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ARTICLE

A belief in socioeconomic mobility promotes the development of academically motivating identities among low-socioeconomic status youth

Alexander S. Browman[a], Ryan C. Svoboda[b] and Mesmin Destin[b,c,d]

[a]Department of Counseling, Developmental, and Educational Psychology, Lynch School of Education and Human Development, Boston College, Chestnut Hill, MA, USA; [b]School of Education and Social Policy, Northwestern University, Evanston, IL, USA; [c]Department of Psychology, Northwestern University, Evanston, IL, USA; [d]Institute for Policy Research, Northwestern University, Evanston, IL, USA

ABSTRACT

Despite barriers to educational attainment, low-SES youth often maintain strong academic intentions and performance if they continue to view school as important for obtaining the desired futures they envision for themselves. We undertook three related studies to examine the importance of one aspiration central to the desired futures of many low-SES youth: attaining upward socioeconomic mobility. Cross-sectional, longitudinal (Study 1), and experimental data (Study 2) demonstrate that low-SES youth's beliefs about their likelihood of attaining mobility affects their likelihood of envisioning futures that hinge on educational attainment, which ultimately predict their academic intentions and performance. Study 3 then tests a novel intervention for promoting the adoption of education-dependent futures among low-SES youth: highlighting multiple viable school-based paths to future mobility.

KEYWORDS Socioeconomic status; mobility; identity; academic intentions; academic performance

Compared to their higher-socioeconomic status (SES) peers, youth from low-SES backgrounds face daunting systemic barriers to educational attainment in the United States. These include lack of access to adequately resourced schools, high-quality teachers and teaching materials, and safe neighborhoods, among many others factors (see Stephens, Brannon, Markus, & Nelson, 2015). The consequences of these disparities are well documented. Compared to peers from the richest 20% of American families, youth from families in the poorest 20% are about 4.5 times more likely to drop out before graduating high school (Stark, Noel, & McFarland, 2015). Furthermore, among those who do graduate, youth who come from families in the bottom income quartile in the U.S. are as much as 68% less likely to apply to, enroll in, and complete post-secondary

CONTACT Alexander S. Browman browman@bc.edu Boston College, Boston, USA

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Supplemental data for this article can be accessed here

education than those from families in the top quartile (Baum, Ma, & Payea, 2013; Cahalan & Perna, 2015).

Despite this, many low-SES youth maintain strong academic intentions and performance, and scholars have sought to identify internal psychological factors that contribute to these positive outcomes. Decades of research have demonstrated that people are more likely to value a domain as an important part of who they are (i.e. to develop a student identity) and thus to feel motivated to engage in that domain (e.g., academics) when they perceive it as important for reaching the kinds of futures that they envision for themselves—their desired future identities (for review, see Oyserman & Destin, 2010). This is especially true for adolescents and young adults, who are in the process of developing a meaningful sense of who they wish to become in the future. In the present research, we highlight the role of one aspiration central to the desired futures of many low-SES youth: attaining upward socioeconomic mobility. Specifically, we examine for the first time whether low-SES youth's beliefs about their likelihood of attaining mobility affects their likelihood of imagining futures that require post-secondary education (education-dependent future identities), thereby influencing their academic intentions and performance. From this, we demonstrate how a consideration of this link can help support the development of education-dependent future identities among low-SES youth.

Socioeconomic mobility goals, internalization of higher education, and academic outcomes among low-SES youth

As discussed, understanding how to encourage academic intentions and performance among low-SES youth requires consideration of the kinds of futures they envision for themselves. One aspiration that is often expressed by these youth is desire to attain upward socioeconomic mobility—to have better and more stable occupations, incomes, and living conditions than they currently experience.[1] Indeed, quantitative research has found that youth who grow up in lower-SES circumstances are more likely to desire "money" and "a job that pays well" than those from more advantaged backgrounds (Chaplin, Hill, & John, 2014; Kasser, Ryan, Zax, & Sameroff, 1995). These trends are echoed in qualitative interviews with low-SES youth—for example, "Most of the kids [here in the projects] … wanna make money so they can help their families and help themselves to get out of [the projects]" (MacLeod, 2018, p. 36).

What these aspirations for mobility suggest is that the academic intentions and performance of low-SES students may ultimately hinge in part on a broader assumption about society at-large: the general belief that socioeconomic mobility can occur in their society. Indeed, a wealth of research has shown that people's beliefs about mobility have a number of important motivational implications. Most notably, when people believe that mobility is possible, they are more likely to trust, internalize, and ultimately act in ways consistent with elements of the prevailing social systems in their society (e.g., Alesina, Stantcheva, & Teso, 2018; for review, see Ryan, Singh, Hentschke, & Bullock, 2018). For example, people who were experimentally led to believe that mobility was more (versus less) attainable in their society were more likely to both trust prevailing societal messages about the importance of hard work and self-reliance for future success (Day & Fiske, 2017) and to frame their own lives in terms of that notion, such as

perceiving their own economic station as a product of effort versus external factors (Shariff, Wiwad, & Aknin, 2016).

Notably, another prevailing message in Western social systems is the notion that educational attainment represents the primary means to attaining future socioeconomic and life success (see Rosenbaum, 2001). Thus, as Figure 1 depicts, if a low-SES student feels that mobility is generally attainable in their society (i.e. they hold stronger [versus weaker] mobility beliefs), they may be more likely to trust and internalize prevailing societal messages about the necessity of educational attainment for future socioeconomic success. In other words, they may be more likely to adopt *education-dependent future identities*, or imagined desired futures that explicitly include attaining a high level of education (Destin & Oyserman, 2010; Oyserman & Destin, 2010). And accordingly, this should lead them to think and act in ways that promote stronger academic intentions and performance (see Oyserman & Destin, 2010).

Prior research provides support for a positive causal relationship between mobility beliefs and the tendency among low-SES youth to think and act in ways that promote positive academic outcomes. For example, in one study conducted with high school students and a second study conducted with college students, Browman and colleagues (2017) experimentally manipulated students' beliefs about the attainability of mobility in their society. Students then completed self-report or behavioral measures of their intentions to persist when they faced academic difficulties. Across both studies, lower-SES students who were led to hold stronger (versus weaker) mobility beliefs were more inclined to persist when faced with academic difficulty. Furthermore, for the high school sample (for whom official grades were collected), students' motivations to persist positively predicted their performance at the end of the academic year—approximately 7 months post-manipulation (see also Laurin, Fitzsimons, & Kay, 2011). Finally, separate studies have shown that low-SES students who held or were led to hold education-dependent future identities (e.g., by experimentally presenting a graph showing the stepwise increase in future income that accompanies increased education) planned to invest more time in their homework and earned higher grades than those did not hold these identities (Destin & Oyserman, 2010). In other words, low-SES students' academic intentions and performance are also causally influenced by the extent to which they hold education-dependent future identities.

By contrast, the potential causal link between low-SES youth's mobility beliefs and the extent to which they envision education-dependent futures for themselves has yet to be empirically tested; nor has the potential mediating role of education-dependent future identities in the relationship between mobility beliefs and academic outcomes (see Figure 1). Testing these links is important for several reasons. From a theoretical standpoint, such tests are necessary for understanding whether or not these two factors that have been separately shown to contribute to the academic outcomes of low-SES students (Browman et al., 2017; Destin & Oyserman, 2010) function via a unified mechanism.

More critically, from a practical standpoint, such findings would suggest that while both factors contribute to academic outcomes (Browman et al., 2017; Destin & Oyserman, 2010), education-dependent future identity may be a more proximal and direct contributor. If this is the case, then strengthening low-SES youth's mobility beliefs should only be effective as long as they are able to see educational attainment as *viable*

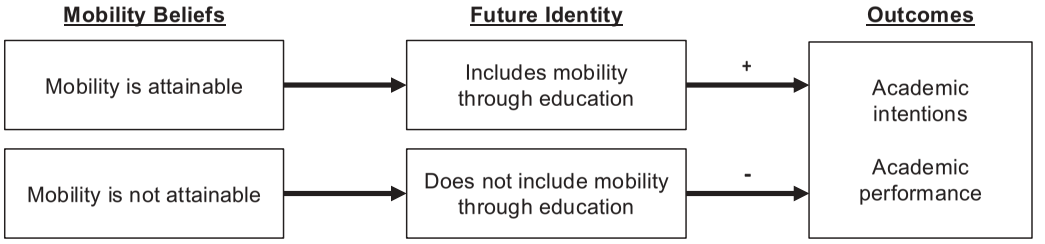

Figure 1. Hypothesized relations between mobility beliefs, inclusion of mobility through education in future identity, and academic outcomes among low-SES youth.

for them, and thus can truly see education as connected to successful futures (see Browman, Destin, Kearney, & Levine, 2019). In other words, such findings would suggest that interventions designed to improve academic intentions and performance among low-SES youth need to provide them with viable education-based opportunities for attaining upward mobility in order to promote the development of education-dependent future identities.

