Online Appendix:
Childhood Skill Development and Adult Political Participation

Not intended for publication in printed versions

Overview of the Online Appendix

In the Online Appendix, I include supporting information that:

- provides additional discussion and evidence on the nature of psychosocial attributes (**Section 1**),
- provides more detail on the Fast Track program components and subject recruitment (**Section 2**),
- provides more detail on the match of Fast Track program participants to voter files (**Section 3**),
- provides basic descriptive statistics (**Section 4**),
- discusses the generalizability of Fast Track participants (**Section 5**),
- shows the predictive relationship between childhood psychosocial skills and adult validated voting (**Section 6**),
- provides checks for pre-treatment and post-treatment covariate balance (**Section 7**),
- provides additional analyses and robustness checks of the treatment effects (**Section 8**),
- looks for subgroup heterogeneities in the treatment effects (**Section 9**),
- provides more detail on the measurement of specific psychosocial skills (**Section 10**),
- provides additional mediation estimates for individual mediators (**Section 11**), and
- provides references cited in the Online Appendix (**Section 12**).

Blue text links to Online Appendix sections below. Clicking the "*****" symbol throughout the Online Appendix text (found at the head of each section and subsection) will take the reader back to this page.

1 Further Conceptualizing Psychosocial Skills*

As mentioned in the text, psychosocial skills belong to a linked family of concepts distinct from cognitive ability. Indeed, a broad literature from psychology, economics, child development, and neuroscience conceptualizes psychosocial abilities as belonging to a critically important component of individual ability (e.g., Borghans et al. 2008; Caprara et al. 2012; Cunha and Heckman 2007; Cunha et al. 2010; Farrington et al. 2012; Heckman 2000; Heckman 2007; Heckman and Kautz 2014; Heckman et al. 2013; Heckman and Rubinstein 2001; Heckman, Stixrud, and Urzua 2006; Jacon 2002; Jackson 2012; Luders et al. 2009; Park et al. 2017; Sorensen and Dodge 2016).

This broader conceptualization is supported by data. Most related to my paper, Sorensen and Dodge (2016) use the Fast Track data to show that psychosocial abilities capture a separate dimension of individual ability. Specifically, they provide evidence that a diverse set of measures of psychosocial ability (i.e. prosocial ability, authority acceptance, emotion recognition/regulation/coping, aggressive attributions, social problem solving, hostile attributions) actually pick up on a shared latent component of individual ability distinct from cognitive ability. They show that this latent ability factor is multifaceted—having both a subdimension that captures self-regulation and one that captures social abilities.[A1] They further provide evidence that Fast Track moved psychosocial skills together: leading to downstream reductions in criminal behavior.

Similar results can be seen in other more representative data sources. For example, Heckman, Stixrud, and Urzua (2006) clearly document that survey-based measures of general self-efficacy (Rosenberg scale) and locus of control (Rotter scale) load onto a common factor separate from cognitive ability that is predictive of adult labor force outcomes. Jackson (2012) comes to a similar conclusion using large-scale school administrative data and multiple observed behavior measures of behavioral control—showing that absences, tardies, and suspensions load on a common latent ability factor separate from test score measures of cognitive ability. Park et al. (2017) also come to this conclusion with teacher and self-ratings of psychosocial abilities such as interpersonal self-control, social intelligence, academic self-control, and grit—providing clear evidence that these load on a shared latent factor separate from cognitive ability.

Figure A1 reinforces the notion that measures of psychosocial ability pick up on a shared construct separate from cognitive ability. It does so by expanding the examination beyond Fast track to other, more representative, data sources. It plots factor weights for proxies of psy-

[A1] This evidence is supported by that from Park et al. (2017)—who show that psychosocial abilities load on an interpersonal and an intrapersonal factor that are more closely related to one another than to cognitive ability (they call this the tripartite model of individual ability—i.e. cognitive, interpersonal, and intrapersonal).

chosocial ability and benchmarks those to measures of cognitive ability and family income, as a reference.[A2,A3] The first panel—that for the National Longitudinal Survey of Youth 1997 (NLSY97)—measures psychosocial skills with self reports about whether adolescents were goal oriented, hardworking, striving to excel, and exhibiting effortful control—all critical components of individual self regulation.[A4] The second panel—that for the National Longitudinal Survey of Youth 1979 (NLSY79)—replicates the analysis by Heckman, Stixrud, and Urzua (2006) and measures psychosocial skills through the classic Rosenberg Self-Efficacy and the Rotter Locus of Control scales.[A5] The third panel uses data from National Education Longitudinal Study of 1988 (NELS:88), which measures psychosocial skills through teacher responses to whether students were frequently absent and tardy and whether they exhibited behavioral control, task completion, and attention control—measures that are quite similar to some of those used in the Fast Track program.[A6] The final panel—that for the the Wisconsin Longitudinal Survey (WLS)—measures psychosocial skills with scales about individuals' tenacious goal pursuit, sense of autonomy (which is related conceptually to general self efficacy), their sense that their personal growth is within their reach, whether they accept themselves, whether they have mastered their social environment, and whether they have

[A2]The results displayed below correspond to principal factor models, however the results remain the same if principal-component analysis, iterated principal factor analysis, or orthogonal and oblique rotations are used.

[A3]Psychosocial skills and socioeconomic status are only weakly related—that is, there are people with highly developed (and less developed) skills among low, moderate, and high income individuals. (This is less true with cognitive ability, which tends to be much more strongly related to SES.) This pattern can be seen in the Fast Track data and in the multiple data sources used in Figure A1. For example, in the NELS:88 data, the Pearson's r between abilities and SES are: task completion=0.15, not tardy=0.06, not absent=0.13, attention control=0.10, behavioral control=0.05, and cognitive ability=0.39. The correlation coefficients for the NLSY79 data are: locus of control=0.08, general self efficacy=0.12, and cognitive ability=0.24. The correlation coefficients for the NLSY97 data are: hardworking=0.05, strives to excel=0.04, goal oriented= 0.12, effortful control=-0.01, and cognitive ability = 0.33. The correlation coefficients for the WLS data are: tenacious goal pursuit=0.05, autonomy/efficacy=0.04, social environmental mastery=0.02, personal growth=0.06, positive relation to others= 0.03, self acceptance=0.02, and cognitive ability=0.09.

[A4]The NLSY97 is a nationally representative sample of youth who were 12 to 16 years old in 1996. For more information on the NLSY97 sample and measures, see `https://www.bls.gov/nls/nlsy97.htm`.

[A5]The NLSY79 is a nationally representative sample of youth who were 14-22 years old when they were first surveyed in 1979. For more information on the NLSY79 sample and measures, see `https://www.bls.gov/nls/nlsy79.htm`.

[A6]The NELS:88 surveyed a nationally representative sample of 8th graders in 1988. For more information on the NELS:88 sample and measures, see `https://nces.ed.gov/surveys/nels88/`.

positive relationships with others.[A7]

As can be seen, across these diverse data sources, psychosocial abilities appear to capture a shared factor distinct from cognitive ability and socioeconomic status—which two are, as has long been known in education research, strongly related to one another.[A8] Measures of psychosocial ability cluster together in different ways. For example, in the WLS data, there appear to be two dimensions of psychosocial ability—one that may capture sociability and the other that may capture individual self regulation. This result is consistent with evidence from Sorensen and Dodge (2016) and Park et al. (2017) already mentioned. While there may be multiple sub-dimensions of psychosocial ability, it remains clear that these attributes are capturing a latent factor separate from two foundational predictors of political behavior: cognitive ability and socioeconomic status.

That psychosocial attributes have been theoretically linked together in other fields (e.g., Borghans et al. 2008; Caprara et al. 2012; Farrington et al. 2012; Heckman 2000; Heckman and Kautz 2014; Heckman and Rubinstein 2001; Heckman, Stixrud, and Urzua 2006; Jackson 2012; Luders et al. 2009; Sorensen and Dodge 2016), hang together empirically across multiple data sources, together predict later-life outcomes (like civic participation), move together with interventions that target these as a bundle (as Fast Track does), and when improved together have downstream effects on civic participation (as I show in the paper) all suggests that these attributes should be considered as part of a separate theoretical construct formally incorporated into studies of political behavior.

[A7]The Wisconsin Longitudinal Survey (WLS) is a long-term study of a random sample of students who graduated from Wisconsin high schools in 1957. For more information on this sample and the measures used, see `http://www.ssc.wisc.edu/wlsresearch/`.

