effects of leaving school in an economic downturn.

2. Conceptual framework

We first review social psychological theories of self-esteem. We then discuss how the economic literature on the effects of leaving school in a downturn can augment these theories.

2.1. Social psychological theories of self-esteem

There are three general social psychological principles that can govern the formation and development of self-esteem. These principles include reflected appraisals, social comparisons, and self-attributions.

The principle of reflected appraisals suggests that self-esteem is determined by our perceptions of how we think others view us (Cooley, 1902; Mead, 1934; Rosenberg and Pearlin, 1978; Rosenberg, 1981). When people perceive that they are valued and respected, self-esteem will tend to be high. When people perceive that they are devalued and disrespected, self-esteem will tend to be low. Our perceptions of how we think others see us are largely dependent upon socialization processes and our understanding of broader cultural values. Because one's socioeconomic status is imbued with social meaning, it represents an important criteria for self-judgment and the development of the self-concept. According to the principle of reflected appraisals, individuals who leave school during an economic downturn are likely to experience negative reflective appraisals due to limited opportunities for occupational and status attainment. This may be especially true when those conditions are experienced during the transition from school to work, when initial attachment to the labor market is generally formed.

The principle of social comparisons suggests that self-esteem is determined by what we learn about ourselves when we compare ourselves to others (Festinger, 1954; Rosenberg and Pearlin, 1978; Rosenberg, 1981). When we contrast ourselves to others, our self-evaluations are by definition relative to a selected reference group. Social comparisons are ubiquitous in life. They involve explicit evaluations (e.g., performance evaluations), salient comparisons (e.g., to co-workers), and countless informal comparisons (e.g., comparisons mediated by social interactions). According to the principle of social comparisons, individuals who leave school during an economic downturn are likely to exhibit lower levels of self-esteem because they tend to compare unfavorably with salient reference groups (e.g., individuals with similar academic credentials) who left school during more prosperous economic conditions.

The principle of self-attributions suggests that self-esteem is determined by perceptions of personal effectiveness and competence in achieving desired outcomes (Rosenberg and Pearlin, 1978; Rosenberg, 1981; Mruk, 2006). When people perceive that they are effective and competent, such perceptions are likely to promote self-esteem. When people perceive that they are ineffective and incompetent, such perceptions are likely to be internalized accordingly. Individuals aspire to achieve certain levels of social status and occupational standing. However, because occupations and income levels are achieved statuses, limited success in these areas may be interpreted as a reflection of personal failure. Self-esteem is likely to suffer as a result.

2.2. The impact of leaving school in an economic downturn

Workers who leave school in an economic downturn may be directed towards low wage and otherwise less desirable jobs in the short run because there are fewer open jobs and lower quality jobs (Reder, 1955; Okun, 1973; McLaughlin and Bils, 2001). Studies show that labor market frictions limit the ability of workers to shift into better jobs as the economy rebounds, leaving workers persistently stuck in low-wage and otherwise less desirable jobs (Oyer, 2006, 2008; Genda et al., 2010; Kahn, 2010; Kwon et al., 2010; Schoar and Zuo, 2011; Oreopoulos et al., 2012; Altonji et al., 2014; Maclean, 2014).

For example, workers who leave school in an economic downturn tend to earn lower wages, to hold less prestigious jobs, and are less likely to be promoted (Kahn, 2010; Kwon et al., 2010). Failure to succeed in the labor market may contribute to poor self-esteem among individuals who leave school in an economic downturn. Regardless of the effort school-leavers apply to their career, frictions in the labor market may prevent them from achieving the success experienced by their more fortunate counterparts who left school in a stronger economy.

The career effects attributable to leaving school in an economic downturn are not uniform across workers, however. Kondo (2007) shows that African American men face higher initial wage penalties, but these penalties are more persistent for white men, while Genda et al. (2010) find more persistent wage penalties for high skill (as defined by a college degree) than low skill (as defined by a high school degree) American men.¹ Among college graduates, Altonji et al. (2014) show that majors with typically higher earnings profiles experience significantly smaller earnings penalties than majors with typically lower earnings profiles. Lastly, women's labor market outcomes may be insulated from economic conditions at school-leaving, perhaps because they can more easily substitute into household production when faced with weak opportunities in the labor market (Kondo, 2007; Hershbein, 2012).

In addition to the above mentioned employment based-channels, leaving school in an economic downturn may affect self-esteem through marriage (Hershbein, 2012; Maclean et al., 2015) and health outcomes (Maclean, 2013, 2015; Cutler et al., 2015). For example, a man who leaves school in an economic downturn and obtains a low paying job may have poor marriage market opportunities, and he may decide to forego marriage. Hershbein (2012) and Maclean et al. (2015) find that men who leave school in an economic downturn are persistently less likely to marry and less likely to have children. This mechanism may be less pertinent for women based on standard economic models of specialization within the family (Becker, 1973, 1981). In general, the literature suggests that leaving school in an economic downturn has a negative effect on health and health behaviors, which may in turn impede self-esteem. Health effects are often stronger for men than for women, suggesting that this mechanism may be more important for men than women.

As noted in the introduction, self-esteem has been established as an important cause and consequence of many outcomes of interest to economists. Thus, it may be that leaving school in an economic downturn lowers self-esteem, which in turn influences other important outcomes. Whether self-esteem is a mechanism through which leaving school in an economic downturn impedes social outcomes or if the reverse relationship is true is *ex ante* ambiguous.

3. Data, variables, and methods

3.1. Data

We draw data from the geocoded National Longitudinal Survey of Youth 1979 Cohort (NLSY79). The original sample consists of 12,686 youth 14 to 22 in 1979. The survey was administered annually by the Bureau of Labor Statistics (BLS) between 1979 and 1993, and bi-annually from 1994 to 2010. NLSY79 administrators dropped 1079 members of the military sample² in 1984 and thus we cannot use these observations in our analysis due to the timing of the self-esteem variables (described in Section 3.2).³ We delete respondents who left school before 1976 as state-level unemployment rates from the BLS Local Area Statistics (detailed later in the manuscript) are available from 1976 onwards and we exclude those who report no completed education. We retain observations from NLSY79 rounds in which self-esteem information was collected, leaving an analysis sample of 4173 men and 4455 women.

¹ Genda and colleagues demonstrate a different pattern of results among Japanese men: high school graduates who leave school in an economic downturn experience larger career penalties than college graduates. These findings are attributed to the structure of the Japanese labor market.

² 201 randomly selected members of the military sample were retained.

³ We do retain the low income white sample [$n = 1643$] that was dropped by NLSY79 administrators for budgetary reasons in 1991. These respondents contribute an observation in 1987 but not in 2006. Results are robust to excluding these respondents from the analysis.

Our sample exclusions rules, which we argue are necessary to create a data set appropriate to our research question, lead to a substantial reduction in sample size. Our sample size after exclusions is in line with other studies that utilize the NLSY79 to examine the persistent effects of leaving school in an economic downturn (Kondo, 2007; Kahn, 2010; Hershbein, 2012; Maclean, 2013, 2014, 2015).⁴ However, we note as limitation of our study that our sample is small and may differ from the broader NLSY79 sample. In robustness checking, reported later in the manuscript, we provide some suggestive evidence on the comparability between our analysis sample and the full NLSY79 sample.

3.2. Self-esteem measures

We measure self-esteem with the Rosenberg self-esteem scale (RSES) (Rosenberg, 1965). This scale is commonly utilized within the economic literature to measure self-esteem in survey settings (Goldsmith et al., 1996; Goldsmith et al., 1997a; Goldsmith et al., 1997a, 1997b; Bowles et al., 2001; Murnane et al., 2001; Heckman et al., 2006; Waddell, 2006; Drago, 2011; Webber, 2014; Maclean, 2015).

The RSES, measured with a 10-item Likert format, asks respondents to describe their perceptions of their own worthiness and competence. Respondents are asked to strongly agree (1), agree (2), disagree (3), or strongly disagree (4) with 10 statements: (A) I am a person of worth, (B) I have a number of good qualities, (C) I am inclined to feel that I am a failure, (D) I am as capable as others, (E) I feel I do not have much to be proud of, (F) I have a positive attitude, (G) I am satisfied with myself, (H) I wish I had more self-respect, (I) I feel useless at times, and (J) I sometimes think I am no good at all. We recode items A, B, D, F, and G such that a higher score indicates higher self-esteem. We sum across the individual statements to create a score for each respondent in the sample. The raw score ranges from 0 to 40, with higher scores indicating higher self-esteem.⁵ For ease of interpretation, we standardize the raw score. Specifically, for each individual we subtract the gender-specific sample mean and divide by the gender-specific sample standard deviation. We use the full sample for standardization.