Thus, the first aim of the present research was to directly test these theoretical assumptions outlined in Figure 1. In Study 1, we employ a longitudinal, measurement-of-mediation design (Spencer, Zanna, & Fong, 2005) as a first test of whether the relationship between low-SES youth's beliefs about mobility and their academic outcomes might be mediated by the extent to which they hold education-dependent future identities. Study 2 then provides a direct, experimental test of whether low-SES youth's mobility beliefs causally influence their likelihood of holding education-dependent future identities. Finally, Study 3 addresses the second aim of the present work: to demonstrate how a consideration of the roles of both of these factors on low-SES youth's academic outcomes can contribute to the development of more complete and effective interventions. Specifically, we provide an initial test of a novel intervention designed to bolster the extent to which low-SES youth perceive education-dependent futures as viable means to socioeconomic mobility. Analyses were not conducted prior to collection of the full sample in each study, and all materials, data, and analytic syntax discussed are available at https://osf.io/a6fqa.

Study 1

Study 1 provided an initial test of whether the relationship between low-SES youth's beliefs about mobility and their academic outcomes is mediated by the extent to which they hold education-dependent future identities. We examined 9th-11th grade students in a low-SES school and employed a longitudinal, measurement-of-mediation design (Spencer et al., 2005) to test the potential links between mobility beliefs and education-dependent identity at the beginning of an academic quarter and their official grades at the end of the quarter.

Participants

Participants were 200 9th-11th grade, low-SES students from a small public high school in a major Midwestern American metropolitan area (112 male, 85 female, 3 undisclosed; 65 9th-grade students, 78 10th-grade students, 54 11th-grade students, 3 undisclosed; M_{age} = 15.91, SD = .98). Because high school schedules are very restrictive, this sample size was determined by the number of consented and assenting students who completed the study on a single day pre-arranged with school staff. No data were excluded. The final sample size provided a statistical power of .80 to detect an effect of $r \geq |.197|$.

This sample had several important characteristics for testing the present hypotheses. First, the school was one with historically low standardized achievement rates. Second, the student body of the school came from almost entirely racial-ethnic minority (99.1% Black, .9% Hispanic) and low-SES backgrounds, with >98% of students being eligible to receive free or reduced-price lunch, living in substitute care, or whose families receive

public aid. The sample and materials were part of a larger study reported by Browman and colleagues (2017, Study 1).

Methods

Procedure

Students completed measures of their mobility beliefs and education-dependent future identities. Students completed both sets of measures at the same time point, during regular class time, about two weeks into the last academic quarter of the year. Seven weeks after completing the questionnaire measures, we obtained students' official quarter-end GPAs for the first (M = 2.46, SD = .89) and last quarters of the year (M = 2.19, SD = .95).

Materials

Mobility beliefs. To test the robustness of our findings, students completed two measures of their mobility beliefs. First, they completed a 6-item *scale-based* measure validated in prior work (Browman et al., 2017; e.g., "No matter what your status is at one point in your life, you can always change it quite a bit"; 1 ="strongly disagree", 7 ="strongly agree"; M = 4.92, SD = .98, ω = .85[2], α = .69). The items were preceded by a stem explaining that "status" referred to "how much money you and your family have, the kind of jobs you can have, and how you describe your place in society (lower class, middle class, or upper class)," and prior scale construction research has confirmed that respondents construe the items in this way (Browman et al., 2017).

Second, students indicated where they believed they and their families stood right now (M = 6.88, SD = 2.01) and would stand in 10 years' time (M = 8.29, SD = 1.64) in the United States in terms of their family's household income, job statuses, and levels of education on a 10-runged ladder (1 = lowest; 10 = highest).[3] As in prior work (Davidai, 2018; Shariff et al., 2016), we quantified students' beliefs about the likelihood of experiencing socioeconomic mobility by computed a *ladder-based* score that involved subtracting their "right-now" responses from their "10-years-from-now" responses. The correlation between the scale- and ladder-based mobility beliefs measures was significant but fairly small (see Table 1), so the two were treated separately in our primary analyses.[4]

Table 1. Correlations between study 1 variables.

	(1)	(2)	(3)	(4)
(1) Mobility beliefs – scale-based measure	–			
(2) Mobility beliefs – ladder-based measure	.216** [.078, .346]	–		
(3) Education-dependent future identity	.214** [.077, .343]	.187** [.048, .319]	–	
(4) Quarter-end GPA	.178* [.039, .310]	.242*** [.104, .371]	.308*** [.175, .429]	–
(5) Pre-study GPA	.091 [−.051, .230]	.251*** [.112, .380]	.264*** [.127, .391]	.698*** [.618, .764]

*** p < .001, ** p < .01, * p < .05.

Note: Values in square brackets represent 95% confidence intervals. Degrees of freedom range from 186–197 as a result of differences in missing responses.

Education-dependent future identity. Four items, adapted from prior work, assessed the degree to which students planned, expected, and desired to attain a high level of education—that is, the extent to which their imagined and desired futures included attaining a high level of education. Students responded to two of the items ("I plan to go to college" [M = 6.35, SD = .94] and "It is important to me to go to college" [M = 6.18, SD = 1.16]) on a 7-point Likert response scale (1 = "strongly disagree", 7 = "strongly agree"; Wigfield & Cambria, 2010), and to the remaining two items ("How far would you like to go in school?" [M = 4.75, SD = 1.14] and "How far do you think you will go in school?" [M = 4.26, SD = 1.22]) on a 1 ("Some high school") to 6 ("Medical degree, law degree, or Ph.D") scale (Cernkovich & Giordano, 1992). An exploratory factor analysis confirmed that these four items clustered together (see supplementary materials), so the extent to which participants held education-dependent future identities was indexed by standardizing each of the four items before averaging them together (ω = .88, α = .82).

Results

Table 1 shows the correlations between the five measures. Corroborating our hypotheses, students with stronger mobility beliefs—as measured with both the scale- and ladder-based measures—reported significantly stronger education-dependent future identities. Furthermore, consistent with prior studies (Browman et al., 2017; Destin & Oyserman, 2010), stronger mobility beliefs and education-dependent future identities at the onset of the academic quarter were both associated with significantly higher quarter-end GPAs. These effects were all small-to-medium in size (Cohen, 1988).

To test our central hypothesis—that education-dependent future identity can mediate the relationship between low-SES youth's mobility beliefs and their academic outcomes—we conducted two mediation analyses using a nonparametric bootstrapping procedure (Preacher & Hayes, 2008). Both analyses posited education-focused future identity as the mediator and quarter-end GPA as the dependent measure, and both were conducted using the *mediate* function from the R package *mediation* (Tingley, Yamamoto, Hirose, Keele, & Imai, 2014) with 5,000 resamples, as recommended (Preacher & Hayes, 2008). In the first analysis, the scale-based measure of mobility beliefs was included as the predictor, while in the second analysis, the ladder-based measure was used instead. As Figure 2 shows, both analyses revealed significant small-to-medium sized indirect effects of low-SES youth's mobility beliefs on their GPAs through their education-dependent future identities, and effects held when controlling for pre-study GPA, gender, grade, and parental education (see supplementary materials). In other words, supporting our central hypothesis, low-SES youth with stronger mobility beliefs reported stronger education-dependent future identities, which predicted stronger academic achievement at the end of the academic quarter.[5]

Discussion

The results of Study 1 represent the first direct evidence of both a relationship between low-SES youth's mobility beliefs and the extent to which they hold education-dependent future identities, as well as a potential intervening role of education-dependent identity on the relation between mobility beliefs and academic outcomes. While these results are

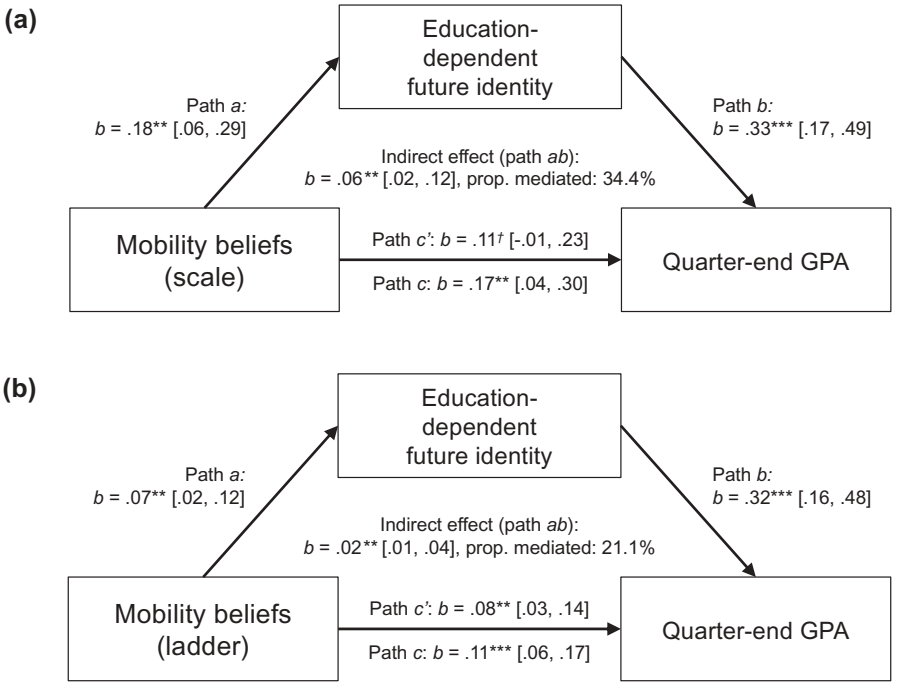

Figure 2. Results of the analyses testing whether education-dependent future identity mediates the relationship between low-SES youth's mobility beliefs (as measured with (a) the scale-based measure, and (b) the ladder-based measure) and quarter-end GPA in Study 1. *c* paths represent total effects (i.e. paths estimated without the mediator) and *c'* paths represent direct effects (i.e. paths estimated with the mediator). *b*s denote unstandardized coefficients.

correlational and thus preliminary, it is notable that they emerged across two distinct measures of youth's mobility beliefs, the effects were small-to-medium in size (Miočević, O'Rourke, MacKinnon, & Brown, 2018), and the inclusion of education-dependent identity in these models reduced the magnitude of the direct relationship between their mobility beliefs and academic outcomes (see Figure 2). Study 1 therefore provides initial but promising correlational support for the relationships we hypothesized (see Figure 1).