[A8]If we examine psychosocial attributes alone, this result is even clearer. NELS:88, Eigenvalue 1=1.51, Eigen 2=0.19; WLS, Eigen 1=2.80, Eigen 2=0.19; NLSY79, Eigen 1=1.22, Eigen 2=-0.20; NLSY97, Eigen 1=1.37, Eigen 2=0.15.

Figure A1: Psychosocial Skills, Cognitive Ability, and Socioeconomic Status (Alternate Sources)

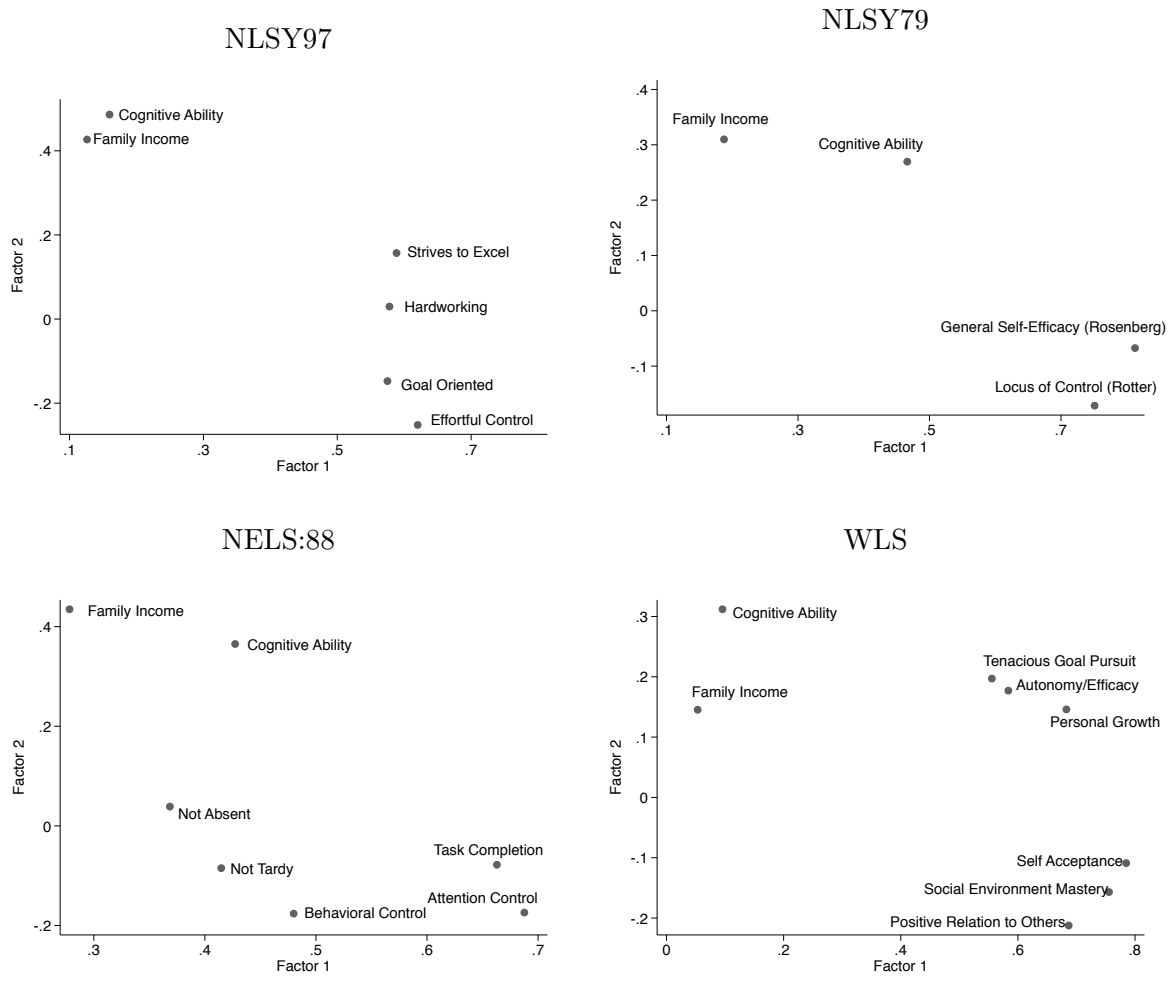


Figure A1 plots principal factor weights for cognitive ability, family income, and measures of psychosocial ability across several data sources—including, the NLSY79, NLSY97, NELS:88, and WLS. Psychosocial measures in the NLSY79 include the Rosenberg Self-Efficacy Scale and the Rotter Locus of Control scale (N=9,023). In the NLSY97 (N=7,391), psychosocial measures include self responses to items about whether they are goal oriented (variable name: *t3162602*), are hardworking (*t3162600*), strive to excel (*t3162601*), and exhibit effortful control (*t3162603*). In the NELS:88 (N=8,953), the psychosocial measures include teacher responses to whether are frequently absent and tardy (*BYT1_4* and *BYT1_5*, both reverse coded) and whether they exhibit behavioral control (*BYT1_8*), task completion (*BYT1_3*), and attention control (*BYT1_6*). In the WLS (N=6,750), the measures of psychosocial skills include those measuring tenacious goal pursuit (i.e. *mn062rei*), sense of autonomy (i.e. self efficacy; *mn001rei*), sense of personal growth (*mn019rei*), individual acceptance (*mn046rei*), social environment mastery (*mn010rei*), and relationships with others (*mn028rei*).

Some psychosocial measures may be conceptually linked with the Big Five personality fac-

tors recently studied by political scientists (e.g., Dawes et al. 2014; Gerber et al. 2011; Mondak et al. 2010; Mondak 2010). While there is a modest empirical relationship between some measures of the two[A9], available observational studies have shown that psychosocial skills—like grit and emotion regulation, for example—predict political behavior above and beyond measures of the Big Five (Denny and Doyle 2008; Hillygus et al. 2016; Holbein et al. 2016). This result is consistent with research outside of political science studying education and labor force outcomes (e.g., Bandura et al. 2001, Caprara et al. 2012, Duckworth et al. 2007; Heckman and Kautz 2014; Park et al. 2017). Together, this suggests that the Big Five may not capture all of the psychological attributes important for political participation.

More broadly, the conceptual frameworks of the Big Five personality traits and psychosocial abilities are markedly different. Whereas Big Five research generally takes the view that psychological characteristics are "stable" (Gerber et al. 2011, 265) because they are "biologically influenced and enduring" (Mondak et al. 2010, 6), the literature from other disciplines related to psychosocial attributes conceptualizes these characteristics as skills that "are not set in stone at birth" but are instead teachable (Heckman and Kautz 2014, 4; see also Bronfenbrenner 1992; Eccles et al. 1993). As a heuristic, Big Five research describes *who one is*, whereas psychosocial research describes *what one can do*. While some Big Five scholars have held out hope that psychological characteristics could be improved (e.g., Bandura et al. 2001; Caprara et al. 2012), little research is available in this area. Some randomized control trials have begun to explore the malleability of psychosocial attributes (e.g., Alan et al. 2016; Blattman forthcoming; Cook et al. 2014). However, interventions intentionally targeting, and moving, these attributes—like Fast Track does—remain relatively rare: hence illustrating one of my paper's additional conceptual contributions. That Fast Track was able to successfully move psychosocial abilities provides evidence of a needed separation from (or updating to) the conceptual framework of the Big Five taxonomy as it relates to political behavior.

2 More Details on the Fast Track Program*

The Fast Track intervention included formal curricula, home visits, parent training groups, tutoring, friendship groups, and peer pairing. In addition, one of the key components of the Fast Track program was the teacher-led curriculum called PATHS that was administered from kindergarten through fifth grade. Group meetings were held often in initial stages, but later declined in their frequency. 22 peer pairing sessions were scheduled in the first year. Friendship and parent groups were scheduled for 22 sessions in the first year, 14 sessions in the second, and around 9 in years three through six. Tutoring was scheduled to occur for 60 sessions, mostly during the initial year. Home visits too were scheduled primarily in the first

[A9] Estimates of the relationship between grit and conscientiousness, for example, include $r = 0.12$ (Hillygus et al. 2016), $r = 0.44$ (Ivcevic and Brackett 2014), and $r = 0.77$ (Duckworth et al. 2007).

year, with 11 visits scheduled. PATHS was implemented once a week during the first three years of the intervention, then declined over the next two years.