The RSES is collected three times in the NLSY79: 1980 (cohort members are 15 to 23 years old), 1987 (cohort members are 27 to 35 years old), and 2006 (cohort members are 41 to 49 years old). We use the 1987 and 2006 scores as over 50% of the NLSY79 sample had not left school by 1980. We rely on the unbalanced panel, i.e. those respondents who provide valid responses to the RSES in either 1987 or 2006, to preserve sample size.

To assess the persistence of self-esteem across the life course in the full NLSY79 sample (i.e., we include all respondents who provide a valid score in any year) we correlate the 1980, 1987, and 2006 RSES scores. The raw correlations range from 0.32 to 0.45. Appendix Figure A plots the mean raw RSES score in the full NLSY79 sample in 1980, 1987, and 2006. Scores are increasing in the earlier years (1980, 1987) and roughly stable in later years (1987, 2006).

The psychological literature has documented that the RSES is a valid and reliable instrument to measure self-esteem in a survey setting (Blascovich and Tomaka, 1991; Schmitt and Allik, 2005; Mruk, 2006; Sinclair et al., 2010; Huang and Dong, 2012), which suggests that respondents provide information that is suitable to support empirical analyses. There may be remaining concerns regarding whether there are systematic differences between those respondents who do, and do not, complete the RSES. To provide some evidence on this question, we compare observable characteristics of NLSY79 respondents based

⁴ For comparison, Hershbein (2012) relies on a sample of 5748; Kahn (2010) relies on a sample of 529; Kondo (2007) relies on a sample of 5387; Maclean (2013) relies on a sample of 6506; Maclean (2014) relies on a sample of 8621; and Maclean (2015) relies on a sample of 6826.

⁵ To preserve sample size, if a respondent declines to answer one of the RSES items we assign him his mean response. Results, available on request, that rely on the non-imputed sample are not appreciably different than the results reported in this manuscript.

on whether they completed, or did not complete, the RSES in i) 1987 and ii) 2006, the years we use in our analysis. Results are reported in Appendix Table A.⁶ There are some differences between completers and non-completers. For example, women are more likely to complete than men, African Americans are more likely to complete than whites, and individuals from more advantaged families are more likely to complete than individuals from less advantaged families.

3.3. School-leaving economic conditions

The key explanatory variable in this study is the economic conditions at school-leaving. To capture this variable, we must first locate the school-leaving period. We focus on the first period of school-leaving which occurs once for each respondent.⁷ The leaving school definition includes both students who graduated with a degree and who dropped out prior to degree completion. Put differently, both completers and drop-outs are included in our analysis sample. We utilize responses to education history questions fielded between 1979 and 1998 to identify the year the respondent left school for the first time. Because we examine the 1987 RSES variable, we exclude those respondents who left school after 1987. We require that respondents report being out of school for a period of two years after school-leaving to avoid incorrectly classifying short departures (e.g., sickness, traveling) as true school-leaving.

We use NSY79 provided geocodes to determine the state of residence at school-leaving. Respondents who left school between 1976 and 1978 are assigned the 1979 interview state. This imputation assumes that individuals do not move across state lines between school-leaving and the 1979 interview. We suspect that this assumption does not substantially impact our findings as only 3% of the U.S. population migrates across state lines annually and this rate has been fairly constant over time (U.S. Census Bureau, 2012). The interview state is assigned to respondents who left school between 1979 and 1987. The annual school-leaving cohort (i.e., individuals who left school in the same calendar year) sizes are: 564 (1976); 806 (1977); 1175 (1978); 1308 (1979); 1107 (1980); 1080 (1981); 991 (1982); 608 (1983); 395 (1984); 266 (1985); 205 (1986); and 123 (1987).

Consistent with previous research concerning the career, marriage, education, and health effects of leaving school in an economic downturn (Kondo, 2007; Genda et al., 2010; Kahn, 2010; Hershbein, 2012; Oreopoulos et al., 2012; Maclean, 2013, 2014, 2015; Altonji et al., 2014), we proxy economic conditions with the unemployment rate. Specifically, we use the seasonally adjusted annual state unemployment rate from the BLS Local Area Unemployment Database.

3.4. Control variables

In all regressions we include a set of pre-determined variables that are expected to predict self-esteem: race/ethnicity (African American and Hispanic, with White as the omitted group) (Twenge and Crocker, 2002), foreign birth (Porter and Washington, 1993), a proxy for ability (age-standardized Armed Forces Qualification Test [AFQT]) (Brack et al., 1988), and parental education as measured by mother's and father's years of education entered linearly and separately (Rosenberg and Pearlin, 1978; Twenge and Campbell, 2002). Because the NLSY79 is a rich data set, we are able to include additional background variables that plausibly predict self-esteem but that are not typically included in survey data. In particular, we include information on family characteristics at age 14: residence in a rural area, language other than English spoken in the home, lived with both biological parents, library card in the home, newspapers in the home, and magazines in the home.

⁶ This analysis includes all NLSY79 respondents, regardless of whether or not they are included in our analysis.

⁷ If a respondent has no formal schooling, we cannot locate the school-leaving period as it does not exist. Such observations are excluded from the sample.

We include indicators for missing covariates and assign missing observations the sample mean (continuous variable) or mode (binary variable) in our regression models. In addition, we include the number of years (entered linearly) between the school-leaving period and the periods in which the RSES is measured (1987 and 2006). This is our proxy for potential experience in the labor market (Kahn, 2010). Lastly, we include the state unemployment rate at the time self-esteem is measured (1987 or 2006) as contemporaneous economic conditions may also influence self-esteem. Eliason and Storrie (2006) show that displaced workers are persistently more sensitive to subsequent economic downturns than non-displaced workers, and therefore we might expect individuals who left school in an economic downturn to be more sensitive to future downturns. We do not include variables that are potentially influenced by leaving school in an economic downturn (e.g., age at school-leaving, wages measured in 1987 or 2006) as control variables in our regressions to avoid bias from over-controlling (Angrist and Pischke, 2009).

The AFQT, our proxy for ability, is a multiple choice test that it utilized to determine qualification for enlistment in the U.S. Armed Forces. It is commonly utilized within the economics literature to proxy ability (Dougherty, 2003; Heckman et al., 2006; Webber, 2014). The test measures knowledge and skill in 10 areas: general science, arithmetic reasoning, word knowledge, paragraph comprehension, numerical operations, coding speed, auto and shop information, mathematics knowledge, mechanical comprehension, and electronics information. The score is converted into a percentile by NLSY79 administrators, thus a score of 99 implies that the test-taker out-performed 99% of the sample. NLSY79 respondents were administered the AFQT in 1980 at 15 to 23 years. To account for differences in maturing and schooling that vary with age, we follow Kahn (2010) and age-standardize the score by subtracting by the age group mean and dividing by the age group standard deviation.⁸

One concern with including the AFQT in our regression models is that it may be influenced by economic conditions at school-leaving. To explore this possibility we conducted two checks: i) we estimated models that do not control for the AFQT, and ii) we estimated models using only respondents who left school after 1980 (years after the AFQT was collected). Findings from these analyses, available on request, are highly comparable to those reported in the manuscript (findings from the latter check are less precise as we lose 50% + of our sample).

3.5. Empirical model

Eq. (1) presents the regression model we use to estimate the effects of leaving school in an economic downturn on self-esteem:

$$E_{istg} = \alpha_0 + \alpha_1 U_{st} + \alpha_2 PE_{ig-t} + \alpha_3 U_{st} * PE_{ig-t} + \alpha'_4 X_i + \alpha'_5 S_s + \alpha'_6 D_t + \alpha'_7 G_g + \varepsilon_{istg} \quad (1)$$

E_{istg} is the RSES measured for individual i in school-leaving state s and school-leaving year t measured in survey year g (where g is either 1987 or 2006). U_{st} is the annual state unemployment rate in school-leaving state s and school-leaving year t . PE_{ig-t} is potential labor market experience. $U_{st} * PE_{ig-t}$ is the interaction between the school-leaving state unemployment rate and potential experience. Including this interaction allows the effect of economic conditions at school-leaving to vary across time (Kahn, 2010; Oreopoulos et al., 2012; Maclean, 2014). X_i is a vector of time-invariant personal characteristics. S_s and D_t are vectors of school-leaving state and year fixed effects. Inclusion of the school-leaving state fixed effects implies that we use within school-leaving state variation in unemployment rates to identify self-esteem effects. These fixed effects control for time invariant and difficult-to-observe between school-leaving state differences that may be correlated with

⁸ Scores are standardized based on the full sample of respondents with valid AFQT scores.

both the school-leaving state unemployment rate and self-esteem. One of the coefficients in D_t or the constant term is normalized to zero because the sum of potential experience in the labor market and school-leaving year is equal to the calendar year in which self-esteem is measured (Deaton, 1997). We also include a survey year fixed effect (2006 with 1987 as the omitted category) denoted by $G_{g, \varepsilon_{istg}}$ is the error term.⁹

We utilize ordinary least squares (OLS) and estimate equations separately by sex given different labor market participation patterns between men and women (Blau and Kahn, 2007). We apply NLSY79 sample weights for the sample that participated in the 1987 and 2006 surveys in all analyses.¹⁰ We cluster standard errors around the school-leaving state to account for correlated errors in our regression models.