Of course, Study 1 was not experimental and thus could not test the causal nature of these relationships. Thus, while prior work supports the independent causal effects of both mobility beliefs (path *c* in Figure 2; Browman et al., 2017) and education-dependent future identity (path *b*; Destin & Oyserman, 2010) on academic outcomes, the causal nature of the relationship between mobility beliefs and education-dependent identity (path *a*) has yet to be examined. Thus, in Study 2, we experimentally manipulated the independent variable in this mediation model (mobility beliefs) to determine whether it has a causal effect on the proposed mediator (education-dependent future identity).

Study 2

In Study 2, we experimentally manipulated students' mobility beliefs before assessing the extent to which they envisioned education-dependent futures for themselves. To

ensure that our general findings from Study 1 were robust across measures, Study 2 utilized a different measure of education-dependent future identity. Furthermore, unlike Study 1, Study 2 involved a sample of students from various socioeconomic backgrounds. Notably, prior research has shown that because people's thoughts about mobility generally center on the prospect of moving up (versus down) the socioeconomic ladder (Davidai & Gilovich, 2015; Kraus & Tan, 2015), the prospect of mobility is typically more consequential for the academic outcomes of those at the lower end of the socioeconomic ladder than for those at the upper end (Browman et al., 2017; Laurin et al., 2011). We therefore hypothesized that lower-SES students' education-dependent future identities would be more contingent on their mobility beliefs than their higher-SES counterparts'.

Participants

Participants were undergraduate students from a private university in the Midwestern United States. After excluding 14 responses (because participants failed attention checks [see supplementary materials], were not undergraduate students, and/or reported having seen the manipulation materials before), the final sample consisted of 121 students (M_{age} = 18.76, SD = 1.04; 71 female, 50 male; 38% White, 26.4% Asian, 14% Latino, 9.9% Black, 3.3% Middle-Eastern/Arab, 8.3% multi-racial; 72.7% freshmen, 17.4% sophomores, 3.3% juniors, 6.6% seniors), who were exposed to one of the two mobility beliefs manipulations.[6] This provided a statistical power of .80 to detect an effect of Cohen's $f^2 \geq .066$.

Method

Pre-testing

SES. As discussed, Study 2 included students from various socioeconomic backgrounds. As such, as part of an online pre-testing questionnaire, participants indicated their subjective SES using the "right-now" ladder measure used in Study 1 (M = 6.83, SD = 1.74). As a measure of objective SES, participants also indicated their family's household income from a list of nine options: (1) <$25,000, (2) $25,001-$40,000, (3) $40,001-$70,000, (4) $70,001-$90,000, (5) $90,001-$120,000, (6) $120,001-$150,000, (7) $150,001-$200,000, (8) $200,001-$300,000, and (9) >$300,001 ($M$ = 5.68, SD = 2.69). The two measures were highly correlated, $r(114) = .79$, $p < .001$, so they were standardized and averaged to create a composite measure of SES.

Pre-manipulation mobility beliefs. To examine pretest equivalence, the pre-testing survey also included an 8-item measure of participants' pre-manipulation mobility beliefs, similar to that used in Study 1 (1 = "strongly disagree," 7 = "strongly agree"; M = 4.94, SD = 1.06, ω = .94, α = .91).

Lab session

Manipulating mobility beliefs. To manipulate mobility beliefs, students were randomly assigned to one of two conditions and were given 3 minutes to read a one-page article that framed socioeconomic mobility in America as either being generally attainable (strong mobility beliefs condition; N = 60) or extremely difficult to attain (weak mobility beliefs condition; N = 61; see supplementary materials). To test the effectiveness of the

manipulation, all participants then completed the same mobility beliefs measure used in pre-testing (M = 4.81, SD = 1.03, ω = .94, α = .91).

Assessing education-dependent future identity. Following the manipulation, students indicated the extent to which they saw educational attainment as a requirement for attaining valued futures—that is, the extent to which their imagined desired futures included attaining a high level of education. The 4-item scale, culled from prior work (Harris, 2008), included "I have to do well in school if I want to be a success in life" (1 ="strongly disagree", 7 ="strongly agree"; M = 5.81, SD = .86, ω = .82, α = .78).

Results

Random assignment and manipulation checks

Random assignment was successful: participants did not differ by condition in terms of their *pre-measured* mobility beliefs, $t(119) = -.59$, $p = .554$, Cohen's $d = .108$. However, confirming the effectiveness of the manipulation, participants in the strong mobility beliefs condition had both significantly stronger post-manipulation beliefs about mobility (M = 5.19, SD = .84), $t(113.89) = 4.22$, $p < .001$, Cohen's $d = .766$, and significantly more positive pre-to-post changes in their mobility beliefs ($M = .30$, $SD = .68$), $t(119) = 7.27$, $p < .001$, Cohen's $d = 1.321$, than those in the weak mobility beliefs condition ($M_{\text{post-measure}}$ = 4.45, SD = 1.07; $M_{\text{pre-to-post}}$ = −.55, SD = .61). See supplementary materials for additional checks.

Effects of the manipulation on education-dependent future identity

Again, the primary aim of Study 2 was to test whether strengthening (versus weakening) low-SES students' mobility beliefs would increase the extent to which they envisioned future success as education-dependent. To isolate the effect on lower- versus higher-SES students' participants' education-dependent future identity scores were regressed on condition (coded −1 [weak mobility beliefs condition] and +1 [strong mobility beliefs condition] and mean-centered), composite SES (standardized, as described above)[7], and their interaction.

The condition × SES interaction, depicted in Figure 3, was significant, $b = -.18$ [−.34, −.02], $t(112) = -2.20$, $p = .030$, Cohen's $f^2 = .043$. Most notably, simple slopes analyses revealed that among lower-SES students (−1 *SD*), those who had their mobility beliefs strengthened reported marginally stronger education-dependent future identities than those who had their beliefs weakened, $b = .20$, $t(112) = 1.89$, $p = .062$. By contrast, there was no significant effect of condition on higher-SES students (+1 *SD*), $b = -.13$, $t(112) = -1.23$, $p = .220$.

Discussion

The results of Study 2 provide the first evidence that strengthening low (but not high) SES youth's mobility beliefs *causally* enhance their likelihood of adopting education-dependent future identities. Taken together, the findings of Studies 1–2 and prior work support the mediation model depicted in Figure 2—through both measurement-of-mediation (Study 1) and experimental causal chain designs (path *a* [Study 2]; path *b* [Destin & Oyserman, 2010]; path *c* [Browman et al., 2017])—that one way that low-SES youth's mobility beliefs affect

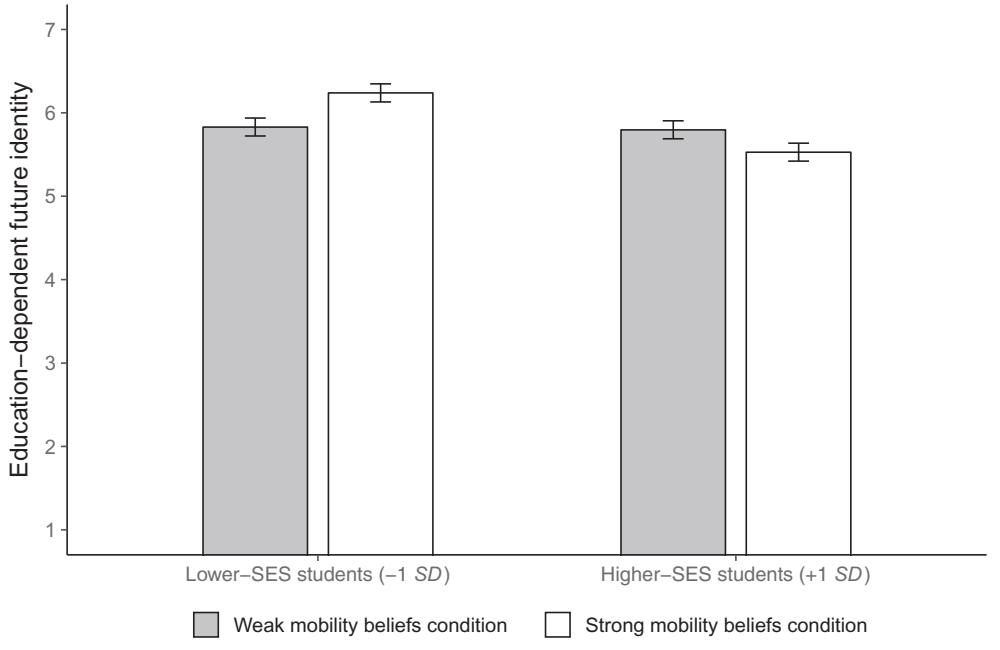

Figure 3. The effect of condition on lower- and higher-SES students' education-dependent future identity. Error bars denote ±1 *SE* for the simple effects of condition on education-dependent future identity for lower-SES (−1 *SD*) and higher-SES (+1 *SD*) students.

their academic outcomes is by influencing the extent to which their imagined and desired futures included attaining a high level of education.