The PATHS curriculum taught children, through hands-on application, skills for emotional understanding and communication (i.e., recognizing and labeling emotions), friendship skills (i.e., participation, cooperation, fair play, and negotiation), self-control skills (i.e., behavioral inhibition and arousal modulation), and social problem-solving skills (i.e., problem identification, response generation, response evaluation, and anticipatory planning). It was hoped that this approach would promote children's ability to get along with others, to calm down when they got upset, to empathize with others, and to think purposively and systematically about choices before making them.[A10]

The curriculum included a package of age-appropriate posters, pictures, lesson plans, activities, and toys. Before the program was implemented, PATHS employees trained teachers in the finer points of the program—teaching them how to use the materials and lesson outlines, while also having flexibility in implementing PATHS' broader goals.

In a typical session, instructors would start by leading a discussion about children's recent experiences or simulated experiences from the course curriculum. While doing so, they encouraged students to identify and label the emotions that they felt. To facilitate this, children were given picture cards that had printed faces on them that expressed various emotions (frustrated, angry, sad, lonely, etc.), that were designed to help children verbalize their own emotions.

For example, a 1st grade PATHS instructor might start a session by remarking how they noticed that sometimes students were being left out on the playground. They might call a student to the front of the class and ask them to role-play a scenario where two other students wouldn't play with them at recess. The instructor would then encourage the student to activate their "control signals" (with a reference to the stoplight image hung in the class, see Figure A2). This would involve them taking a deep breath, thinking about how the situation made them feel, verbalizing their emotions, evaluating the scenario in front of them, and making a plan to try and move forward positively with the situation. After executing their plan, the instructor would then ask the student to evaluate how the situation went, considering what went well and what didn't. The instructor might then incorporate the rest of the class into the discussion to evaluate the positive ways the student had used the control signals. They might then invite students to come up with alternate ways to solve the problem. This process might occur iteratively, with the teacher then presenting other

[A10] For an overview of the program, including example classroom demonstrations, see `http://learn.channing-bete.com/PATHS/` or `www.channing-bete.com/prevention-programs/paths/program\discretionary{-}{}{}implementation.html`.

scenarios to the children and repeating the process.

Figure A2: Example PATHS Classroom Poster

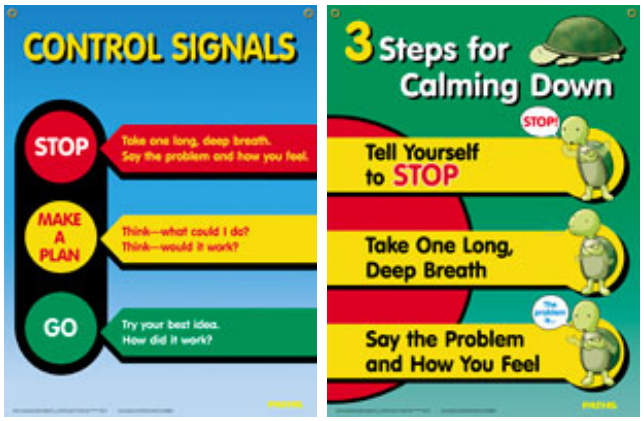


Figure A2 shows sample posters that were hung in the instructional room. The posters (and other instructional materials) reinforced the principles of the PATHS curriculum: teaching students to identify and control their thoughts, emotions, and behaviors and to work well with others. The above posters taught children to slow down, process their emotions, make a plan, and execute their plan.

Other program components for a given week would reinforce these lessons. The program was designed to be age appropriate—with children in later grades reading and discussing short books than reinforced the PATHS lessons.[A11] The home visits, parent training groups, tutoring, friendship groups, and peer pairing sessions were all structured to build upon these curricular lessons: providing an opportunity for parents and children to interact with others in a positive, semi-structured environment, to receive professional guidance about issues that the children were facing, and to nurture the beliefs in students that they had the support group in place to do what they set out to do.

2.1 Fast Track Recruitment*

Fast Track began recruiting participants during the 1991-1992 school year. Near the end of the year, the PI's from the Fast Track group began recruiting families with kindergarten students. After this first round, two subsequent cohorts of kindergarteners were recruited in the same manner in the 1992–1993 and 1993–1994 school years. All in all, approximately 10,000

[A11] For example, in fifth grade, the reading list included "Bridge to Terabithia" by Katherine Paterson, "Maniac Magee" by Jerry Spinelli, "Number the Stars" by Lois Lowry, and "Hatchet" by Gary Paulsen—books that have a reflective inward-looking style and that teach the importance of attributes such as empathy, grittiness, self control, and emotion regulation, to name a few.

individuals signed up for initial screening. Given a desire to target at-risk students and a finite pool of resources to implement the program, the investigators selected a limited number of applicants to participate.[A12] Following a clustered design, the researchers selected 55 high-risk schools to be randomized to either the treatment or control groups. This resulted in 445 children in the treatment and 446 in the control group.[A13] The two groups were balanced on a host of pre-treatment demographic and psychosocial characteristics (see table A2). Once assignment was determined, Fast Track followed children at the individual-level.

3 More Details on the Match to Voter Files*

The match to public voter files took place in July 2014. Individuals were matched using first name, last name, birthdate (the standard inputs used in matching intervention (Sondheimer and Green 2010) and survey data to voter files (Ansolabehere and Hersh 2012)) and in some instances—when the state required more information—county, street name, or social security number. These matching inputs were available at the same rate across the treatment and the control groups.

Individuals were identified as living in a given state using Fast Track's list of current addresses as of year 19 (2011) of the follow-up study.[A14] For those that had a current address outside of state, I searched their original intervention state and the state listed in their most current address. Among this sample, a few individuals—representing only 1% of the total sample (about 10 individuals)—had moved to states where matching was particularly difficult. Those living in Nevada, New York, Montana, Georgia, or Arizona had some type of restriction that limited matching ability. In most cases, this consisted of the state requiring voter identification or driver's license numbers. However, these individuals were balanced across the two groups ($p = 0.99$), thus introducing additional noise, but not bias, into the estimates. In a few cases, the state publicized registration history, but not voting history.[A15]

[A12] Risk was determined based on poverty and crime in the school zone and student misbehavior (CPPRG 1999*a*).

[A13] The principal investigators recruited with an appeal to participate in a longitudinal program helping children adjust to school. Fast Track came to its final sample through a two step screening process. In the first, families were recruited to participate in the study. This created the initial pool of 10,000 individuals. In the second, the sample was pared down to the 55 high-risk schools.

[A14] This list of addresses is continuously maintained in-between waves by Fast Track. The bulk of this occurs around follow-up surveys. However, current addresses are maintained in-between survey follow-ups through a combination of searches of social media, other online databases, and contact with extended family members.

[A15] In this case, individuals who were not registered were coded as not voting. If they were registered, they were coded as such, but their voting status was left as missing.

This match was easiest for the four intervention states: Tennessee, North Carolina, Pennsylvania, and Washington. Unfortunately, due to data security concerns, the Fast Track PIs would not allow the match through various third-party providers, such as Catalist, who maintain large-scale voter registration data that spans multiple states (for data security concerns). Instead, for individuals in North Carolina and Washington, this match was done through manually entering individual information into these states' sophisticated online portals, which matched to the files current as of July 2014. For individuals in Tennessee and Pennsylvania, this match was done using the downloaded statewide voter files.[A16] To ensure similarity across states where the downloaded statewide file was used and where the online portal was used (including in states outside the intervention sites pool), I employed exact matching.

All in all, about 44% of Fast Track individuals were linkable to registered voters in voter files. As noted in the paper, this registration rate is comparable to those of this age range and socioeconomic status in the general population. Following previous practice (e.g., Sondheimer and Green 2010), those who could not be located were marked as having never registered nor voted.