The NLSY79 is a nationally representative survey leading to concern that it emits too few clusters (i.e., school-leaving states) to generate consistent standard error estimates. However, our data include 51 clusters in both the male and female samples, suggesting that we have a sufficiently large number of clusters to consistently estimate standard errors (Bertrand et al., 2004; Cameron et al., 2008; Angrist and Pischke, 2009; Cameron and Miller, 2013).¹¹ In all tables that present regression results, we include the number of clusters emitted.

3.6. Identification

Identification of Eq. (1) hinges on the assumption that the state unemployment rate at school-leaving is uncorrelated with the error term in the self-esteem equations after we condition on personal characteristics and fixed effects. An obvious concern is that the time or location of school-leaving is endogenous to the unemployment rate (Oyer, 2006, 2008; Kondo, 2007; Kahn, 2010; Oreopoulos et al., 2012; Maclean, 2013). School-leavers may engage in endogenous sorting to avoid leaving school in an economic downturn. Endogenous sorting may entail altering the time (e.g., enrolling in additional schooling) or location (e.g., moving to a stronger labor market) of school-leaving.

Signing the bias attributable to endogenous sorting is difficult ex ante. For example, school-leavers who avoid economic downturns may have unobservable characteristics (e.g., financial resources) that permit avoidance behavior. Alternatively, only the most capable individuals may be willing to leave school in an economic downturn, as they know that their abilities will allow them to secure desirable jobs regardless of the economic conditions they face. Kondo (2007) and Maclean (2014) provide evidence in the NLSY79 cohort that the school-leaving state unemployment rate does not correlate strongly with enrollment or education at school-leaving.¹² We explore these behaviors in our sample as a robustness check.

An additional concern is measurement error in the school-leaving variables as we rely on self-reported year of school-leaving, which may be reported with error. The impact of such error on regression coefficients is difficult to sign ex ante (Bound et al., 2001).

We rely two-stage least squares (2SLS) to address these sources of bias. Following the literature on the persistent effects of leaving school in an economic downturn, we select instruments that have been utilized in previous studies (Oyer, 2006; Kondo, 2007; Kahn, 2010; Oreopoulos et al., 2012; Maclean, 2013, 2014, 2015) and are based on birth year, state of residence at age 14, and early educational expectations. The compliers to these IVs are those individuals who would have changed their educational decision if they would have changed residence at age 14. These instruments assume that respondents adhere to normal school-starting ages and progression through school. We refer to our instrument as the “on time” state unemployment rate.

The on time IV utilizes state unemployment rate variation that is generated exogenously by birth year and early life residential decisions (these decisions are plausibly made by parents or guardians, not school-leavers). For example, we assign a college graduate the annual state unemployment rate in the year she turned 22 (modal school-leaving age for college graduates in our sample) in the state of residence at age 14. We make comparable assignments for all educational levels. We delete respondents who did not reside in the U.S. at age 14 as we cannot match them to an age 14 state of residence, and use historical compulsory schooling laws to calculate school start dates (Acemoglu et al., 2001).¹³

Because the period of school-leaving is potentially endogenous, so are potential labor market experience and the interaction between potential experience and the school-leaving state unemployment rate. Thus, we instrument these variables as well. First, we instrument potential labor market experience with potential experience implied by the instrument. For example, if a respondent is 41 in 2006 and left school with a college degree the potential experience implied by the on time instrument is 19 years.¹⁴ Second, we instrument the interaction term with the instrument interacted with potential experience implied by the instrument. In our 2SLS models we cluster standard error around the state of residence at age 14. This approach emits 49 clusters in the full male sample and 50 clusters in the full female sample.

4. Results

4.1. Sample characteristics

Summary statistics are reported in Table 1, results for men are reported in the top panel and results for women are reported in the bottom panel. Although in regression models we use up to two observations per respondent, we include only one observation per respondent in Table 1.¹⁵ The mean (raw) RSES is 34.05 among men and 33.68 among women (the RSES ranges from 0 to 40, with higher scores indicating higher self-esteem). Standardized scores are also reported and display the same sex pattern. Consistent with previous research men have, on average, higher self-esteem than women (Rosenberg, 1965; Kling et al., 1999; Mruk, 2006). The mean state unemployment rate at the school-leaving period is 7.52% among both men and women. The mean school-leaving year for both men and women is 1980, and in the average number of years of potential experience is just over 8. The average on time state unemployment rate (the instrument) is 7.56% among men and 7.52% among women. The mean unemployment rate at the time the RSES is measured is roughly 6.20% among both men and women. The demographics of the NLSY79 sample are comparable to members of this age cohort.

⁹ Results are consistent, although parameters are less precisely estimated, to the inclusion of school-leaving state-specific linear time trends.

¹⁰ In analysis of respondents who do not appear in our analysis sample, we apply sample weights that are appropriate to that sample. Information on the specific sample weights used in these analyses is available on request.

¹¹ Recent simulation work by Cameron et al (2008) suggests that in a data set with 30 clusters (which is substantially fewer than we have in our data set, even in subsamples), the rejection rate for tests of nominal size 0.05 is 0.068. In light of this evidence, it is plausible that our data can generate consistent estimates of standard errors. Moreover, concerns regarding over-rejection are particularly important when the treatment variable is an ‘absorbing state’ variable. For example, a policy variable that ‘turns on’ in time t and remains unchanged for the duration of the study period. Our treatment variable is the state unemployment rate and is thus not an absorbing state. Instead, it displays variation in terms of expansions and recessions, within states, over our study period.

¹² Moreover, Maclean (2014) finds no evidence that suggests NLSY79 respondents of school-leaving age move across state lines in response to economic downturns.

¹³ If a respondent was born outside the U.S., we assign them the modal school-starting age in our sample (seven years). Results are robust to excluding these observations, however.

¹⁴ A respondent who is 41 in 2006 was born in 1964, and would have completed a college degree in 1987 if he followed normal school entry ages and progression, and did not engage in endogenous sorting. Thus, in 2006 19 years will have passed since he left school “on time”.

¹⁵ The sample sizes are not half of the total sample sizes as we rely on the unbalanced panel. Thus, there are either one or two observations per respondent that appears in our analysis sample.

Table 1
Summary statistics.

Variable	School-leaving unemployment rate			
	Mean/prop.	>Mean	≤Mean	Difference (p-value)
<i>Sample: Men</i>				
Self-esteem	34.05	34.35	33.84	0.0001
Self-esteem (standardized)	0.131	0.201	0.0813	0.0001
School-leaving state unemployment rate	7.516	9.595	6.044	0.0000
School-leaving year	1980.32	1981.08	1979.78	0.0000
Potential experience	8.277	7.511	8.820	0.0000
On time school-leaving state unemployment rate	7.560	9.063	6.496	0.0000
Interview state unemployment rate	6.200	6.457	6.017	0.0000
White	0.806	0.816	0.799	0.1748
African American	0.137	0.135	0.138	0.4536
Hispanic	0.0574	0.0485	0.0637	0.0051
Foreign born	0.0324	0.0309	0.0335	0.3005
Age-adjusted AFQT score	−0.0521	−0.0327	−0.0658	0.2085
Mother's level of education	11.78	11.87	11.72	0.0088
Father's level of education	12.05	12.12	12.00	0.0079
Live in rural area at age 14	0.220	0.226	0.216	0.8333
Spoke foreign language in home at age 14	0.130	0.136	0.126	0.1723
Live with both biological parents at age 14	0.760	0.774	0.750	0.4415
Library card in home at age 14	0.753	0.742	0.761	0.5698
Magazines in home at age 14	0.684	0.704	0.670	0.0003
Newspapers in home at age 14	0.851	0.863	0.842	0.0078
Observations	4173	1648	2525	
<i>Sample: Women</i>				
Self-esteem	33.68	33.92	33.50	0.0001
Self-esteem (standardized)	0.114	0.173	0.0712	0.0001
School-leaving state unemployment rate	7.522	9.539	6.025	0.0000
School-leaving year	1980.12	1980.92	1979.64	0.0000
Potential experience	8.171	7.540	8.640	0.0000
On time school-leaving state unemployment rate	7.618	9.083	6.531	0.0000
Interview state unemployment rate	6.215	6.476	6.022	0.0000
White	0.814	0.833	0.799	0.0119
African American	0.133	0.118	0.145	0.0661
Hispanic	0.0530	0.0494	0.0557	0.2207
Foreign born	0.0328	0.0360	0.0305	0.4794
Age-adjusted AFQT score	−0.0760	−0.0372	−0.105	0.0013
Mother's level of education	11.67	11.84	11.55	0.0029
Father's level of education	11.89	12.03	11.79	0.0019
Live in rural area at age 14	0.220	0.228	0.213	0.3630
Spoke foreign language in home at age 14	0.125	0.126	0.124	0.4647
Live with both biological parents at age 14	0.752	0.764	0.744	0.1052
Library card in home at age 14	0.783	0.791	0.777	0.0533
Magazines in home at age 14	0.675	0.688	0.665	0.0033
Newspapers in home at age 14	0.838	0.857	0.824	0.0266
Observations	4455	1751	2704	

Notes: NLSY sample weights applied. Only one observation per respondent utilized in calculations.