These findings have important potential implications. If education-dependent identity is a proximal contributor to academic outcomes in this model (as these analyses imply), this suggests that strengthening low-SES youth's mobility beliefs will only be effective as long as they are able to see educational attainment as *viable* for them, and thus can truly envision themselves having futures that are education-dependent. In other words, our findings suggest that efforts to improve academic outcomes among low-SES youth need to provide and highlight viable education-based opportunities for attaining upward mobility in order to effectively promote the adoption of education-dependent future identities.

Study 3

In Study 3, we tested the insight suggested by Studies 1–2: that improving academic outcomes among low-SES youth requires the provision of education-based opportunities for attaining upward mobility *that feel viable to all low-SES youth*, in order to effectively promote the adoption of education-dependent future identities. As such, we tested whether highlighting *multiple* school-based paths to future mobility—specifically, both college *and* vocational post-secondary options—could promote the adoption of education-dependent future identities and bolster academic intentions among low-SES youth. We experimentally compared this with the common approach in Western education systems of

highlighting college—which low-SES youth are less likely to be able to attend (Baum et al., 2013; Cahalan & Perna, 2015)—as the only school-based path to mobility (see Rosenbaum, 2001). We expected that highlighting multiple school-based paths to future mobility would be especially important for low-SES youth in their later high school years (seniors), who may already have decided whether college seems out of reach for them (King, 1996) and thus may not envision education-dependent futures for themselves. Thus, in Study 3, we introduce a novel, multiple pathways curriculum for low-SES high school seniors and employ a two-condition randomized-control design in real classroom settings to test its effects on academic intentions.

Participants

Participants were students from the same small public high school as in Study 1. As discussed, the student body at this school was characteristically low-SES and the school had historically low achievement rates. As in Study 1, the sample (and thus the sample size) was determined through conversations with school officials, who were most interested in targeting seniors. As such, the sample available to us was the senior class at this high school, which on the day of the study totaled 53 students (21 male, 25 female, 7 undisclosed; M_{age} = 17.24, SD = .60). Because it was clear after communicating with the school that this study would involve a small sample (a maximum of 70 students was discussed during initial planning), and because all of our primary predictions were directional (i.e. students in the multiple pathways condition were expected to report stronger academic intentions than students who were not), these methods, materials, and directional predictions were pre-registered before data collection (at https://osf.io/eruyb) in order to allow for the use of one-tailed tests and thereby increase the power of our analyses (see Hales, 2016). Using this analytic approach, the final sample provided a statistical power of .80 to detect effects of Cohen's $d \geq .703$.

Materials and Procedures

Speakers

To ensure that our materials were seen as credible and relevant to students' own lives, the study materials in both conditions were delivered to students by post-secondary graduates who were alumni of the target high school and came from the same neighborhoods and socioeconomic and racial-ethnic backgrounds as the school's student body. These individuals were chosen because they could serve as role models for our student participants—accomplished ingroup members from similar backgrounds—which has been shown to enhance the relevance and credibility of information in prior studies (see Oyserman & Destin, 2010).

Again, the goal of Study 3 was to test whether low-SES youth who are made aware of post-secondary paths to future financial success that are truly viable for them would be more likely to adopt future identities that were education-dependent than those who were only made aware of a single, universal post-secondary pathway that may or may not be viable for them. We therefore recruited 4 alumni (2 Black males and 2 Black females) who (a) had completed either traditional or vocational post-secondary

education programs and (b) reported financial and quality-of-life benefits that came as a direct result of their respective post-secondary pathways.[8]

In-school sessions

Regular school days at our target institution were structured such that the senior class was divided into three independent post-secondary preparation classes. Our in-school sessions took place during these class periods. Because high school schedules are very restrictive, the students could not be separated from their classes for the purposes of the experiment. Thus, two classes (*N*s = 15 and 16) were randomly assigned to the *college pathway condition* and one class (*N* = 22) was assigned to the *multiple pathways condition*. Students in the two conditions were similar in terms of age, gender, and parental education (see supplementary materials).

To build rapport with the students, in both conditions, speakers introduced themselves as alumni of the school and noted their graduation year and what neighborhood of the city they grew up in (since students at this school have historically come from the same few communities). Next, they described where they completed their post-secondary education and their current occupations.

The remaining materials varied by condition; however, in both conditions, the emphasis was on making the highlighted post-secondary option(s) seem both viable and financially beneficial for low-SES youth. Specifically, students in the *college pathway condition* heard two *college-educated alumni* (1 male and 1 female) discuss three types of college-promoting information that have been shown to make college feel viable and financially beneficial (see Oyserman & Destin, 2010). First, speakers discussed how going to college resulted in them having greater financial success than their peers who did not. Second, speakers described the availability of need-based financial aid opportunities to help students afford a college education, and provided examples from their own experiences. Finally, speakers described personal experiences of difficulty in high school and college, and how they overcame these barriers and achieved success. The meta-message provided in this condition was thus that *college* could be viable and financially beneficial for low-SES youth.

In the *multiple pathways condition*, students heard these same college-promoting messages from one (male) speaker, while the second (female) speaker spoke about her experiences on the *vocational post-secondary path*. Specifically, she discussed (1) how going to vocational school resulted in her having much more financial success, (2) need-based financial aid opportunities available to enable students to afford a vocational school education, again providing examples from her own experiences, and (3) experiences of difficulty in high school and vocational school, and how she overcame them. The meta-message provided in this condition was thus that there are *multiple post-secondary options* that are both viable and financially beneficial for low-SES youth. The presentations in both conditions lasted ~25 minutes.

Post-presentation measures

Immediately following the presentations, students completed the following measures.

Perceptions of the presentations. To ensure that the presentations and speakers were experienced similarly, students responded to 9 items[9] such as "The speakers were warm"

and "I liked today's presentation" (1="I completely disagree", 6="I completely agree"; M = 5.17, SD = .76, ω = .98, α = .97).

Presentation effectiveness: Education-dependent future identities. To determine the effectiveness of the manipulation—that is, whether the multiple pathways presentation influenced the extent to which students envisioned education-dependent futures—students responded to 6 items[10] similar to those used in Study 2 (e.g., "Education really pays off in the future for people like me"; 1="I completely disagree", 6="I completely agree"; M = 5.20, SD = 1.02, ω = .98, α = .96).

Academic intentions. Finally, students complete two measures of their academic intentions, culled from prior work (Destin & Oyserman, 2010). First, they indicated how much time they planned to spend that night (using a 1–8 scale ranging from "less than 1 hour" to "7 or more hours) on two academic activities ("studying and doing homework" and "research on things related to continuing your education after high school, like school options and scholarships") and four non-academic activities (e.g., "watching TV"). Academic intentions were operationalized as the percentage of time they planned to spend on academic activities that evening (M = 31.21%, SD = 10.66%). Second, they reported their academic goals—specifically, what grades they expected to earn during the current academic year: (1) Two or more Ds or Fs, (2) One D or F, (3) Nothing lower than a C, (4) All Bs, (5) As and Bs, or (6) All As (M = 4.27, SD = 1.15).

Results

Perceptions of the presentations

There were no between-condition differences in students' ratings of the speakers (college pathway condition: M = 5.19, SD = .80; multiple pathways condition: M = 5.15, SD = .73), $t(44)$ = –.18, p = .854, Cohen's d = .055. Furthermore, students in both conditions provided significantly positive ratings of the presentations (compared to the scale midpoint), ts > 10.14, ps < .001, Cohen's ds > 2.11. Thus, students in both conditions perceived the speakers and presentations equally positively.

Presentation effectiveness: Education-dependent future identities

As discussed, the remaining analytic methods and associated directional predictions were pre-registered to enable the use of one-tailed tests to increase our power (see https://osf.io/eruyb). Students in the multiple pathways condition reported stronger education-dependent future identities (M = 5.48, SD = .62) than those in the college pathway condition (M = 5.00, SD = 1.19), $t_{one\text{-}tailed}(45.87)$ = 1.89, p = .033, Cohen's d = .485. Thus, as hypothesized, exposing low-SES students to multiple (versus one) viable and financially beneficial post-secondary options encouraged greater adoption of education-dependent future identities.