As outlined in the paper and in the covariate balance table below (see Table A2), a few things related to the match are unlikely to bias the results. First, moving out of the state is unlikely to bias the results, given movement's balance across the treatment and control groups. Second, attrition from the sample is also unlikely to bias the results, for the same reason. Third, purges from the voter file are unlikely to influence the results outlined in the paper. The voter file data in North Carolina indicates whether an individual was ever removed, placed as inactive, or denied. Treatment individuals were no more likely to be in any of these conditions than individuals in the control group (any: $p \approx 0.91$; removed: $p \approx 0.85$; inactive: $p \approx 0.98$; denied: $p \approx 0.99$). Fourth, it is well known that matching females to public records is difficult because many women change their names upon getting married, and indeed married women in the Fast Track data are less likely to be successfully matched to voter files. However, this pattern is unlikely to bias the results, as the marriage match gap is equal across the treatment and the control group ($p \approx 0.87$). Finally, that the survey-based measure produces a similar result should lend confidence to the results involving matching to voter files (see Figure A6).

[A16] I used the most recent publicly available version of the voter file. For North Carolina, Pennsylvania, and Washington this was the July 2014 version. As Tennessee's voter file is not readily accessible to researchers, I used the version from May 2012. This should do little to alter the results outlined below, as individuals in the treatment and control group are equally likely to be purged from voter files.

4 Descriptive Statistics*

Table A1 provides summary statistics for the key variables included in the model estimation in the text. The first column displays the variable name, the second the overall sample size, the third the mean, the fourth the standard deviation, and the fifth and sixth the minimum and maximum values.[A17]

Table A1: Overall Summary Statistics

Variable	N	Mean	σ	Min.	Max.
Ever Vote (0/1)	875	0.291	0.455	0	1
% Elections Voting	875	12.0	21.6	0	100
Treatment (0/1)	891	0.5	0.5	0	1
Female (0/1)	891	0.325	0.532	0	1
Non-white (0/1)	891	0.532	0.499	0	1
Age at Start of Program (years)	891	4.98	0.98	3	7
Socioeconomic Status (4-66)	888	24.4	12.7	4.5	66
Sibling Present (0/1)	891	0.57	0.50	0	1
Male Adult Figure Present (0/1)	863	0.547	0.498	0	1
Parents Married (0/1)	855	0.418	0.493	0	1
In North Carolina (0/1)	891	0.246	0.431	0	1
In Tennessee (0/1)	891	0.258	0.438	0	1
In Washington (0/1)	891	0.245	0.430	0	1
In Pennsylvania (0/1)	891	0.253	0.435	0	1
In Cohort 1 (0/1)	891	0.348	0.477	0	1
In Cohort 2 (0/1)	891	0.360	0.480	0	1
In Cohort 3 (0/1)	891	0.292	0.455	0	1

Table provides N, mean, standard deviation, minimum and maximum for variables used in model estimation. For reference, the total number of individuals in the treatment or control group is 891.

Figure A3 shows mean adult voter turnout rates across original assignment schools. In the Figure, school means are ordered from lowest (on the left) to highest (on the right) levels of voter turnout. The points in the figure are sized by the number of students in the assignment school. The overall weighted voter turnout at the school level (i.e. the "grand mean") is

[A17] As can be seen, some individuals were missing baseline characteristics and some were not able to be matched to voting records. Overall 16 individuals lived in places where they could not be matched to voting records or had died (people known to have died were coded as missing for the elections after their death date); 3 individuals were missing baseline socioeconomic status, male present, and parents married; 1 person was missing socioeconomic status alone; 26 were missing male present alone; and 34 were missing marital status alone. This missingness works to reduce the estimation sample to 812 in the models with controls (i.e. 891 - 16 - 2 - 1 - 26 - 34 = 812).

plotted with a *red* horizontal line. As can be seen, there are two sources of variance here—deviations in the school mean voter turnout levels from the grand mean and deviations of voter turnout levels within individual schools. If we model these differences with a null model, we can quantify the level of variance across both dimensions. When we do so, we see that there is more variance within original schools than between schools—$\sigma_{between} = 0.15$ and $\sigma_{within} = 0.43$. That is, there is quite a bit of variance within schools in the types of students who attend. The disadvantaged schools in the sample as a whole are much more similar to each other in terms of voter turnout overall than they are within those schools—with some students being higher propensity than others.[A18] That said, there is important heterogeneity in vote propensity across original assignment schools.

Figure A3: Voter Turnout by Original Assignment School

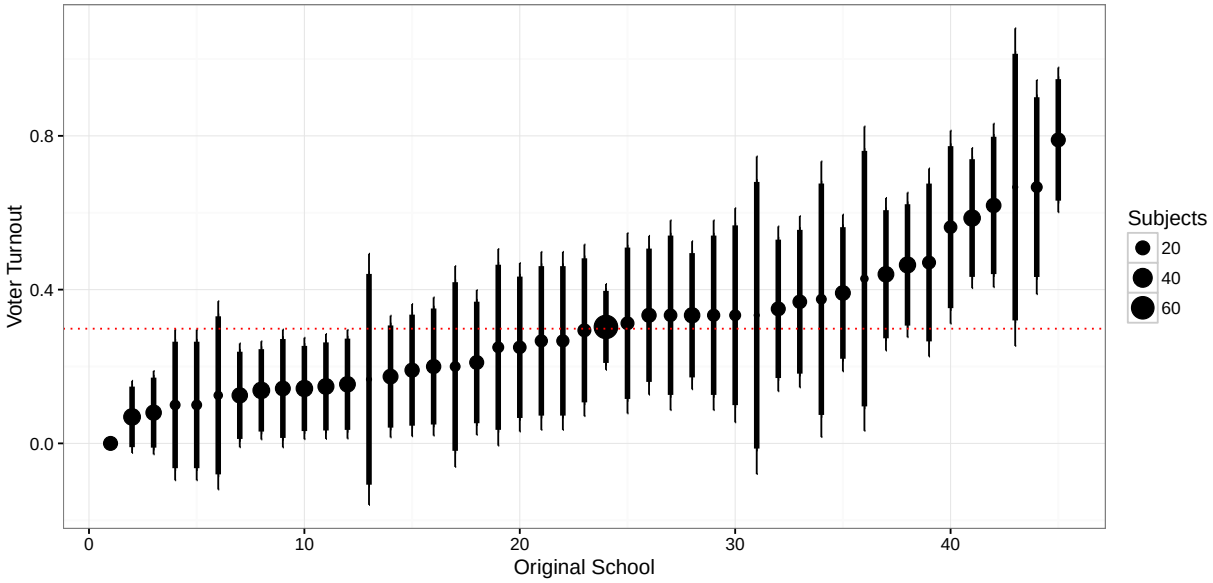


Figure A3 shows mean levels of voter turnout by original school at the time of assignment. Observations ordered from lowest (on the left) to highest (on the right) levels of voter turnout. Observations plot mean turnout levels that are sized by the number of students in the assignment school. Bars represent 90% and 95% confidence intervals. Schools with fewer than 5 students (6 schools totaling 19 students) omitted. The grand mean of voter turnout at the school level is plotted with a *red* horizontal line. Maximum school turnout is 0.79 (1 school; N=20), minimum school turnout is 0 (1 school; N=20).

5 Program Generalizability*

Most randomized-control experiments that provide internal validity struggle, at least to some degree, with external validity. Still, there are reasons to like the Fast Track sample. While it

[A18] This result may be, in part, due to the relatively small groups of students in individual schools ($\mu = 17.5$; $\sigma = 10.8$).

is true that this sample was largely comprised of disadvantaged, low-propensity participants, individuals enrolled were not wholly different from a large portion of the general population.

Though Fast Track does not divulge participants' baseline income or educational attainment (for data security reasons), they do provide baseline occupational codes that categorize individuals into one of five categories.[A19] With these we can see that, conditional on employment, about 85% of Fast Track participants' parents worked in unskilled, semi-skilled, or skilled craftsmen occupations at baseline. By some estimates, about 60% of the general population fits these occupational categories.[A20] Moreover, if we look at graduation rates among the Fast Track control group, we can see that 75% of individuals graduated from high school by year 19 (when they were 22-25 years old); whereas the population graduation rate at that time was about 80% (Stetset and Stillwell 2014). Similarly, if we look at year 19 income levels among the control group, we can see that the average income among the FT sample (about $12,000 per year) puts them at about the 16th percentile for their corresponding age bracket. While this may seem low, it should be remembered that there is a sizable chunk of the youth population close to the income levels of the Fast Track sample—with the overall population median and 75th percentile income levels being within two standard deviations of the FT income distribution (FT $\sigma \approx \$15,000$).[A21] Finally, a comparison of the demographic relationships in voting in the Fast Track sample reveals patterns consistent with the overall population—with higher SES subjects and subjects in higher turnout states being more likely to vote (see Table A3). Hence, while Fast Track is certainly not nationally representative and is comprised disproportionally of disadvantaged persons, it does focus its attention on a group of individuals connected to quite a large sample of Americans.