We next divide both the male and female samples into two groups: respondents who left school when the state unemployment rate was 1) greater than the sample mean rate and 2) less than/equal to the sample mean rate. Put differently, the former group of school-leavers left school under worse economic conditions than the latter group. Stratifying the sample in this manner allows us to provide an unadjusted analysis of the effect of leaving school in an economic downturn on self-esteem across the life course.

The unadjusted statistics suggest that those individuals who left school when the state unemployment rate was relatively high have higher levels of self-esteem. The school-leaving state unemployment rate is, as expected, substantially higher among the group of school-leavers who left school when the state unemployment rate was greater than the sample mean. In terms of the covariates we include in Eq. (1), the two groups look fairly similar, although some of the differences are statistically different from zero. Interestingly, the statistically significant differences that do exist tend to suggest that individuals who left school when the state unemployment rate was high are relatively more advantaged than individuals who left school when the state

unemployment rate was low. For example, among both men and women ability and parental educational attainment is higher among those who left school when the unemployment rate was relatively high (i.e., greater than the sample mean).

4.2. Regression results

Table 2 reports OLS estimates of the effect of leaving school in an economic downturn on self-esteem among men and women, respectively. The coefficient for the main effect of the school-leaving state unemployment rate is negative (positive) among men (women), but is not statistically distinguishable from zero. The coefficient for the interaction term between the school-leaving state unemployment rate and potential labor market experience is negative for both sexes (although only precisely estimated among women). This pattern of results suggests that the effect of the school-leaving state unemployment rate does not emerge immediately. Instead, as time passes individuals' self-esteem erodes. For example, among women with each year of potential experience a 1 percentage point increase in the school-leaving state unemployment rate is associated with a 0.001 standard deviation (SD) reduction in the RSES ($p < 0.01$). Thus, 10 and 20 years after school-leaving a 1 percentage point increase in the school-leaving state unemployment rate reduces self-esteem among women by 0.01 and 0.02 SDs, respectively. Findings for men are nearly identical in terms of magnitude, but are imprecise.

Table 2
Effect of economic conditions faced at school-leaving on self-esteem: OLS model.

	Men	Women
Sample mean	0.117	0.075
School-leaving state unemployment rate	−0.005 (0.014)	0.014 (0.013)
School-leaving state unemployment rate*	−0.001 (0.001)	−0.001*** (0.000)
potential experience	−0.020 (0.013)	0.006 (0.018)
Potential experience	−0.011 (0.013)	0.002 (0.017)
Interview state unemployment rate	0.212*** (0.052)	0.303*** (0.042)
African American	0.111* (0.057)	−0.020 (0.064)
Hispanic	−0.015 (0.097)	−0.059 (0.069)
Foreign born	0.266*** (0.016)	0.261*** (0.020)
Age-adjusted AFQT score	0.019*** (0.005)	0.013* (0.007)
Mother's level of education	−0.004 (0.007)	−0.011** (0.004)
Father's level of education	0.049 (0.043)	−0.115*** (0.035)
Live in rural area age 14	−0.026 (0.058)	0.106 (0.064)
Spoke foreign language in home at age 14	−0.048 (0.042)	−0.034 (0.036)
Live with both biological parents at age 14	0.026 (0.037)	0.054 (0.048)
Library card in home at age 14	0.077* (0.039)	0.076* (0.038)
Magazines in home at age 14	0.001 (0.056)	0.033 (0.045)
Newspapers in home at age 14	6972	7542
Observations	51	51
Number of clusters		

Notes: All models estimated with OLS and control for indicators for missing information, survey year fixed effects, school-leaving state fixed effects, and school-leaving year fixed effects. NLSY79 sample weights applied. Standard errors reported in parentheses and clustered around the school-leaving state.

* Statistically different from zero at the 10% level.

** Statistically different from zero at the 5% level.

*** Statistically different from zero at the 1% level.

Several of the personal characteristics that we include in our regressions – African American race, Hispanic ethnicity, ability, and family background measures – are important predictors of self-esteem. In general, the regression results suggest that more advantaged respondents have higher self-esteem scores. The pattern of results is not entirely consistent, however. For example, among women, father's educational attainment is negatively associated with self-esteem. Consistent with previous sociological work (Twenge and Crocker, 2002), African Americans tend to have higher self-esteem than whites.

4.3. Instrumental variables

The key empirical challenge in this study is bias from endogenous sorting and measurement error in the school-leaving variables. To address these potential sources of bias, we estimate 2SLS models using the instruments described in Section 3.6.

We next provide some evidence on the validity of our selected instruments. Table 3 presents results from first stage regressions: the school-leaving state unemployment rate is regressed on the IVs and other covariates included in Eq. (1) using OLS. The IV is strong predictor of the school-leaving state unemployment rate: the *F*-statistic is approximately 51 in the male sample and 40 in the female sample, both well above the minimum standard of 10 (Stock et al., 2002). A 1 percentage point increase in the on time state unemployment rate is associated with a 0.31 and 0.32 percentage point increase in the school-leaving state unemployment rate among men and women ($p < 0.01$).

The unemployment rate at the time the RSES is measured is negatively associated with the school-leaving state unemployment rate.

Table 3
First stage OLS regressions.

	Men	Women
Mean school-leaving state unemployment rate	7.516	7.522
On time school-leaving state unemployment rate	0.305*** (0.043)	0.324*** (0.051)
Interview state unemployment rate	−0.057** (0.025)	−0.057*** (0.017)
African American	0.075 (0.046)	0.036 (0.055)
Hispanic	0.047 (0.096)	−0.009 (0.095)
Foreign born	0.117 (0.136)	0.025 (0.138)
Age-adjusted AFQT score	0.013 (0.022)	0.044* (0.023)
Mother's level of education	−0.002 (0.009)	−0.005 (0.009)
Father's level of education	−0.008 (0.006)	−0.009 (0.009)
Live in rural area at age 14	−0.005 (0.041)	0.004 (0.054)
Spoke foreign language in home at age 14	−0.039 (0.070)	−0.034 (0.078)
Live with both biological parents at age 14	−0.014 (0.041)	0.035 (0.039)
Library card in home at age 14	−0.024 (0.034)	0.029 (0.038)
Magazines in home at age 14	0.149*** (0.041)	−0.025 (0.037)
Newspapers in home at age 14	0.061 (0.061)	−0.047 (0.050)
<i>F</i> -statistic on expected school-leaving state unemployment rate (<i>p</i> -value)	50.52 (0.0000)	40.01 (0.0000)
Observations	6972	7542
Number of clusters	51	51

Notes: All models estimated with OLS and control for indicators for missing information, survey year fixed effects, school-leaving state fixed effects, and school-leaving year fixed effects. NLSY79 sample weights applied. Standard errors reported in parentheses and clustered around the school-leaving state.

* Statistically different from zero at the 10% level.

** Statistically different from zero at the 5% level.

*** Statistically different from zero at the 1% level.

Table 4

Effect of economic conditions faced at school-leaving on educational outcomes measured at school-leaving.

	Men	Women
Outcome: Years of education at school-leaving		
Mean years of education	12.844	12.931
School-leaving state unemployment rate	−0.009 (0.020)	0.016 (0.030)
Number of clusters	51	51
Observations		
Outcome: College degree at school-leaving		
Proportion with a college degree	0.201	0.202
School-leaving state unemployment rate	−0.003 (0.006)	−0.006 (0.004)
Number of clusters	51	51
Observations	4173	4455

Notes: All models estimated with OLS (continuous outcome) or a linear probability model (binary outcome) and control for indicators for missing information, survey year fixed effects, school-leaving state fixed effects, and school-leaving year fixed effects. NLSY79 sample weights applied. Standard errors reported in parentheses and clustered around the school-leaving state.

***, **, and * = statistically different from zero at the 1%; 5%; and 10% level.

This pattern of results is likely due to the fact that many members of our sample left school during high unemployment times, while 1987 and 2006 were relatively prosperous times. In general personal characteristics are not strong predictors of the school-leaving unemployment rate. Some exceptions to this pattern are ability in the female sample and reporting magazines in the home at age 14 among men. Both variables are positively associated with the school-leaving state unemployment rate.