Academic intentions

Finally, we tested whether this novel method of promoting adoption of education-dependent future identities among low-SES students would enhance their academic intentions. Supporting our predictions, students in the multiple pathways condition reported planning to spend significantly more of their time that evening on academic activities (M = 34.72, SD =

9.44), $t_{one\text{-}tailed}(47) = 2.06$, $p = .022$, Cohen's $d = .595$, and expected to earn marginally higher grades ($M = 4.52$, $SD = 1.12$), $t_{one\text{-}tailed}(47) = 1.37$, $p = .088$, Cohen's $d = .397$, than those in the college pathway condition (time planned: $M = 28.58$, $SD = 10.92$; expected grades: $M = 4.07$, $SD = 1.15$). In other words, corroborating our hypotheses, making low-SES youth aware of post-secondary paths to financial success that are truly viable for them increased their academic intentions compared to those who were only made aware of a single, universal post-secondary pathway that may or may not be viable for them.

General discussion

Given the barriers that low-SES youth face in their educational endeavors, many scholars have worked to identify psychological factors that help these students maintain strong academic intentions and performance. The present findings extend this discussion by suggesting, as depicted in Figure 1, that two previously identified contributors—low-SES youth's mobility beliefs (Browman et al., 2017) and the extent to which they adopt education-dependent future identities (Destin & Oyserman, 2010)—may exert their influence on academic intentions and performance via a unified pathway. Between the measurement-of-mediation evidence from Study 1 and the summative experimental causal chain evidence accrued between Study 2 (path *a*) and prior work (Destin & Oyserman, 2010 [path *b*]; Browman et al., 2017 [path *c*]), our results suggest that the extent to which low-SES youth envision education-dependent futures mediates the relationship between their beliefs about the attainability of mobility and their academic outcomes. And notably, these results emerged across multiple measures of mobility beliefs (Study 1) and education-dependent future identity (Study 1 versus Studies 2–3).

These findings may help integrate the growing body of research on the motivational implications of mobility beliefs. Specifically, scholars have noted that a belief in mobility has seemingly contradictory effects (see Ryan et al., 2018), with some studies finding that holding such beliefs is beneficial (e.g., for academic intentions and outcomes among low-SES students; Browman et al., 2017) and others finding that they are harmful (e.g., by reducing support for programs designed to help disadvantaged individuals; Alesina et al., 2018). The present work provides a potential unifying framework for explaining both sets of findings: that mobility beliefs motivate people to trust, internalize, and ultimately act in ways consistent with the prevailing social system, which includes both elements that are beneficial (e.g., the belief that educational attainment leads to future success) and others that are harmful (e.g., the belief that success stems solely from merit; Day & Fiske, 2017).

Beyond these theoretical contributions, this work also showcases its potential practical implications. As discussed, the finding that education-dependent future identity is a proximal contributor to academic outcomes (Studies 1–2) suggests that strengthening low-SES youth's mobility beliefs will only be effective as long as they see educational attainment as viable and thus can truly envision realistic education-dependent futures for themselves. Otherwise, they should be more likely to put their efforts into following a different path that does feel like a viable means to future success, and thus is easier for them to envision themselves attaining (see Browman et al., 2019). The implication is that interventions targeting low-SES youth need to highlight or provide viable education-based opportunities for attaining upward mobility in order to effectively promote the

adoption of education-dependent future identities. The results of Study 3 provide initial support for this view: low-SES youth who were made aware of multiple post-secondary paths to future financial success (to increase the likelihood that at least one would feel viable for them) reported stronger academic intentions than those who were only made aware of a single, universal post-secondary pathway that may or may not be viable for them.

Finally, it seems plausible that the present findings could ultimately be part of a larger recursive cycle, where our academic outcomes of interest ultimately feed back as an input. For example, changes in students' grades could influence their beliefs about how attainable mobility is for them, which would then influence their education-dependent identities, and so on. Indeed, additional analyses in Study 1 provide some potential support for such a process (see supplementary materials), but future research should seek to specifically address these important follow-up questions.

Although the findings from all three studies support our hypotheses regarding both the interconnections of mobility beliefs and education-dependent identity (Studies 1–2) and the implications for intervention (Study 3), we acknowledge that our statistical power was less than ideal. As noted, however, this was often due to the kinds of logistical restrictions that naturally arise when conducting research in real-world contexts (see Destin, 2018). For example, schools have very restrictive schedules, which determined data collection capabilities in Studies 1 and 3 and our ability to randomly assign individual students (as opposed to classes) to conditions in Study 3. In addition, when working with community partners, the partner's goals must be respected—for example, the school's desire for a program for senior students in Study 3, which again determined potential sample size. We note, however, that where possible, we took precautions to make these studies valuable despite power issues. For example, as noted, the hypotheses, materials, and analytic strategies discussed in Study 3 were pre-registered prior to data collection. Still, future research should seek to replicate these findings with samples large enough to test potential moderators, including pre-intervention mobility beliefs and past performance.

Taken together, the present findings highlight an important pathway by which messages from society can shape identities in ways that guide academic outcomes among disadvantaged youth. These insights provide a foundation for continued research, in addition to important considerations for a wide variety of programming related to youth development.

Notes

1. While such goals may be perceived as extrinsic and self-focused (e.g., Kasser et al., 1995), many low-SES youth adopt them for intrinsic and communal reasons like helping their families and communities (e.g., MacLeod, 2018).
2. We report McDonald's omegas (ω) following recent recommendations, as Cronbach's alpha (α) makes rigid assumptions that can introduce considerable downward bias (see McNeish, 2018). We also include alphas for comparison.
3. These high perceptions of their current and future SES are consistent with prior work demonstrating tendencies among many disadvantaged individuals to both overestimate their relative SES (e.g., Fernández-Albertos & Kuo, 2018) and be highly optimistic about their futures (see Oyserman & Destin, 2010).

4. Note that these two measures differ in focus: the scale-based measure assesses beliefs about the general likelihood of mobility in their society, while the ladder-based measure assessed beliefs about the likelihood that the participant themselves would experience mobility. Analyzing them separately, as in prior work (e.g., Day & Fiske, 2017; Shane & Heckhausen, 2017), was therefore important for testing whether our findings hold regardless of the focus of the mobility beliefs measure.
5. We also tested mediation models with the two measures of mobility beliefs mediating the relationship between future identity and academic outcomes. The results were less consistent and the effect sizes were smaller than those described here (see supplementary materials).
6. The broader study also included three other experimental manipulations that were unrelated to mobility beliefs (see supplementary materials).
7. See supplementary materials for analyses testing the independent effects of income and subjective SES.
8. See supplementary materials for details regarding alumni recruitment and material development.
9. Ten items were administered, but a factor analysis revealed that one item did not cluster with the other nine (see supplementary materials).
10. Seven items were administered, but a factor analysis revealed that one item did not cluster with the other six (see supplementary materials).

Disclosure statement

No potential conflict of interest was reported by the authors.

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ORCID

Alexander S. Browman http://orcid.org/0000-0002-2957-3262

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Supplementary Materials

(Complete materials, data, and analytic syntax are available at https://osf.io/a6fqa)

Study 1

Additional Details Regarding the Larger Study

As reported previously (Browman, Destin, Carswell, & Svoboda, 2017), the larger study that Study 1 drew from centered on students' interest in science, technology, engineering, and mathematics. This study included four conditions that did not influence our three variables of interest—mobility beliefs, $F(3, 195) = .17$, $p = .917$, education-dependent future identities, $F(3, 195) = 1.73$, $p = .161$, or official grades, $F(3, 193) = .32$, $p = .814$—and thus our main analyses were conducted by collapsing across conditions.

Factor Analysis of Education-Dependent Future Identity Items

To test whether the four education-dependent future identity items used in Study 1 clustered together, we conducted an exploratory factor analysis (EFA). The number of factors to extract was determined by Horn's Parallel Analysis (HPA; Horn, 1965), with polychoric correlations, principal components analysis, and the mean eigenvalue criterion (as recommended for ordinal data by Garrido, Abad, & Ponsoda, 2013). Based on the results of the HPA, we used principal axis factoring (PAF) to extract one factor (initial eigenvalue: 2.78) from the polychoric matrix and then applied an oblimin rotation. Squared multiple correlations were used as initial estimates of communalities. The EFA revealed that all four items loaded onto a single factor at >.657.

Mediation Analyses with Covariates

The primary mediation analyses discussed in the main text were also conducted with four covariates included: GPA from the first quarter of the academic year, grade, gender, and parental education (scoring: at least one parent completed a bachelor's degree [$N = 58$], neither parent

completed a bachelor's degree [$N = 65$], or student did not know/did not respond for either both parents or for one parent while the other did not complete a bachelor's degree [$N = 77$]). As shown in Figure S1, the indirect effects reported in the main text remained significant and small-to-medium in effect size when the covariates were included.