Further, as I mention in the text, there are reasons to want to pay extra attention to the group that Fast Track targets, given this group's stubbornly low rates of political participation (Leighley and Nagler 2013). The findings presented in this paper have clear implications for both voter turnout levels (i.e. bringing in more voters who under the counterfactual would not have voted) and inequalities (i.e. drawing these gains from low propensity citizens).

Ultimately, generalizability cannot be wholly addressed with one study. In some ways, this study acts as an important feasibility test—a first causal evaluation that lays the foundation for a broader literature examining the intricacies of the relationship between psychosocial

[A19] Fast Track also provides a continuous SES measure that is a composite of parent education and family occupational status, using the approach developed by Hollingshead (1975). I use this in the subgroup effects section below.

[A20] Source: "Distribution of Nonelderly Adult Workers by Occupational Category," Kaiser Family Foundation.

[A21] Income percentiles by age calculated using 2013 IPUMS–CPS Data; see, `https://dqydj.com/`.

attributes and political participation.

6 Predictive Relationship*

While not the primary focus of this paper, I can use the matched Fast Track data to produce some observational results relating psychosocial skills in childhood to validated voting in adulthood. This gives us a first pass look at the relationship between psychosocial skills developed in childhood and adult turnout. Figure A4 plots the predicted relationship between several psychosocial skills measured in childhood and adult validated voter turnout among the Fast Track control group. These skill measures come from teacher and expert evaluations of students' psychosocial abilities (more detail about the measures used can be found in Table A4).[A22] Figure A4 shows that measures of childhood self control, behavioral control, grit, and social skills are all strongly predictive of participation in adulthood. For example, a child with the highest level of grit has a 30% higher predicted probability of voting in adulthood than a child with the lowest levels of grit ($p<0.04$). This relationship is similar for measures of self control ($p<0.15$), behavioral control ($p<0.01$), and social skills ($p<0.04$).[A23] Importantly, these observational relationships hold even when controlling for *cognitive ability*—a fundamentally important predictor shown in previous turnout studies.[A24]

[A22] As is customary (Barber et al. 1994), behavioral control is measured using observed misbehaviors.

[A23] If these four psychosocial skills are included in the same model together, grit and behavioral control remain positive and significant; self control remains positive and not significant; and social skills are effectively zero.

[A24] Fast Track has several measures of cognitive ability. Here, I use a weighted average of two reading exams taken in year 6 of the follow up compiled from a one-factor principal factor analysis. These items are from the Revised Woodcock-Johnson Psycho-Educational Battery—a commonly-used measure of childrens verbal cognitive ability (Woodcock and Mather 1989). The results do not change if measures from other years are used.

Figure A4: Relationship Between Psychosocial Skills and Turnout (Control Group)

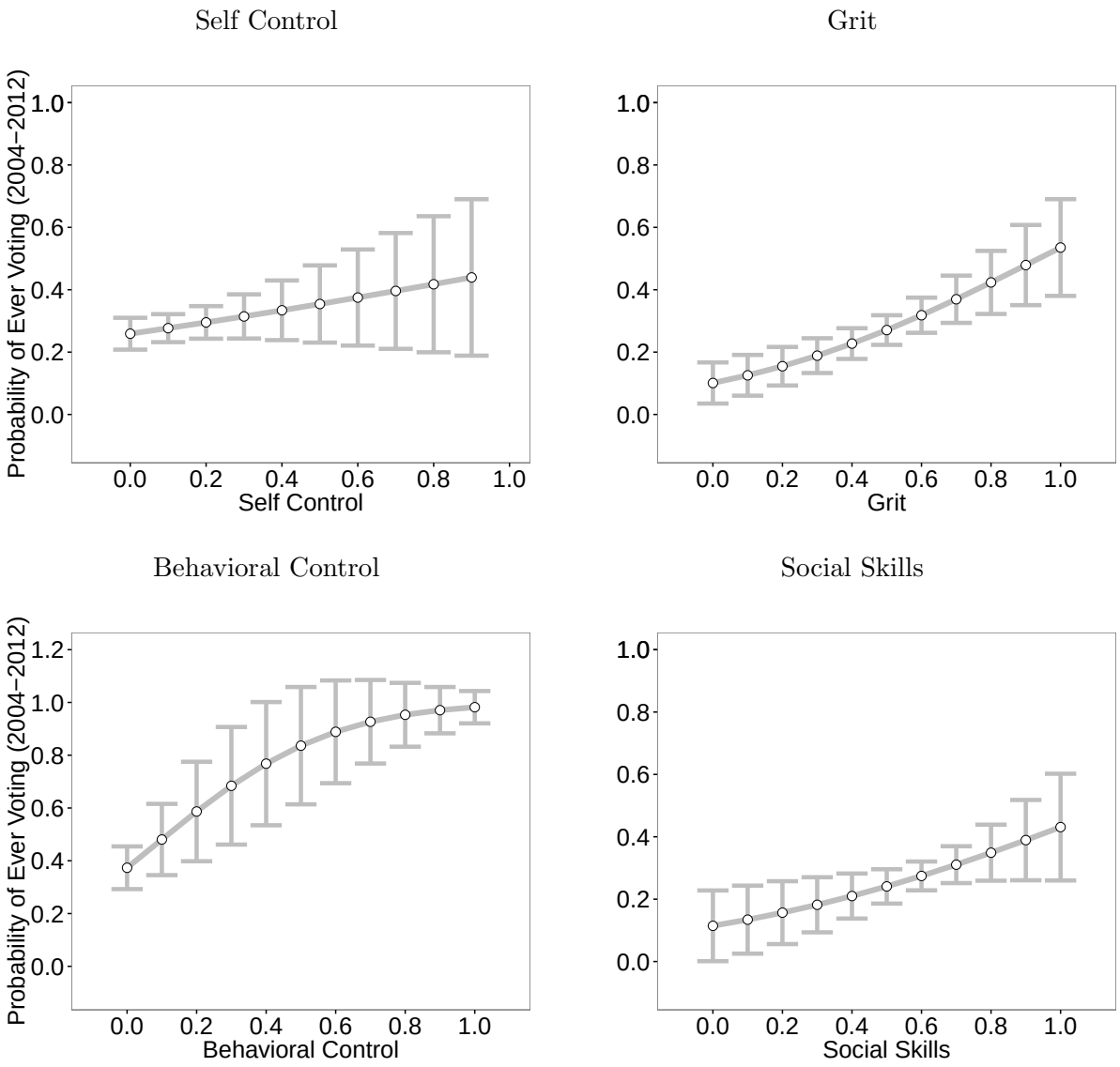


Figure A4 plots the predicted probability of *ever voting* (2004–2012; validated voting records; $\mu = 0.3$, $\sigma = 0.5$) in adulthood by several measures of childhood psychosocial skills. Data are from the control group in the Fast Track intervention data. Specific details about these measures can be found in Table A4. The *grit* (measured in waves 1-6; teacher rated; $\mu = 0.46$, $\sigma = 0.23$, model $N = 304$), *self control* (measured in waves 1-3; psychological evaluation; $\mu = 0.06$, $\sigma = 0.11$, model $N = 342$), *behavioral control* (measured in waves 8-13; observed behaviors; $\mu = 0.09$, $\sigma = 0.14$, model $N = 188$), and *social skills* (measured in waves 7-10; teacher rated; $\mu = 0.59$, $\sigma = 0.15$, model $N = 338$) measures used here come from scales from all of the years available to increase internal consistency. Models based on a logit specification and control for baseline measures of cognitive ability, gender, race, age, socio-economic status in childhood, and family composition (siblings, mother married, and male present). Predicted probabilities are constrained to be between 0 and 1. As the standard errors are estimates using the delta method, they are not constrained to be between 0 and 1.

These results—combined with the treatment effect estimates and mediation analyses in the paper—suggest that developing psychosocial skills in childhood may be important for political participation in adulthood. While these estimates may not be causal, they show that general, non-political psychosocial attributes can be used to predict in childhood who will vote in adulthood (above and beyond cognitive ability)—a notable feat it its own right given the paucity of political socialization research focusing on childhood (Astuto and Ruck 2010).