We next estimate separate first stage regressions by skill level and minority status (white, non-white). In our analysis by skill level, we divide the sample into three skill groups based on the age-adjusted AFQT score. The range of age-adjusted AFQT scores by skill group is: −1.70 to −0.841 in the low skill group, −0.829 to 0.116 in the middle skill group, and 0.145 to 1.635 in the high skill group. First stage regression results by skill level are reported in Appendix Table B and results by race/ethnicity are reported in Appendix Table C. The results are broadly comparable to those generated in the full sample.

An assumption of our IV is that human capital accumulation is not influenced by the economic conditions at school-leaving. Although previous work suggests that this assumption may be satisfied in the NLSY79 (Kondo, 2007; Maclean, 2014), we next attempt to provide some empirical support of this assumption within our analysis sample. To this end, we regress i) the number of years of completed education at school-leaving and ii) the probability of leaving school with a college degree on the school-leaving state unemployment rate in Eq. (1). We use OLS to estimate the years of completed education regression, and a linear probability model to estimate the probability of a college degree regression.

Results from this analysis are reported in Table 4,¹⁶ and suggest that human capital accumulation at school-leaving is not substantially influenced by the state unemployment rate at the time of school-leaving. The coefficient estimates in our regression models are statistically indistinguishable from zero and are arguably too small in magnitude to be practically significant. In unreported analyses, we re-estimated these models using a lag in the state unemployment and results are robust. Using the lag allows time for respondents to recognize the change in economic conditions and alter their education plans. However, our tests may not adequately capture the influence of school-leaving economic conditions at school-leaving.

Table 5 results from the 2SLS models for men and women. The relationships identified in our OLS regressions remain after instrumenting,

¹⁶ We use only one observation per respondent in these analyses.

Table 5
Effect of economic conditions faced at school-leaving on self-esteem: 2SLS model.

	Men	Women
Mean standardized self-esteem	0.117	0.075
School-leaving state unemployment rate	–0.021 (0.043)	–0.016 (0.120)
School-leaving state unemployment rate* potential experience	–0.002** (0.001)	–0.001** (0.001)
Potential experience	–1.146 (1.271)	–0.240 (2.381)
Interview state unemployment rate	–0.013 (0.024)	–0.006 (0.041)
African American	0.037 (0.198)	0.222 (0.716)
Hispanic	–0.102 (0.287)	–0.097 (0.769)
Foreign born	0.047 (0.221)	–0.076 (0.258)
Age-adjusted AFQT score	0.375*** (0.138)	0.278 (0.267)
Mother's level of education	0.026** (0.013)	0.014 (0.016)
Father's level of education	–0.034 (0.032)	–0.015 (0.038)
Live in rural area at age 14	0.150 (0.102)	–0.085 (0.143)
Spoke foreign language in home at age 14	–0.129 (0.190)	0.123 (0.190)
Live with both biological parents at age 14	–0.070 (0.058)	–0.018 (0.168)
Library card in home at age 14	0.055 (0.097)	0.065 (0.124)
Magazines in home at age 14	0.090* (0.052)	0.055 (0.164)
Newspapers in home at age 14	0.098 (0.136)	0.025 (0.055)
Observations	6972	7542
Number of clusters	49	50

Notes: All models estimated with 2SLS and control for indicators for missing information, survey year fixed effects, on time school-leaving state fixed effects, and on time school-leaving year fixed effects. NLSY79 sample weights applied. Standard errors reported in parentheses and clustered around the on time school-leaving state.

* Statistically different from zero at the 10% level.

** Statistically different from zero at the 5% level.

*** Statistically different from zero at the 1% level.

but coefficients are somewhat larger.¹⁷ The coefficient estimate on the main effect for the school-leaving state unemployment rate is not statistically different from zero. The interaction term between the school-leaving state unemployment rate and potential experience is negative and precisely estimated among both men and women. Among men (women) with each year of potential experience a 1 percentage point increase in the school-leaving state unemployment rate reduces self-esteem by 0.002 (0.001) SDs ($p < 0.05$). Thus, 10 and 20 years after leaving school men's (women's) self-esteem is reduced by 0.02 and 0.04 (0.01 and 0.02) SDs respectively.

The OLS and IV models produce fairly comparable estimates of the effect of leaving school in an economic downturn on self-esteem (although the latter are more precisely estimated for men).¹⁸ This pattern of results provides additional suggestive evidence that members of our analysis sample are not acquiring human capital in response to the economic conditions at school-leaving and, therefore, that our IVs are excludable from Eq. (1).

¹⁷ In unreported analyses, we used a second instrument based on birth year, state of residence at age 14, and self-reported expected educational attainment information collected in 1979 (Maclean, 2013). Results using this instrument are comparable, although less precise. We conducted an overidentification test using both instruments, and we could not reject the null that our instruments are correctly excluded from Eq. (1).

¹⁸ 95% confidence intervals surrounding the coefficient estimates overlap.

4.4. Heterogeneity

Economic research documents differences in the career penalties attributable to leaving school in an economic downturn by personal characteristics (Kondo, 2007; Genda et al., 2010). To explore heterogeneity, we stratify our sample by skill as defined by the AFQT score. We use the same skill group definitions outlined earlier in the manuscript: low, middle, and high skill. We report results generated in OLS and 2SLS regressions.

Table 6
Heterogeneity by skill level in the effect of economic conditions faced at school-leaving on self-esteem.

	Men	Women
<i>Sample: High skill</i>		
Mean standardized self-esteem	0.369	0.262
<i>OLS model</i>		
School-leaving state unemployment rate	–0.021 (0.025)	0.030 (0.024)
School-leaving state unemployment rate* potential experience	–0.002** (0.001)	–0.002** (0.001)
Number of clusters	50	48
<i>2SLS model</i>		
School-leaving state unemployment rate	–0.043 (0.055)	0.019 (0.041)
School-leaving state unemployment rate* potential experience	–0.002* (0.001)	–0.002* (0.001)
Number of clusters	47	48
Observations	2262	2323
<i>Sample: Middle skill</i>		
Mean standardized self-esteem	0.089	0.081
<i>OLS model</i>		
School-leaving state unemployment rate	–0.012 (0.027)	0.006 (0.024)
School-leaving state unemployment rate* potential experience	–0.000 (0.001)	–0.001 (0.001)
Number of clusters	48	46
<i>2SLS model</i>		
School-leaving state unemployment rate	0.198 (0.720)	0.132 (0.160)
School-leaving state unemployment rate* potential experience	–0.007 (0.025)	–0.001 (0.002)
Number of clusters	47	48
Observations	2044	2492
<i>Sample: Low skill</i>		
Mean standardized self-esteem	–0.274	–0.256
<i>OLS model</i>		
School-leaving state unemployment rate	0.029 (0.022)	–0.005 (0.023)
School-leaving state unemployment rate* potential experience	–0.001 (0.001)	–0.001** (0.001)
Number of clusters	50	47
<i>2SLS model</i>		
School-leaving state unemployment rate	0.609 (1.465)	–0.304*** (0.109)
School-leaving state unemployment rate* potential experience	0.024 (0.024)	–0.001 (0.002)
Number of clusters	47	47
Observations	3690	4145

Notes: All models control for personal characteristics, indicators for missing information, and survey year fixed effects. OLS models control for school-leaving state fixed effects and school-leaving year fixed effects. 2SLS models control for on time school-leaving state fixed effects and on time school-leaving year fixed effects. NLSY79 sample weights applied. Standard errors reported in parentheses. In OLS models standard errors are clustered around the school-leaving state. In 2SLS models standard errors are clustered around the on time school-leaving state. High skill is defined as the top tercile of the age-adjusted AFQT score, middle skill is defined as the middle tercile of the age-adjusted AFQT score, and low skill is defined as the bottom tercile of the age-adjusted AFQT score.

* Statistically different from zero at the 10% level.

** Statistically different from zero at the 5% level.

*** Statistically different from zero at the 1% level.

Table 6 reports results by skill level. In general, the results suggest the same pattern as those generated in the full sample but the effects of leaving school in an economic downturn are strongest for high skill workers. Indeed, coefficient estimates are only statistically distinguishable from zero in the high skill sample (although coefficient estimates follow the same pattern in all samples). This finding is consistent with previous studies that document larger career penalties among more highly skilled workers (Genda et al., 2010). Sample sizes across the groups are roughly equal, and therefore we do not suspect that lack of statistical power can explain the null findings among lower skill groups.¹⁹

One exception to this finding is low skill women. OLS regressions imply a pattern of results comparable to the full sample: the main effect is imprecisely estimated but the interaction term is negative, suggesting that self-esteem erodes with potential labor market experience. In the 2SLS regressions, the effects of leaving school are immediate for this group of women: the coefficient on the main effect for leaving school in an economic downturn is negative, large relative to other samples, and precisely estimated. Specifically, a 1 percentage point increase in the school-leaving state unemployment rate leads to a 0.304 SD reduction in the RSES. The interaction term between the school-leaving state unemployment rate and potential experience is imprecisely estimated; therefore these findings suggest that the reduction in self-esteem does not vary with potential labor market experience. These findings for low skill women are somewhat surprising as the previous literature on the career and marriage effects of leaving school in an economic downturn does not document large penalties for this group.