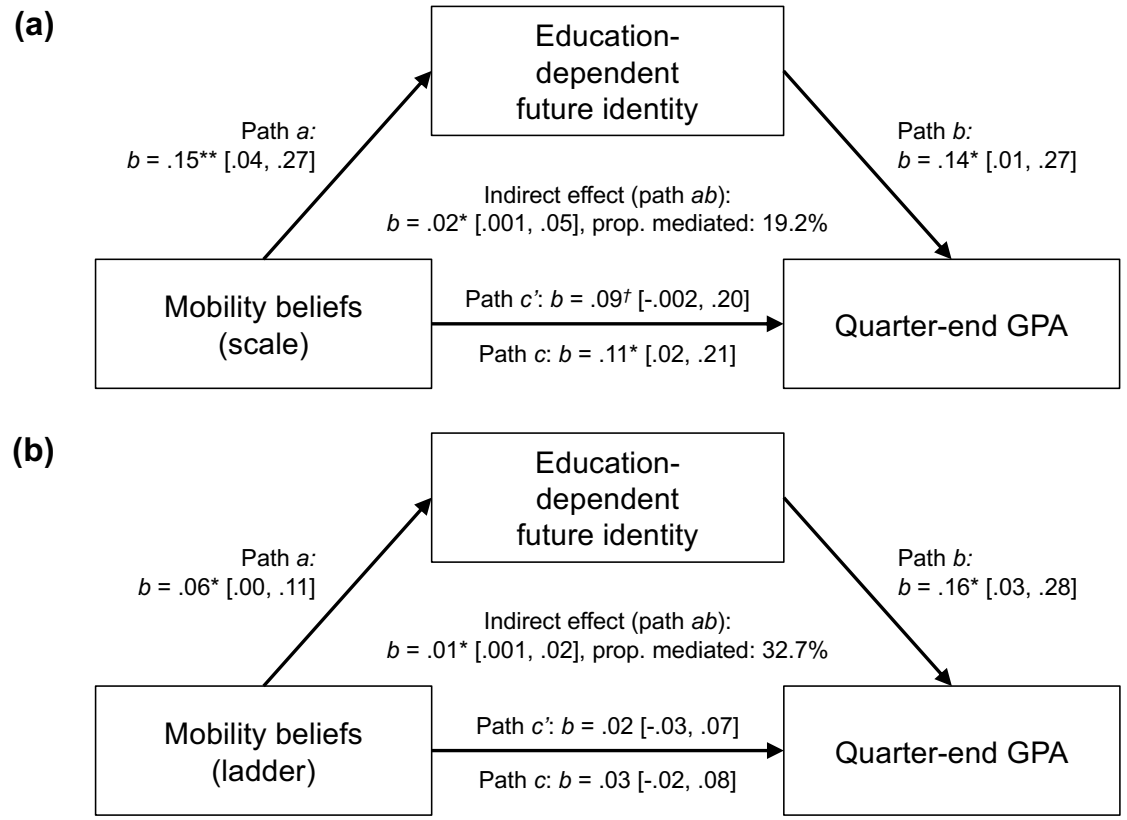

Figure S1. Results of the analyses testing whether low-SES youth's mobility beliefs (as measured with (a) the self-report measure, and (b) the ladder-based measure) mediate the relationship between their education-dependent future identities and quarter-end GPAs in Study 1, controlling for pre-study GPA, grade, gender, and parental education. *c* paths represent total effects (i.e., paths estimated without the mediator) and *c'* paths represent direct effects (i.e., paths estimated with the mediator). *b*s denote unstandardized coefficients.

Tests of Alternative Mediation Models

As noted in the main text, low-SES youth's mobility beliefs and education-dependent future identities were assessed at the same time point. As such, in addition to the tests of our hypothesized mediation models discussed in the main text, we also tested whether low-SES youth's mobility beliefs instead mediate the relationship between their education-dependent

future identities and their academic outcomes. We therefore conducted two additional mediation analyses, both positing education-focused future identity as a predictor and quarter-end GPA as dependent measure (with 5,000 bootstrapped samples; Preacher & Hayes, 2008). In the first analysis, the scale-based measure of mobility beliefs was included as the mediator, while in the second analysis, the ladder-based measure was used instead. These analyses were conducted both with and without covariates. As Figure S2 shows, the results of these analyses were less consistent than the results of our primary analyses: only one of the four indirect effects reached significance, and the indirect effect sizes were smaller than those reported in the main text. However, testing this alternative model was not the primary focus of the present work, and future research should seek to confirm these results with a more causal test.

In addition, as noted in the General Discussion, we also conducted a preliminary test of a recursion process, whereby students' grades feed back and influence their beliefs about how attainable mobility is for them, which then influence their education-dependent identities. Specifically, we conducted an additional two mediation analyses, both positing pre-study GPA as a predictor and education-dependent future identity as the dependent measure (with 5,000 bootstrapped samples; Preacher & Hayes, 2008). When the scale-based mobility beliefs measure was included as the mediator, the indirect effect was not significant, $b = .02$ [-.01, .05], $p = .214$, prop. mediated: 6.6%, nor was this measure's correlation with pre-study GPA (see Table 1). By contrast, indirect effect was significant when the ladder-based mobility beliefs measure served as the mediator, $b = .03$ [.00005, .07], $p = .049$, prop. mediated: 12.0%, and this measure was significantly positively correlated with pre-study GPA (see Table 1). While there is therefore some preliminary but mixed evidence for this recursive process, testing this alternative model was also not the primary focus of the present work, and future research should seek to confirm these results with a more causal test.

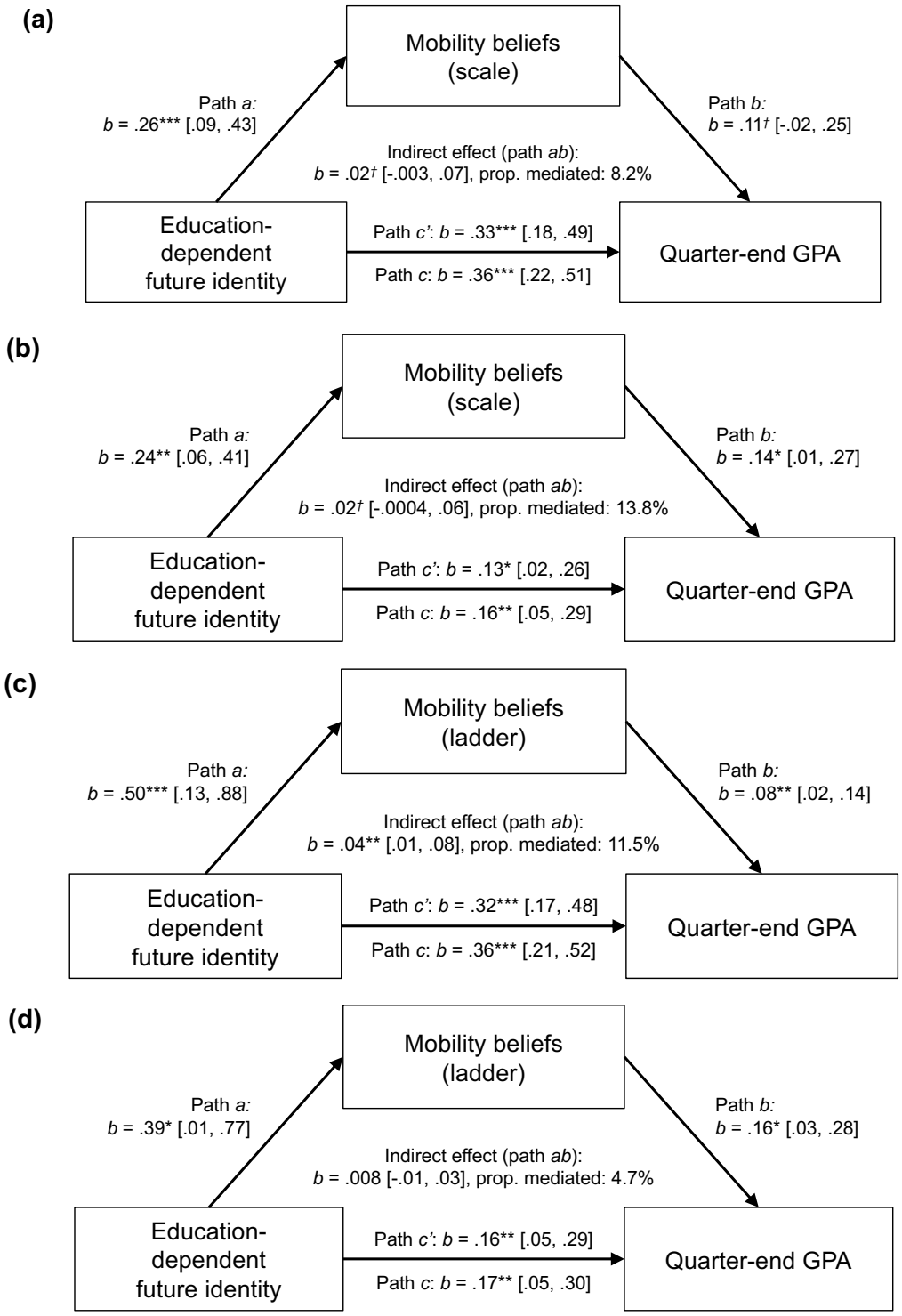

Figure S2. Results of the analyses testing whether low-SES youth's mobility beliefs (as measured with (a-b) the self-report measure, and (c-d) the ladder-based measure) mediate the relationship between their education-dependent future identities and quarter-end GPAs in Study 1, both without (a, c) and with (b, d) covariates. *c* paths represent total effects (i.e., paths estimated without the mediator) and *c'* paths represent direct effects (i.e., paths estimated with the mediator). *b*s denote unstandardized coefficients.