7 Covariate Balance*

Table A2 shows covariate balance across the randomly assigned treatment and control groups. It does so by using a simple difference of means test. Groups in the treatment and control groups were similar in racial composition, age, socioeconomic status, presence of a sibling, mother's marital status, site, cohort, cognitive skills, and missingness across covariates. In addition, measures of psychosocial skills appear to be balanced at baseline. Finally, parents appeared to have similar characteristics across the treatment and control groups. When all baseline characteristics are included together in a single model predicting treatment status, the joint significance test yields a p-value of 0.65—meaning that we cannot reject the null hypothesis that the baseline covariates are balanced across the treatment and control groups.

Unfortunately, subjects' propensity to vote was not measured at baseline. This would have been nearly impossible as subjects were so young at baseline (5 years old). The closest thing to a baseline version of our dependent variable is whether the mother ever registered to vote.[A25] This measure, while being informative of Fast Track child participants' later voting propensity, has some limitations. Mothers could only be matched to voter files in Tennessee and Washington due to limited availability of mothers' birth dates in the other two sites. As such, registration levels between the two groups shown in Table A2 should not be directly compared. (Registration rates in Tennessee and Washington among the children subjects in both treatment and control groups was about 30%: more aligned, but still slightly higher than their mothers.) Despite these limitations, mother's registration shows balance across the treatment and control groups ($p = 0.75$). As such, it seems likely that children in both the treatment and control conditions had equally low voting propensities at baseline.

[A25] We use mother's status do to the prevalence of single-parent, mother-led households in our sample.

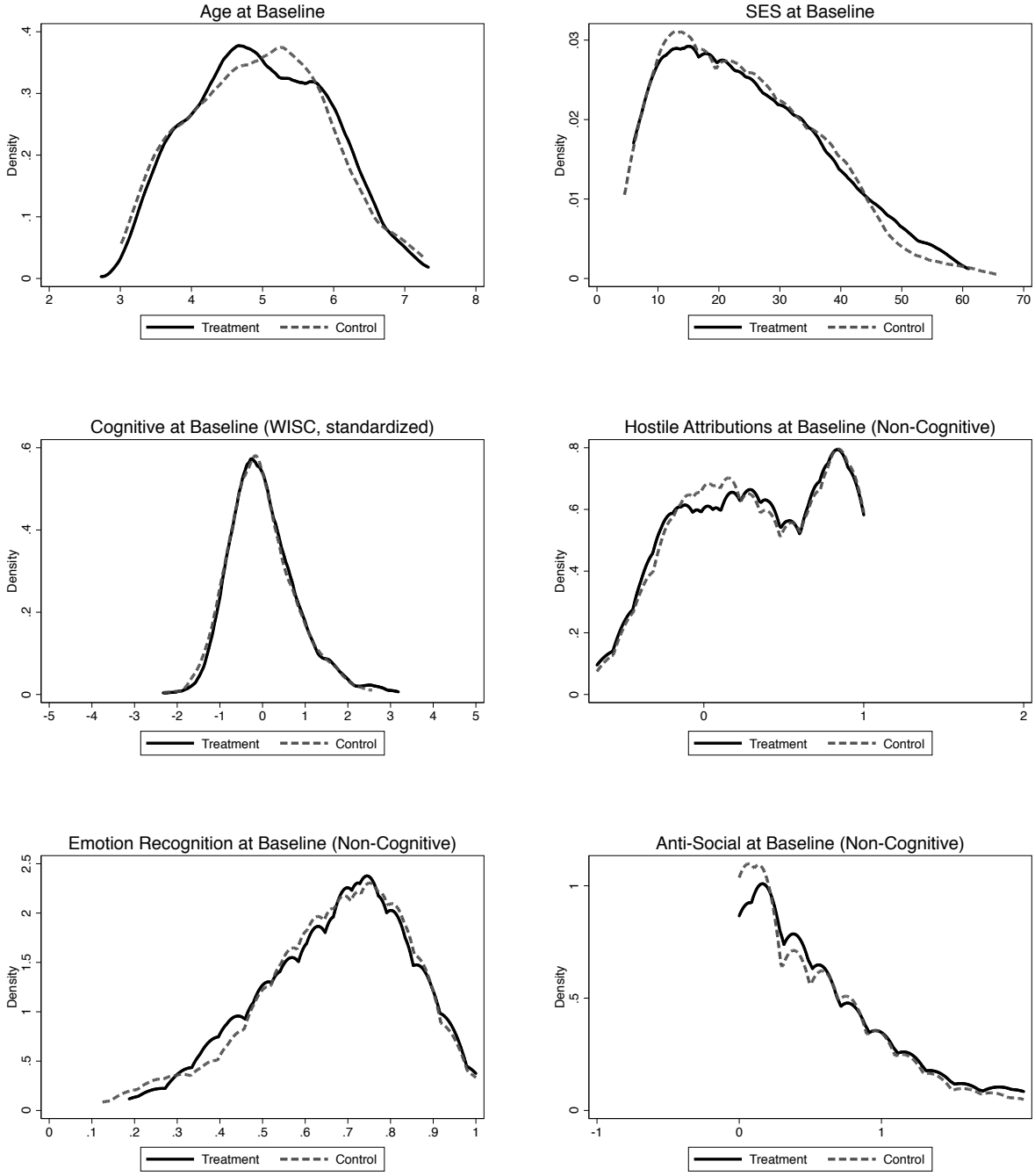
Table A2: Covariate Balance

Variable	Control	Treatment	p
Pre-Treatment Covariates			
% African American	48.88	44.72	0.21
% White	48.43	52.81	0.19
% Female	32.74	27.42	0.08
Age on Jan. 1, 1992 (years)	5.96	5.99	0.63
SES (4-66)	24.17	24.58	0.63
% Have sibling	56.50	57.42	0.76
% Married mother	43.90	39.63	0.21
% Male present	56.50	52.90	0.29
% Missing at least 1 covariate	8.07	6.06	0.24
% North Carolina	24.44	24.71	0.92
% Tennessee	26.00	25.61	0.89
% Washington	24.44	24.27	0.95
% Pennsylvania	25.11	25.39	0.92
% Cohort 1	34.75	34.83	0.98
% Cohort 2	36.10	35.96	0.96
% Cohort 3	29.15	29.21	0.98
Verbal Test Score (WISC, Standardized)	-0.04	-0.03	0.22
Mother Registered to Vote	19.49	18.22	0.75
Child Hostile Attributions (100)[a]	0.34	0.33	0.69
Child Aggressive Behavior Score (35)[a]	-0.07	0.33	0.47
Child Appropriateness Score (4)[a]	3.55	3.58	0.61
Child Oppositional Behavior (2)[b]	0.00	-0.01	0.49
Child Social Competence Score (4)[b]	-0.05	0.04	0.03
Child Emotion Recognition (100)[a]	66.8	67.0	0.84
Child Social Problem Solving Score (1)[a]	0.64	0.61	0.15
Child Grit Score (1)[c]	0.47	0.46	0.90
Child Withdrawn Score (2)[c]	0.33	0.31	0.37
Child Internalizing Score (2)[c]	0.30	0.29	0.82
Child Attentiveness Score (2)[c]	0.81	0.82	0.78
Child Anti-Social Score (2)[c]	0.46	0.52	0.12
Child Social-Problems Score (100)[c]	62.43	62.62	0.74
Parent Stress Levels (20)[d]	-0.05	-0.04	0.96
Parent Family Satisfaction Score (3)[d]	0.03	-0.04	0.15
Parent Friendship Satisfaction Score (3)[d]	0.03	-0.04	0.07
Parent Physical Punishment Score (2)[d]	0.02	-0.01	0.04
Parent Verbal Punishment Score (2)[d]	0.01	-0.01	0.31
Parent Harsh/Warm Score (2)[d]	-0.04	0.004	0.64
Parent Maternal Warmth Score (4)[d]	-0.06	0.04	0.07
Parent Maternal Depression (60)[d]	0.40	-0.36	0.26
Parent Neighborhood Satisfaction Score (4)[d]	-0.01	-0.01	0.88
Post-Treatment Covariates			
% Treatment Exposure[e]	0.0	65.9	0.00
Attrition rate (missing address)[f]	8.30	6.74	0.38
Attrition rate (follow-up survey response)[g]	20.9	21.3	0.86
% Moved out of State[f]	9.53	8.19	0.50
% Died[f]	1.57	2.47	0.34
% Voter Removed/Inactive/Denied (NC only)[h]	6.05	6.39	0.88
% Registered to Vote[h]	43.0	47.2	0.22
Dependent Variable			
% Turnout to Vote[h]	26.2	32.8	0.04

[a] From interview with child subjects at baseline. Rater coded.
[b] From interview with parents of Fast Track subjects at baseline.
[c] From interview with teachers of Fast Track subjects at baseline.
[e] Treatment exposure is the % of sessions attended average across the components of the program.
[d] From interview with parents of Fast Track subjects at baseline. Parents responses about themselves.
[f] From Fast Track participant contact information records.
[g] From a follow-up survey conducted in 2010-2011 (years 19-20).
[h] From match to validated voting records, same sample as regression results (national elections from 2004-2012; Washington: 2006-2012).