We also explore results by race/ethnicity (white, non-white). Results are reported in Appendix Table D. We do not observe substantial heterogeneity in effects across these groups.

5. Robustness checks and extensions

In this section, we assess the robustness of our findings to various sensitivity checks, and conduct additional analyses on economic conditions and self-esteem.

As discussed in an earlier section of this manuscript, the state unemployment rate is but one proxy for economic conditions. In Appendix Table E, we report estimates generated in models that proxy economic conditions with 1) the annual number of unemployed persons in the labor market (millions) and 2) 1) the annual state employment-to-population ratio from the BLS. The results are broadly consistent with results generated in our core model, although the signs of the coefficient estimates are reversed (i.e., positive) in the employment-to-population ratio as increases in this variable represents improvements in economic conditions. However, the findings are somewhat less precise than those generated using the unemployment rate.

Although our analysis sample size is in line with other studies that utilize the NLSY79 to study the persistent effects of leaving school in an economic downturn, it is substantially smaller than the full NLSY79. Thus, it is reasonable to be concerned that our analysis sample may be vulnerable to selection bias. We attempt to shed light on this concern in two ways. First, we compare characteristics of members of our analysis sample with those in the broader NLSY79 sample. Results are reported in Appendix Table F. On average, our analysis sample appears to be more advantaged than the full NLSY79 sample in terms of race/ethnicity, ability, and family background (e.g., foreign birth, parental education, access to cultural materials). In addition, members of our analysis sample are more likely to be female. These differences suggest that we may not be able to extrapolate our findings to all segments of the population.

Second, we estimate wage regressions on i) respondents in our analysis sample who provide valid wage information and ii) the full NLSY79²⁰ with valid information on wages. We select wages as our outcome as this variable is of interest to labor economists and has been well studied in the literature examining the career effects of leaving school in an economic downturn. We take the logarithm of the hourly wage and coefficient estimates have the interpretation of an approximation to the percent change. Results are reported in Appendix Table G. In OLS regressions, the coefficients estimated in both samples are highly comparable in terms of magnitude and statistical significance. Specifically, individuals who leave school when the state unemployment rate is higher have lower wages, but the effect dissipates over time. The wage penalties appear to be stronger for men than for women. This pattern of results is consistent with previous research (Kondo, 2007; Kahn, 2010; Hershbein, 2012). The findings for wages among men depart in 2SLS models, however. In particular, findings based on our analysis sample are imprecise while findings based on the full NLSY79 sample are comparable to those generated in the OLS models. 95% confidence intervals around the school-leaving state unemployment rate coefficients estimated in our analysis sample (not reported) include negative values and thus we cannot rule out comparable findings as those generated in the full NLSY79 sample. We acknowledge that our inability to fully replicate wage effects identified in the full NLSY79 sample in our analysis sample is a limitation of our study.

In the main analysis we use the unbalanced panel (respondents for whom we observe a valid self-esteem score in either 1987 or 2006). A limitation of this approach is that there may be compositional change between the samples that provide a valid RSES score in 1987 and 2006. We next report results based on the balanced panel, i.e., the sample of respondents that provides a valid RSES in both 1987 and 2006. Results are reported in Appendix Table H. The results are highly comparable with those generated in the unbalanced sample and suggest that focusing on the unbalanced panel does not induce substantial bias into our estimates.

In our analysis we include the contemporaneous state unemployment rate as a control variable. We do not apply a causal interpretation to the estimated coefficients because we do not include contemporaneous state fixed effects. We next focus on how contemporaneous economic conditions influence self-esteem.²¹ We use all three rounds of the NLSY79 in which the RSES was fielded to respondents. Our analysis samples include 14,892 male/year pairs and 15,304 female/year pairs (we rely on the unbalanced panel). We regress the standardized RSES on the contemporaneous state unemployment rate, personal characteristics, contemporaneous state fixed effects, and contemporaneous year fixed effects. Results are reported in Appendix Table I.

Our analysis shows no statistically significant relationship between the contemporaneous state unemployment rate and the RSES. We rely on just three years of data and perhaps do not have enough variation in the state unemployment rate to precisely detect effects.

6. Discussion

In this study, we expand the literature on the life course effects of leaving school in an economic downturn. Previous studies have focused mainly on outcomes related to careers, marriages, and health. We build on this body of work by focusing on self-esteem. We show that leaving school in an economic downturn leads to lower self-esteem, but the effects do not emerge immediately. Instead they develop over time. We also find evidence that these effects appear to be particularly strong for high skill workers. In our preferred specification, a 1 percentage point increase in the school-leaving state unemployment rate leads to

¹⁹ The sample size in the low skill group is larger than the middle and high skill groups due to inclusion of the low income white sub-sample, which has disproportionately lower AFQT scores.

²⁰ We continue to exclude those respondents who left school before 1976, do not have valid school-leaving information, and have missing information on the instrumental variables.

²¹ To the best of our knowledge there are no studies that examine this question.

a 0.04 and 0.02 SD reduction in the Rosenberg self-esteem score among the full sample of men and women respectively 20 years after school-leaving.

It is important to ask whether these findings are sufficiently large to be considered practically significant. One approach to assess the practical significance of our findings is to compare these estimates with the effects of other conceptually important variables in our regression models. None of the personal characteristics predict women's self-esteem in 2SLS models, our preferred specifications, thus we focus on men here.²² Among men we find in 2SLS regressions that having a mother with an additional year of schooling is associated with a 0.026 SD increase in self-esteem. Thus, the magnitude of our main findings is potentially comparable to maternal schooling. In addition, a one unit increase in the age-adjusted AFQT score is associated with a 0.375 SD increase in self-esteem while access to magazines in the home at age 14 (a proxy for family SES) is associated with a 0.090 SD increase. These coefficient estimates suggest that the effects of leaving school in an economic downturn are perhaps smaller than the effects of ability but larger than family SES (at least to the extent that access to magazines in the household proxies family SES). However, we do not apply a causal interpretation to the estimates generated for control variables as these estimates may be vulnerable to omitted variable bias and thus direct comparison is muddled. On the other hand, we find no statistically significant evidence that contemporaneous economic conditions influence self-esteem, suggesting that experiencing precarious economic conditions at important life transitions (such as school-leaving and initial labor market attachment) is particularly important.

We can also compare our findings with previous studies. Our effect sizes (derived from Cohen's *d* (Cohen, 1988)²³) associated with the unemployment rate range from 0.003 (women) to 0.01 (men) in our 2SLS analyses. Our individual effect sizes are arguably small in comparison to the mean effect sizes reported in meta-analyses of self-esteem in relation to sex (0.16 to 0.21), education (0.18), occupation (0.20), income (0.11), overweight (0.36), depression (0.08), parental divorce (0.12 to 0.19), and child sexual abuse (0.17) (Amato and Keith, 1991; Feingold, 1994; Jumper, 1995; Kling et al., 1999; Miller and Downey, 1999; Amato, 2001; Twenge and Campbell, 2002; Sowislo and Orth, 2013). These differences in effect sizes seem to make conceptual sense. Effects sizes for distal indicators of broader economic conditions experienced early in life should be smaller than those observed for more proximal indicators of individual characteristics and statuses, and severe childhood traumas (e.g., abuse).

Another way to consider the economic significance of our findings is to view them as one component of the full penalty of leaving school in an economic downturn. Previous research suggests that individuals who leave school in an economic downturn have persistently lower wages, less prestigious careers, worse mental and physical health, and less stable marriages. Thus, lower self-esteem can be viewed as one part of this penalty. Moreover, as noted earlier in the manuscript, reduced self-esteem attributable to leaving school in an economic downturn may be caused by poor career/marriage outcomes and/or may exacerbate other penalties (e.g., wages) and thus it is difficult to fully isolate any independent effects.

A growing line of economic research emphasizes the importance of self-esteem for socioeconomic outcomes (career, marriage, crime, financial planning, civic engagement, health, etc.). Thus, it may be that leaving school in an economic downturn leads to lower social outcomes, which in turn erodes self-esteem. Alternatively, leaving school in an economic downturn is detrimental to self-esteem, leading to poor health and worse performance in the labor and marriage markets.

However, the timing of our findings, taken together with findings from related literature, suggests that the former temporal ordering is more likely. To see this, recall that the career and marriage effects emerge soon after school-leaving for most demographic groups while we do not observe deterioration in self-esteem until middle age. The direction of the self-esteem-career/marriage/health relationships need not be entirely one-directional, however. For example, once self-esteem begins to decline, it may exacerbate already poor labor and marriage market outcomes (e.g., an employee with low self-esteem is less likely to be selected for promotion; a partner with low self-esteem may create problems in an already unstable marriage). Future research should consider these pathways.