Study 2

Manipulation Materials

The articles used in the strong and weak mobility beliefs conditions were compiled from two sources (DeParle, 2012; The Pew Charitable Trusts, 2012) and were at an 11th-grade reading level (http://www.readabilityformulas.com/free-readability-formula-tests.php). They were originally developed for the first author's dissertation (Browman, 2017). See the Appendix of this supplementary materials document for the complete articles.

Attention Checks

Attention checks were embedded in the pre-testing and main study materials amongst self-report scale items with Likert-style response options. These items appeared as "This item is here to screen out random responding; do not give a response to this item" and were presented with the same response scales as the scale items surrounding them. Accordingly, participants had the option to continue to the next page without answering these questions—responses that would indicate that they had read the item (Oppenheimer, Meyvis, & Davidenko, 2009).

Additional Random Assignment Checks

Participants in Study 2 did not significantly differ by condition in terms of subjective SES, $t(119) = -.43$, $p = .671$, Cohen's $d = .077$, income, $t(114) = -.056$, $p = .955$, Cohen's $d = .010$, or composite SES, $t(114) = -.018$, $p = .858$, Cohen's $d = .033$.

Separate Analyses with Income and Subjective SES

To test whether our primary effects held for both income and subjective SES, we conducted two additional analyses. First, students' education-dependent future identity scores were regressed on condition (coded -1 [weak mobility beliefs condition] and +1 [strong mobility beliefs condition] and mean-centered), and income (mean-centered), and their interaction. A

second regression analysis was then conducted with subjective SES (mean-centered) included instead of income.

Matching our main analyses, both condition × SES interactions were significant, income: b = -.06 [-.12, -.001], $t(112)$ = -2.02, p = .045, Cohen's f^2 = .037, subjective SES: b = -.09 [-.18, -.01], $t(112)$ = -2.12, p = .036, Cohen's f^2 = .037. Furthermore, simple slopes analyses revealed that in both analyses, lower-SES students (-1 *SD*) who had their mobility beliefs strengthened reported marginally stronger education-dependent future identities than lower-SES students who had their mobility beliefs weakened, income: b = .19, $t(112)$ = 1.78, p = .078, subjective SES: b = .20, $t(112)$ = 1.81, p = .073. By contrast, there was no significant effect of condition among higher-SES students (+1 *SD*), income: b = -.12, $t(112)$ = -1.09, p = .278, subjective SES: b = -.13, $t(112)$ = -1.19, p = .235. To summarize, our results held regardless of whether income or subjective SES was used as the index of SES.

Additional Conditions

As part of a larger study, in addition to the two mobility belief conditions, Study 2 also included three additional conditions that were not designed to influence students' mobility beliefs. The first was Stephens and colleagues' (2012, Studies 3-4) interdependent academic culture manipulation (N = 58), which was designed to frame the college environment as being supportive of the kinds of independent cultural norms endorsed by students from working-class backgrounds. The second was Browman and Destin's (2016, Experiments 1-3) warm climate condition (N = 61), which was designed to frame students' college as being explicitly supportive of socioeconomic diversity. The third was an optimism condition developed for this study (N = 61), which was designed to framed the future as being generally bright for young people but without directly invoking social mobility beliefs (see Browman, 2017, Study 4).

Because none of these conditions were designed or expected to alter participants' mobility beliefs, the three were collapsed together into a single control condition. As in our main analyses, we then regressed students' education-dependent future identity scores were regressed on condition, composite SES, and their interaction. Complementing our main findings, the omnibus condition × SES interaction was significant, $F(2, 282) = 3.30$, $p = .038$, Cohen's $f^2 = .023$, and this effect was driven by significant condition × SES interactions between the control (0) and strong mobility beliefs (1) conditions, $b = -.32$ [-.58, -.06], $t(282) = -2.39$, $p = .018$, and between the strong (0) and weak mobility beliefs (1) conditions, $b = .34$ [.03, .66], $t(282) = 2.17$, $p = .031$, but not between control (0) and weak mobility beliefs (1) conditions, $b = .03$ [-.24, -.29], $t(282) = -.21$, $p = .834$. Breaking down these interactions revealed that lower-SES students (-1 *SD*) who had their mobility beliefs strengthened reported marginally stronger education-dependent future identities than lower-SES students in both the weak mobility beliefs condition, $b = .36$ [-.76, .04], $t(282) = 1.75$, $p = .081$, and the control condition, $b = .30$ [-.04, .64], $t(282) = 1.74$, $p = .083$. By contrast, there was no significant difference between the education-dependent future identities reported by lower-SES students in the control condition and those in the weak mobility beliefs condition, $b = -.05$ [-.40, .28], $t(282) = -.33$, $p = .739$, nor did any between-condition differences emerge among higher-SES students (+1 *SD*), ts < 1.56, ps > .120. To summarize, the results of the analyses including the three additional, non-mobility-based conditions complemented our primary findings.

Study 3

Demographics of Students in Each Condition

To ensure that random assignment to condition by classroom did not create important differences between conditions, we examined age, gender, and parental education trends of students in each condition. As shown Table S1, students in the two conditions were generally

similar in terms of these factors, although more students in the college pathways condition chose not to respond to the demographics questions.

Table S1. Student demographics by condition in Study 3.

	College pathway condition	**Multiple pathways condition**
M_{age} (*SD*)	17.2 (.72)	17.2 (.44)
Undisclosed	6	1
Gender		
Male	12 (48.0%)	9 (42.9%)
Female	13 (52.0%)	12 (57.1%)
Undisclosed	6	1
Parental education		
At least one parent with college degree	2 (12.5%)	2 (12.5%)
No parents with college degree	14 (87.5%)	14 (87.5%)
"I don't know" or undisclosed	15	6

Alumni Recruitment and Material Development

School staff assisted in identifying 16 alumni of the high school (5 male, 11 female; 100% Black) who had completed a university or vocational post-secondary educational program, were working in their field of training, and were interested in being involved in the project. Our initial meetings consisted of groups of 2-3 alumni and lasted approximately 2 hours each. The goal of these meetings was to identify a final group of alumni who (a) could serve as relatable role models for the students in our sample (i.e., came from the same neighborhoods and socioeconomic backgrounds and had relatable home and school experiences while they were in high school), (b) had collectively taken both traditional and vocational post-secondary education pathways, and (c) had clearly benefited from their respective post-secondary pathways—that is, they had successful careers in their respective domains and reported experiencing better life outcomes either than they had previously or than people in their inner circles who had not continued their education following high school. The alumni received a $50 honorarium for their involvement in these initial interviews.

Using the information recorded during these initial interviews and in communicating with school staff and the seven alumni regarding availabilities for the in-school sessions, we selected four of the alumni to take part in the in-school sessions. Through repeated communications and meetings with the selected alumni, their recorded interviews were used to create loose scripts addressing three broad themes that have been shown to enhance academic outcomes in prior research: (1) experiencing difficulty in high school and post-secondary education is normal and can be overcome (e.g., Lin-Siegler, Ahn, Chen, Anny Fang, & Luna-Lucero, 2016; Oyserman et al., 2002, 2006), (2) continuing your education can be affordable (Destin, 2017; Destin & Oyserman, 2009), and (3) continuing your education contributes to increased future success (e.g., Destin & Oyserman, 2010; The Pew Charitable Trusts, 2012). The alumni who were selected received an additional $50 honorarium for participating in the in-class session.

Factor Analysis of Items Assessing Students' Perceptions of the Presentations

To test whether the ten items assessing students' perceptions of the presentations in Study 3 clustered together, we conducted an EFA as described in Study 1. The results suggested extracting one factor (initial eigenvalue: 7.87) onto which the nine items retained for our analyses loaded at >.735. The item that was omitted ("Overall, I found the presentation to be a waste of time") loaded at -.155.

Factor Analysis of Education-Dependent Future Identity Items

To test whether the seven education-dependent future identity items used in Study 3 clustered together, we conducted another EFA, again as described in Study 1. The results suggested extracting one factor (initial eigenvalue: 5.20), with the six items retained for our analyses loading >.840 onto Factor 1. The item that was omitted ("People like me aren't treated fairly no matter how much education we have") loaded at .015.