Figure A5 shows the overall distribution of a handful of continuous baseline covariates. These show that the treatment and control groups are remarkably similar not just in their means, but in their overall distributions at baseline—as we would hope with a randomized-control design.

Figure A5: Baseline Covariate Distributions



8 Robustness Checks*

Table A3 shows the full version of table 1 in the text, reporting control coefficients.[A26] A few notes about the control estimates in order. None of these comparisons is causal, but they are illuminative of the sample to which the Fast Track program was administered.

First, women in this sample–conditional on the other controls included–are more likely to vote than men. This is consistent with patterns in the overall population, with women increasingly voting at a higher rate than men (Leighley and Nagler 2013). Second, the disadvantaged African American subjects in the Fast Track sample are more likely to vote than the disadvantaged Caucasians in the sample. This is consistent with the fact that African Americans have been catching up with Caucasians in turnout over the last few election cycles (Leighley and Nagler 2013). Third, those individuals with higher SES have a higher likelihood of voting. This pattern has been documented in many other circumstances. Finally, the results show—as has long been established—turnout varies by state. Fast Track subjects in North Carolina have higher turnout than those in Tennessee, Washington, or rural Pennsylvania. This is entirely consistent with youth turnout patterns across states. For example, in 2012 young people in North Carolina turned out to vote at a rate 10 percentage points higher than youth in Washington and Pennsylvania and 14 points higher than Tennessee.[A27]

[A26] In the paper, I rely on scale measures of voting to increase precision among this modest-sized clustered sample. This approach is consistent with other research in this space (Sondheimer and Green 2010) and is justifiable given that the five measures of voting pick up on a shared common construct ($\alpha = 0.7$; Eigen 1= 1.67, Eigen 2= 0.15). However, I can also go one step further and break these five voting variables apart. The turnout effects outlined in the paper are strongest in presidential elections, and don't show up when midterm years alone are pooled. This may be due to extremely low turnout rates in these years among the Fast Track sample (4% in 2006 and 7% in 2010) or, it may be driven by a specific year—2010—where a slight negative (but not significant) estimate is observed. This cancels out the positive effect in the 2006 Midterms. In short, 4 out of the 5 elections available show a positive effect.

[A27] Source: The Center for Information & Research on Civic Learning and Engagement (i.e. "CIRCLE").

Table A3: Fast Track's Effect on Voting

	DV: Ever Vote ITT	DV: Ever Vote TOT	DV: Prop. Vote ITT	DV: Prop. Vote TOT
FT Treatment	0.073*	0.111*	0.094*	0.140+
	[0.015,0.132]	[0.026,0.195]	[0.000, 0.187]	[-0.0009, 0.280]
Male	-0.152*	-0.151*	-0.214*	-0.212*
	[-0.226,-0.078]	[-0.222,-0.080]	[-0.320, -0.107]	[-0.318, -0.106]
Non-white	0.085*	0.083*	0.140*	0.137*
	[0.009,0.161]	[0.011,0.156]	[0.006, 0.274]	[0.003, 0.271]
Age (years)	-0.016	-0.016	-0.020	-0.020
	[-0.067,0.034]	[-0.065,0.032]	[-0.100, 0.060]	[-0.098, 0.059]
Log(SES)	0.079*	0.081*	0.138*	0.139*
	[0.025,0.133]	[0.029,0.133]	[0.045, 0.231]	[0.046, 0.232]
Sibling (0/1)	-0.091	-0.094	-0.135*	-0.139*
	[-0.214,0.033]	[-0.212,0.025]	[-0.295, 0.025]	[-0.298, 0.021]
Male present (0/1)	-0.029	-0.029	-0.056	-0.057
	[-0.116,0.057]	[-0.112,0.054]	[-0.194, 0.081]	[-0.194, 0.80]
Mother married (0/1)	0.003	0.003	0.033	0.035
	[-0.083,0.089]	[-0.077,0.085]	[-0.108, 0.174]	[-0.104, 0.173]
Tennessee	-0.360*	-0.361*	-0.507*	-0.510*
	[-0.457,-0.262]	[-0.455,-0.268]	[-0.659, -0.355]	[-0.661, -0.360]
Pennsylvania	-0.311*	-0.313*	-0.375*	-0.378*
	[-0.399,-0.223]	[-0.398,-0.228]	[-0.496, -0.254]	[-0.501, -0.255]
Washington	-0.263*	-0.267*	-0.326*	-0.330*
	[-0.375,-0.151]	[-0.375,-0.159]	[-0.505, -0.146]	[-0.510, -0.150]
Cohort 2	0.103	0.107	0.174^{+}	0.180^{+}
	[-0.041,0.246]	[-0.032,0.245]	[-0.018, 0.365]	[-0.011, 0.371]
Cohort 3	0.075	0.078	0.123	0.129
	[-0.088,0.239]	[-0.079,0.235]	[-0.119, 0.366]	[-0.111, 0.369]
Constant	0.394*	0.390*	-0.300	-0.306
	[0.016,0.771]	[0.029,0.751]	[-0.887, 0.288]	[-0.889, 0.277]
N	812	812	812	812
Number of Schools	55	55	55	55
R^2	0.166	0.169	0.129	0.132
F (instrument strength)	.	3265.4	.	251.3

Notes: 95% confidence intervals in brackets. $^{+}$ $p \leq .10$, * $p \leq .05$. Standard errors are clustered at the school level. For those in Washington, vote history was not available in 2004.

The results are also unchanged if I model the hierarchical data structure with a random effects or multilevel model, as in some previous Fast Track studies.

The results also do not change if we use ordered logit on the proportion of elections voting outcome—showing that FT was especially effective at getting participants to vote at least one time. The TOT average marginal effects for ordered logit models are as follows, voting in no elections: 6.0% decrease in probability (p=0.038); 1/5 elections: 1.0% increase (p=0.045); 1/4 elections: 1.0% increase (p=0.045); 2/5: 1.4% increase (p=0.044); 2/5: 1.0% increase (p=0.051); 3/5: 0.7% increase (p=0.061); 3/4: 0.2% increase (p=0.102); 4/5: 0.4% increase (p=0.089); all elections 0.2% increase (p=0.115).

One potential concern regarding these results is that they are an artifact of the procedure used to match Fast Track subjects to voter-files. This is unlikely given the specification checks outlined earlier and given the fact that if the turnout effects from Table 1 are re-estimated using just those who were registered, the estimates do not change substantially: becoming slightly larger. Still, I nonetheless use a check here that avoids voter-files altogether. In year 15 of the study (2007)—when participants were between 19- and 23-years-old—subjects were asked to identify how often they voted. In this survey question, Fast Track asked, "Over the past year, how often have you voted in elections?" This question had a 5-item response scale, ranging from never voting to voting more than four times. Admittedly, this question is not ideal given its vagueness, but it nonetheless serves as a useful robustness check.

When I use this survey measure as an outcome, I find a similar result to that presented in Table 1 and Figure 2. Individuals assigned to the Fast Track treatment (i.e. the ITT) reported voting at a rate somewhere between 0.16 and 0.23 points higher on the 5 point scale.[A28] When this is collapsed to an indicator variable, individuals assigned to the treatment group reported voting at a rate 9.0 p.p. (ITT) higher, while individuals exposed to the full program indicated voting at rate 13.6 p.p. higher (TOT). Figure A6 shows the TOT visually. This check, in short, provides reassurance that the effect observed from the voter file data is not simply an artifact of the data matching procedure used.