Our findings suggest that, unlike wage effects, the effect of leaving school in an economic downturn on self-esteem does not emerge immediately. It is potentially useful to consider why we do not observe self-esteem effects immediately after school-leaving. It may take time for individuals to fully integrate their socioeconomic status into their self-concepts. One reason for this is that some individuals may not be fully aware of the gap between their outcomes and the outcomes of their peers, as previous work shows that the early career is characterized by job-churning and "shopping around," which may mask true career trajectories (Neumark, 2002). Another reason is that individuals who leave school in a downturn may hope that their career trajectories will eventually "catch-up" to their peers. Lastly, the distribution of wages is compressed in early career which may further impede the ability of school-leavers to observe their relatively poor labor market outcomes. As time passes, however, individuals who left school in an economic downturn realize that they may not catch-up. At this point, the reality of their trajectories becomes evident and their self-esteem begins to decline.

Although these mechanisms are speculative and our data do not allow us to explore them in any great detail, the idea that early economic conditions may affect career outcomes initially, and over time self-esteem, is generally consistent with the life course framework and cumulative disadvantage theory (O'Rand, 1996; Ross and Wu, 1996; Dannefer, 2003; Elder and Giele, 2009; Ferraro and Shippee, 2009). The life course framework proposes that the trajectories of human lives are often shaped by geography (where one lives), history (when one lives), and the timing of major life events. Cumulative disadvantage theory extends the life course framework by establishing a general process through which early structural advantages and accumulating personal resources might increase heterogeneity with age. In this paper, we explore the geographic contexts of state economies, unique periods of history, and the timing of major events (when one leaves school to enter the labor market). Our results seem to suggest that the unemployment rate at school leaving matters for self-esteem in middle adulthood because adverse economic conditions create structural disadvantages in opportunities, resources, and experiences that accumulate over the life course.

This study has several limitations. First, the NLSY79 administered the Rosenberg self-esteem scale three times, and we utilize only two of these rounds, thus we are unable to explore the full life course evolution of this relationship. Moreover, it is but one proxy for self-esteem and likely is vulnerable to reporting error concerns. Second, our sample is relatively small compared to the full NLSY79 sample, and we are not able to fully replicate wage effects identified in previous research. Lastly, because the NLSY79 contains only one cohort, it is unclear how well findings generalize to the broader population. Work by Altonji et al. (2012) comparing the NLSY79 and the National Survey of Youth 1997 Cohort (NLSY97) suggests that there have been only modest changes in the characteristics of youth between these surveys. Viewed in this light, our findings could be informative for more recent cohorts.

Our findings suggest that the full effects of leaving school in an economic downturn extend to a broader set of outcomes than considered in previous research. Because self-esteem is linked with employment, health, marriage, civic engagement, and crime, and these behaviors

²² The lack of significance of all other predictor variables in the female sample could suggest that the effects we identify on the school-leaving state unemployment rate are practically large for females.

²³ Where *d* is the difference between the means of two groups divided by standard deviation of either group.

have implications for social welfare, it is potentially important to understand how these outcomes are influenced by economic conditions at school-leaving. Future work could explore how self-esteem effects evolve as individuals enter older ages and whether other non-cognitive traits (e.g., mastery, personality traits) are influenced by economic conditions at school-leaving.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.labeco.2015.08.004>.