We note that Study 3 also included two items used in Study 1 that were relevant to education-dependent future identity: “How far would you like to go in school?” and “How far do you think you will go in school?” (response options: (1) Some high school, (2) Complete high school, (3) Complete a career training program or Associate degree, (4) Complete a Bachelor’s degree, (5) Complete a Master’s degree, (6) Complete a Medical degree, Law degree, or Ph.D). In Study 1, however, participants’ responses to these items were treated ordinally, as each unit increase represented an interpretable increase in educational attainment given the study design. By contrast, because participants in Study 3 were presented with messages designed to motivate them to pursue post-secondary education, the proper way to score these items in the context of this study was dichotomously—that is, whether their responses included post-secondary education (responses 3, 4, 5, and 6) or excluded post-secondary education (responses 1 and 2). This scoring method was selected prior to data collection and was included in our pre-registration (see https://osf.io/eruyb). Using this scoring method, no significant between-condition differences emerged regarding students desired or expected levels of educational attainment, log odds $< .83$, $ps > .387$. However, we note that given the small sample size of Study 3, there was very little variance in these dichotomous indices: only 5 responses for desired attainment and 7 for expected attainment excluded post-secondary education. Thus, these analyses are not particularly informative.

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Appendix

Strong mobility beliefs condition article (figure adapted from The Pew Charitable Trusts, 2012)

BRIEF REPORT

THE ECONOMY

Economic Mobility in America

Research suggests that the American Dream is still highly attainable

BY JEROME BERGLUND

Benjamin Franklin did it. Henry Ford did it, too. In fact, American life is built on the idea that *anyone* can do it: rise from humble origins to economic heights. "Movin' on up," George Jefferson-style, is not only a sitcom song, but a civil religion and a historically integral part of American culture.

In support of this deeply ingrained folklore, recent research has concluded that our faith in the attainability of the American Dream may be well placed. Americans, it has been found, enjoy more economic and social mobility today than is popularly believed—similar levels, in fact, to their peers in other developed nations such as Canada and much of Western Europe.

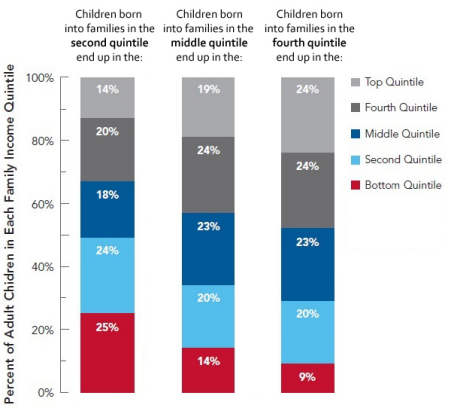
At least five large studies in recent years have found the United States to be as mobile as comparable nations. In a study of American and European women, for example, economist Markus Jantti found that 74 percent of the Americans raised in the lowest socioeconomic quintile (determined by household income) escaped that social status group as adults. This represents a level of social mobility that is very similar to that found in Finland, Norway, and Sweden (all 76 percent).

The Economic Mobility Project, conducted by the Pew Center, revealed similar trends: only 24 percent of Americans born into one of the lowest quintiles remained in that bracket as adults. Meanwhile, 10 percent of Americans raised in the very bottom quintile rose to the very top. That compares nicely with 13 percent in the Finnish sample, and 14 percent in the Swedish and Norwegian samples.

Similar patterns of economic and social mobility have been found at the upper end of the socioeconomic spectrum as well. The Economic Mobility Project found that only 24 percent of Americans raised in the second-highest socioeconomic quintile remain in that quintile. The rest show substantial mobility, with 23 percent moving up the ladder and 53 percent moving down. Similar values were found in the European samples examined by Professor Jantti.

> *"Contrary to popular belief, it's becoming well understood that the U.S. has similar levels of social mobility as most other advanced countries. The hope is that the American people will come to embrace this reality."*

Of course, Europe differs from the United States in culture and demographics, and so a more telling comparison may be with neighboring Canada. In line with the trends discussed thus far, Miles Corak, an economist at the University of Ottawa, found that 39 percent of Canadians raised in families with household incomes in the bottom quintile moved into the top half of the earnings distribution as adults, compared with a similar 34 percent of Americans. As well, 63 percent of Americans raised in families in the top quintile dropped to a lower bracket as adults, similar to the 69 percent found among Canadians. In other words, family background seems to play a small role in determining socioeconomic status in the U.S., as it does in comparable countries.



The small influence of family background has long been documented. Pioneering work in the early 1980s by Gary S. Becker, a Nobel laureate in economics, found a weak relationship between the earnings of Americans and those of their children. Specifically, the correlation between parent and child earnings was found to be 0.16, which means that for every 1 percent increase in parental income, their children's income can be expected to increase by about 0.16 percent—a fairly weak relationship.

These conclusions are critical. By deemphasizing the influence of family background and strengthening the legitimacy of the American Dream, these findings not only lend support to a key part of the American identity, but also speak to the debate about inequality. While social critics often argue that the United States has unacceptable income gaps, proponents of the American Dream have long maintained that the system is fair because mobility is high and therefore everyone can climb the social status ladder. Now the evidence supports this claim that while America may be less equal than many other nations, it is no less mobile. "Contrary to popular belief, it's becoming well understood that the U.S. has similar levels of social mobility as most other advanced countries," said renowned economist Iliana Savage. "The hope is that the American people will come to embrace this reality."

Jerome Berglund is a free-lance writer from Ann Arbor, Michigan. He is a frequent contributor to Psychology Today.

Weak mobility beliefs condition article (figure adapted from The Pew Charitable Trusts, 2012)

BRIEF REPORT

THE ECONOMY

Economic Mobility in America

Research suggests that the American Dream is unattainable today

BY JEROME BERGLUND

Benjamin Franklin did it. Henry Ford did it, too. In fact, American life is built on the idea that *anyone* can do it: rise from humble origins to economic heights. "Movin' on up," George Jefferson-style, is not only a sitcom song, but a civil religion and a historically integral part of American culture.

However, in spite of this deeply ingrained folklore, recent research has concluded that our faith in the attainability of the American Dream may be misplaced. Americans, it has been found, enjoy little economic and social mobility, much less, in fact, than their peers in other developed nations such as Canada and much of Western Europe.

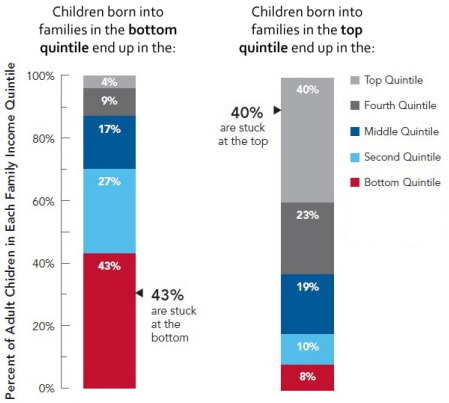
At least five large studies conducted in recent years have found the United States to be less mobile than comparable nations. In a study of American and European men, for example, economist Markus Jantti found that 43 percent of the Americans raised in the lowest socioeconomic quintile (determined by household income) remained in that social status group as adults. This represents a level of social immobility that is much higher than that of Denmark (25 percent), Norway (28 percent), and even Britain (30 percent) — a country with an infamous history of socioeconomic constraint.

The Economic Mobility Project, conducted by the Pew Center, found similar results: 65 percent of Americans born into families in the bottom quintile ended up in one of the bottom two quintiles as adults. Meanwhile, just 8 percent of Americans raised in the bottom quintile were able to rise to the top quintile. That contrasts with 12 percent in the British and Norwegian samples, and 14 in the Danish sample.

Similar patterns of economic and social mobility have been found at the upper end of the socioeconomic spectrum as well. The Economic Mobility Project found that about 62 percent of Americans raised in the top socioeconomic quintile end up in one of the top two quintiles. These values are much greater than those found in the European samples examined by Professor Jantti.

> *"It's becoming conventional wisdom that the U.S. does not have as much social mobility as most other advanced countries. I don't think you'll find too many Americans who will argue with that."*

Of course, Europe differs from the United States in culture and demographics, and so a more telling comparison may be with neighboring Canada. In line with the trends discussed thus far, Miles Corak, an economist at the University of Ottawa, found that just 16 percent of Canadians raised in families with household incomes in the bottom tenth of the nation stayed there as adults, compared with 22 percent of Americans. As well, 26 percent of Americans raised in families in the top tenth remained there in adulthood, compared with just 18 percent of Canadians. In other words, family background seems to play more of a role in determining socioeconomic status in the U.S. than it does in comparable countries.



The importance of family background has long been acknowledged in the scientific literature. Pioneering work in the early 1990s by Gary Solon, a prominent figure in economics, found a strong relationship between the earnings of Americans and those of their children. Specifically, the correlation between parent and child earnings has been found to be about 0.5, which means that for every 1 percent increase in parental income, their children's income can be expected to increase by about 0.5 percent—a fairly strong relationship.

These conclusions are critical. By emphasizing the influence of family background and questioning the legitimacy of the American Dream, these findings not only challenge a key part of the American identity, but also speak to the debate about inequality. While social critics often argue that the United States has unacceptable income gaps, proponents of the American Dream have long maintained that the system is fair because mobility is high and therefore everyone can climb the social status ladder. Now the evidence suggests that America is not only less equal, but less mobile as well. "It's becoming conventional wisdom that the U.S. does not have as much social mobility as most other advanced countries," said renowned economist Isabel Sawhill. "I don't think you'll find too many Americans who will argue with that."

Jerome Berglund is a free-lance writer from Ann Arbor, Michigan. He is a frequent contributor to Psychology Today.