References

- Acemoglu, D., Angrist, J., Bils, M., Rouse, C.E., 2001. How large are human-capital externalities? Evidence from compulsory schooling laws. *NBER Macroecon. Annu.* 15 (9–+).
- Altonji, J.G., Bharadwaj, P., Lange, F., 2012. Changes in the characteristics of American youth: implications for adult outcomes. *J. Labor Econ.* 30 (4), 783–828.
- Altonji, J.G., Kahn, L.B., Speer, J.D., 2014. Cashier or consultant? Entry labor market conditions, field of study, and career success. NBER Working Paper Series. N. B. o. E. Research. National Bureau of Economic Research, Cambridge, MA.
- Amato, P.R., 2001. Children of divorce in the 1990s: an update of the Amato and Keith (1991) meta-analysis. *J. Fam. Psychol.* 15 (3), 355–370.
- Amato, P.R., Keith, B., 1991. Parental divorce and the well-being of children — a metaanalysis. *Psychol. Bull.* 110 (1), 26–46.
- Angrist, J.D., Pischke, J., 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press, Princeton, NJ.
- Becker, G.S., 1973. Theory of marriage. *J. J. Polit. Econ.* 81 (4), 813–846.
- Becker, G.S., 1981. *A Treatise on the Family*. Harvard University Press, Cambridge, Mass.
- Bertrand, M., Dufo, E., Mullainathan, S., 2004. How much should we trust differences-in-differences estimates? *Q. J. Econ.* 119 (1), 249–275.
- Blascovich, J., Tomaka, J., 1991. Measures of self-esteem. Measures of personality and social psychological attitudes. In: Robinson, J., Shaver, P., Wrightsman, L. (Eds.), *Academic Press*, San Diego, CA, pp. 115–160.
- Blau, F., Kahn, L., 2007. Changes in the labor supply behavior of married women: 1980–2000. *J. Labor Econ.* 25 (3), 393–438.
- Bound, J., Brown, C., Mathiowetz, N., 2001. In: Heckman, J.J., Leamer, E. (Eds.), Chapter 59 measurement error in survey data *Handbook of Econometrics Vol. 5*. Elsevier, Amsterdam, Netherlands, pp. 3705–3843.
- Bowles, S., Gintis, H., Osborne, M., 2001. The determinants of earnings: a behavioral approach. *J. Econ. Lit.* 39 (4), 1137–1176.
- Brack, C.J., Orr, D.P., Ingersoll, G., 1988. Pubertal maturation and adolescent self-esteem. *J. Adolesc. Health* 9 (4), 280–285.
- Cameron, A.C., Miller, D.L., 2013g. A practitioner's guide to cluster-robust inference. *J. Hum. Resour.* 221–236 (Forthcoming).
- Cameron, A.C., Gelbach, J.B., Miller, D.L., 2008. Bootstrap-based improvements for inference with clustered errors. *Rev. Econ. Stat.* 90 (3), 414–427.
- Cohen, J., 1988. *Statistical Power Analysis for the Behavioral Sciences*. Lawrence Erlbaum Associates, Hillsdale, NJ.
- Cooley, C.H., 1902. *Human Nature and the Social Order*. Charles Scribner's Sons, New York, NY.
- Corneo, G., Jeanne, O., 2010. Symbolic values, occupational choice, and economic development. *Eur. Econ. Rev.* 54 (2), 237–251.
- Cutler, D.M., Huang, W., Lleras-Muney, A., 2015. When does education matter? The protective effect of education for cohorts graduating in bad times. *Soc. Sci. Med.* 127, 63–73.
- Dannefer, D., 2003. Cumulative advantage/disadvantage and the life course: cross-fertilizing age and social science theory. *J. Gerontol. B Psychol. Sci. Soc. Sci.* 58 (6), S327–S337.
- de Araujo, P., Lagos, S., 2013. Self-esteem, education, and wages revisited. *J. Econ. Psychol.* 34, 120–132.
- Deaton, A., 1997. *The Analysis of Household Surveys: A Microeconomic Approach to Development Policy*. World Bank Publications.
- Dougherty, C., 2003. Numeracy, literacy and earnings: evidence from the National Longitudinal Survey of Youth. *Econ. Educ. Rev.* 22 (5), 511–521.
- Drago, F., 2011. Self-esteem and earnings. *J. Econ. Psychol.* 32 (3), 480–488.
- Elder, G., Giele, J., 2009. Life course studies: an evolving field. In: Elder, G., Giele, J. (Eds.), *The Craft of Life Course Research*. The Guilford Press, New York City, pp. 1–24.
- Eliason, M., Storrie, D., 2006. Lasting or latent scars? Swedish evidence on the long-term effects of job displacement. *J. Labor Econ.* 24 (4), 831–856.
- Feingold, A., 1994. Gender differences in personality — a metaanalysis. *Psychol. Bull.* 116 (3), 429–456.
- Ferraro, K.F., Shippee, T.P., 2009. Aging and cumulative inequality: how does inequality get under the skin? *The Gerontologist* 49 (3), 333–343.
- Festinger, L., 1954. A theory of social comparison processes. *Hum. Relat.* 7 (2), 117–140.
- Genda, Y., Kondo, A., Ohta, S., 2010. Long-term effects of a recession at labor market entry in Japan and the United States. *J. Hum. Resour.* 45 (1), 157–196.
- Goldsmith, A.H., Veum, J.R., William Jr., D., 1996. The impact of labor force history on self-esteem and its component parts, anxiety, alienation and depression. *J. Econ. Psychol.* 17 (2), 183–220.
- Goldsmith, A.H., Veum, J.R., Darity Jr., W., 1997a. Unemployment, joblessness, psychological well-being and self-esteem: theory and evidence. *J. Socio-Econ.* 26 (2), 133–158.
- Goldsmith, A.H., Veum, J.R., Darity Jr., W., 1997b. The impact of psychological and human capital on wages. *Econ. Inq.* 35 (4), 815–829.
- Graham, C., Eggers, A., Sukhtankar, S., 2004. Does happiness pay?: an exploration based on panel data from Russia. *J. Econ. Behav. Organ.* 55 (3), 319–342.
- Haney, T.J., 2007. “Broken windows” and self-esteem: subjective understandings of neighborhood poverty and disorder. *Soc. Sci. Res.* 36 (3), 968–994.
- Heckman, J.J., Stixrud, J., Urzua, S., 2006. The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *J. Labor Econ.* 24 (3), 411–482.
- Hershbein, B.J., 2012. Graduating high school in a recession: work, education, and home production. *B.E. J. Econ. Anal. Policy* 12.
- Huang, C., Dong, N., 2012. Factor structures of the Rosenberg self-esteem scale. *Eur. J. Psychol. Assess.* 28 (2), 132–138.
- Jumper, S.A., 1995. A metaanalysis of the relationship of child sexual abuse to adult psychological adjustment. *Child Abuse Negl.* 19 (6), 715–728.
- Kahn, L.B., 2010. The long-term labor market consequences of graduating from college in a bad economy. *Labour Econ.* 17 (2), 303–316.
- Kling, K.C., Hyde, J.S., Showers, C.J., Buswell, B.N., 1999. Gender differences in self-esteem: a meta-analysis. *Psychol. Bull.* 125 (4), 470–500.
- Kondo, A., 2007. Differential effects of graduating during a recession across race and gender. Institute for Social and Economic Research and Policy Working Paper. Institute for Social and Economic Research and Policy, Essex, U.K.
- Kwon, I., Milgrom, E.M., Hwang, S., 2010. Cohort effects in promotions and wages. *J. Hum. Resour.* 45 (3), 772–808.
- Maclean, J.C., 2013. The health effects of leaving school in a bad economy. *J. Health Econ.* 32 (5), 951–964.
- Maclean, J.C., 2014. Does leaving school in an economic downturn impact access to employer-sponsored health insurance? *IZA J. Labor Policy* 3 (1), 1–27.
- Maclean, J.C., 2015. The lasting effects of leaving school in an economic downturn on alcohol use. *ILR Rev.* 68 (1), 120–152.
- Maclean, J.C., Covington, R., Sikora Kessler, A., 2015. Labor market conditions at school-leaving: long-run effects on marriage and fertility. *Contemp. Econ. Policy* (n/a–n/a) <http://onlinelibrary.wiley.com/doi/10.1111/coep.12113/abstract>.
- Markowitz, F.E., 2001. Modeling processes in recovery from mental illness: relationships between symptoms, life satisfaction, and self-concept. *J. Health Soc. Behav.* 42 (1), 64–79.
- McLaughlin, K.J., Bils, M., 2001. Interindustry mobility and the cyclical upgrading of labor. *J. Labor Econ.* 19 (1), 94–135.
- Mead, G.H., 1934. *Mind, Self, and Society*. University of Chicago Press, Chicago, IL.
- Mendolia, S., Walker, I., 2014. The effect of noncognitive traits on health behaviours in adolescence. *Health Econ.* 23 (9), 1146–1158.
- Miller, C.T., Downey, K.T., 1999. A meta-analysis of heavyweight and self-esteem. *Personal. Soc. Psychol. Rev.* 3 (1), 68–84.
- Mruk, C., 2006. *Self-Esteem Research, Theory, and Practice: Toward a Positive Psychology of Self-Esteem*. Springer, New York, NY.
- Murnane, R.J., Willett, J.B., Braatz, M.J., Duhaldeborde, Y., 2001. Do different dimensions of male high school students' skills predict labor market success a decade later? Evidence from the NLSY. *Econ. Educ. Rev.* 20 (4), 311–320.
- Neumark, D., 2002. Youth labor markets in the United States: shopping around vs. staying put. *Rev. Econ. Stat.* 84 (3), 462–482.
- Neymotin, F., 2010. Linking self-esteem with the tendency to engage in financial planning. *J. Econ. Psychol.* 31 (6), 996–1007.
- Okun, A.M., 1973. Upward mobility in a high-pressure economy. *Brook. Pap. Econ. Act.* 1, 207–261.
- O'Rand, A.M., 1996. The precious and the precocious: understanding cumulative disadvantage and cumulative advantage over the life course. *Gerontologist* 36 (2), 230–238.
- Oreopoulos, P., Salvanes, K.G., 2011. Priceless: the nonpecuniary benefits of schooling. *J. Econ. Perspect.* 25 (1), 159–184.
- Oreopoulos, P., von Wachter, T., Heisz, A., 2012. The short- and long-term career effects of graduating in a recession. *Am. Econ. J. Appl. Econ.* 4 (1), 1–29.
- Owens, T., King, A., 2001. Measuring self-esteem: race, ethnicity, and gender considered. In: Owens, T., Stryker, S., Goodman, N. (Eds.), *Extending Self-Esteem Theory and Research*. Cambridge University Press, New York: NY, pp. 56–84.
- Oyer, P., 2006. Initial labor market conditions and long-term outcomes for economists. *J. Econ. Perspect.* 20 (3), 143–160.
- Oyer, P., 2008. The making of an investment banker: stock market shocks, career choice, and lifetime income. *J. Financ.* 63 (6), 2601–2628.
- Porter, J.R., Washington, R.E., 1993. Minority identity and self-esteem. *Annu. Rev. Sociol.* 19, 139–161.
- Reder, M.W., 1955. The theory of occupational wage differentials. *Am. Econ. Rev.* 45 (5), 833–852.
- Rosenberg, M., 1965. *Society and the Adolescent Self-image*. Princeton University Press, Princeton, NJ.
- Rosenberg, M., 1981. The self-concept: social product and social force. In: Rosenberg, M., Turner, R. (Eds.), *Social Psychology: Sociological Perspectives*. Transaction Publishers, New Brunswick, NJ, pp. 593–624.
- Rosenberg, M., Pearlman, L., 1978. Social-class and self-esteem among children and adults. *Am. J. Sociol.* 84 (1), 53–77.
- Ross, C.E., Wu, C.L., 1996. Education, age, and the cumulative advantage in health. *J. Health Soc. Behav.* 37 (1), 104–120.
- Schmitt, D.P., Allik, J., 2005. Simultaneous administration of the Rosenberg self-esteem scale in 53 nations: exploring the universal and culture-specific features of global self-esteem. *J. Pers. Soc. Psychol.* 89 (4), 623–642.
- Schoar, A., Zuo, L., 2011. Shaped by booms and busts: how the economy impacts CEO careers and management styles. NBER Working Paper Series. National Bureau of Economic Research, Cambridge, MA.

- Sinclair, S.J., Blais, M.A., Gansler, D.A., Sandberg, E., Bistis, K., LoCicero, A., 2010. Psychometric properties of the Rosenberg self-esteem scale: overall and across demographic groups living within the United States. *Eval. Health Prof.* 33 (1), 56–80.
- Sowislo, J.F., Orth, U., 2013. Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychol. Bull.* 139 (1), 213–240.
- Stock, J.H., Wright, J.H., Yogo, M., 2002. A survey of weak instruments and weak identification in generalized method of moments. *J. Bus. Econ. Stat.* 20 (4), 518–529.
- Trzesniewski, K.H., Donnellan, M.B., Moffitt, T.E., Robins, R.W., Poulton, R., Caspi, A., 2006. Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects during adulthood. *Dev. Psychol.* 42 (2), 381–390.
- Twenge, J.M., Campbell, W.K., 2002. Self-esteem and socioeconomic status: a meta-analytic review. *Personal. Soc. Psychol. Rev.* 6 (1), 59–71.
- Twenge, J.M., Crocker, J., 2002. Race and self-esteem: meta-analyses comparing Whites, Blacks, Hispanics, Asians, and American Indians and comment on Gray-Little and Hafdahl (2000). *Psychol. Bull.* 128 (3), 371–408.
- U.S. Census Bureau, 2012. Statistical abstract of the United States 2012. Statistical Abstract of the United States. U.S. Census Bureau, Washington, DC.
- Waddell, G.R., 2006. Labor-market consequences of poor attitude and low self-esteem in youth. *Econ. Inq.* 44 (1), 69–97.
- Waite, L.J., Luo, Y., Lewin, A.C., 2009. Marital happiness and marital stability: consequences for psychological well-being. *Soc. Sci. Res.* 38 (1), 201–212.
- Webber, D.A., 2014. The lifetime earnings premia of different majors: correcting for selection based on cognitive, noncognitive, and unobserved factors. *Labour Econ.* 28, 14–23.
- Yang, Y., 2006. How does functional disability affect depressive symptoms in late life? The role of perceived social support and psychological resources. *J. Health Soc. Behav.* 47 (4), 355–372.