[A28]The ITT is roughly equivalent to 24% of a standard deviation or 42% of the base rate. Those exposed to the full program reporting voting at a rate 0.23 to 0.35 points higher on the 5 point scale ($p < 0.02$). Variation in size estimates based on how missing respondents are treated.

Figure A6: Fast Track's Impact on Voter Turnout (Survey Measure Robustness Check)

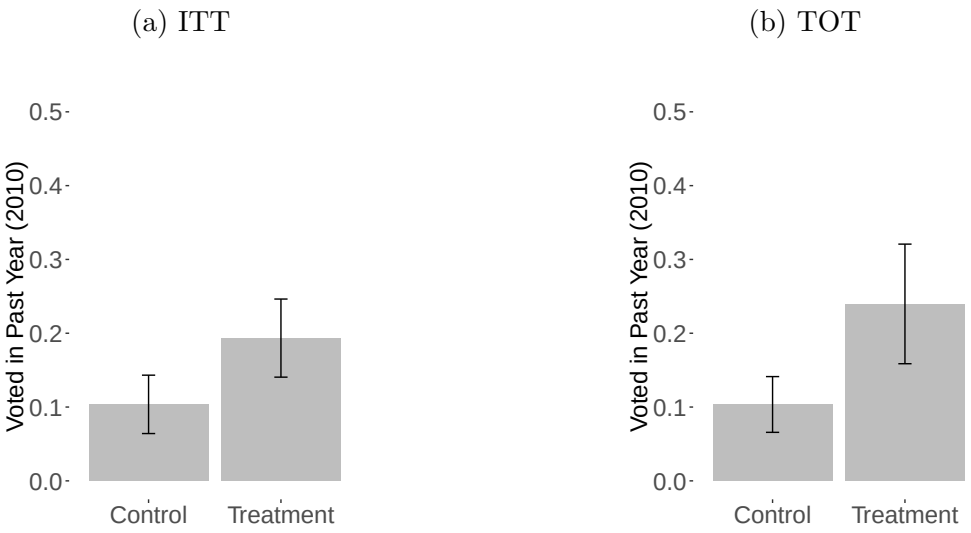


Figure shows the predicted turnout rates for the ITT and the TOT. Based on a survey item administered by Fast Track in year 15 of the study, when participants were between 19- and 23-years-old ($N = 416$). In this survey question, Fast Track asked, "Over the past year, how often have you voted in elections?" This question had a 5-item response scale, ranging from never voting to voting more than four times. I collapse this into a dichotomous outcome for whether a person indicated voting more than once (i.e. greater than or equal to the third quartile) to help minimize the impact of false over-reporting. The results do not change if this variable is kept as a 5-item ordinal scale ($\beta = 0.35$; $p = 0.017$).

Finally, does Fast Track increase other related forms of civic participation? As an aside, I note that in addition to increasing turnout, there is some (albeit less precise) evidence that Fast Track may have increased civic volunteering too, but this is not quite significant at traditional levels ($\beta = 0.12\sigma$, $p \approx 0.075$ one-tail).

9 Subgroup Effects*

Who benefited most from improvements in their psychosocial skills? The effects presented in the paper are similar across subgroups, with one exception. While the program was equally effective at mobilizing boys and girls, minority and non-minority participants, and children across the four implementation sites, there is some evidence that this treatment effect is larger for the lowest-SES individuals.[A29]

Figure A7 shows that the coefficient for low SES subjects is about 2.2 times larger than that

[A29]Though Fast Track does not divulge participants' baseline income or educational attainment (for data security reasons), they do provide a composite SES measure that pulls in information on family income, education, and occupation into a continuous scale ranging from 4-66. To quantify high and low SES individuals, I split this measure at the median level (23.5).

for high SES subjects. Moreover, when considering the base rates of participation across SES, these differences in magnitude are even more noticeable. The effect among low SES individuals represents 53% of the base rate of participation; while the high SES effect is only 13% of the base rate. The difference in the treatment effect between low and high SES individuals is not statistically significant at traditional levels ($p \approx 0.3$). Thus, while I cannot be entirely sure, there is at least some suggestive evidence that psychosocial skill programs could be especially effective among the lowest propensity citizens in the already low propensity Fast Track sample.[A30]

[A30]This provides some suggestive evidence that if psychosocial skill interventions—like Fast Track—were scaled up, they might see their larger effects amongst disadvantaged, low propensity citizens and smaller effects among advantage, higher propensity citizens. This would serve to narrow participatory inequality. More experiments are necessary, however, to fully test this possibility.

Figure A7: Fast Track's Impact Heterogeneities

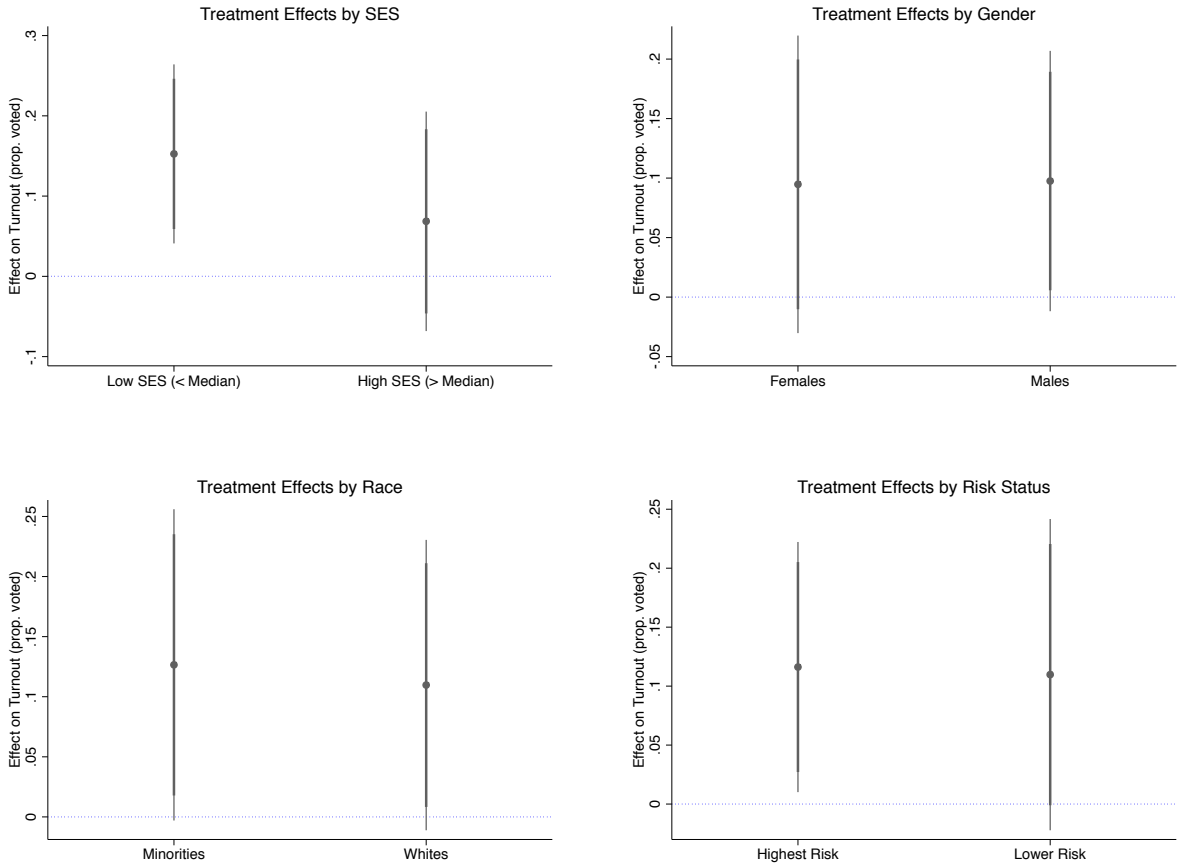


Figure A7 plots the coefficients and confidence intervals (90% and 95%) for the treatment effects stratified by these groups. These use the ever voted outcome measure as the outcome. For SES and risk, the groups are stratified at the median level of these continuous measures. Low SES model $N = 419$, high SES model $N = 393$; male model $N = 540$, female model $N = 252$; non-white model $N = 431$, white model $N = 381$; Higher risk model $N = 455$, lower risk model $N = 357$

10 Measurement of Psychosocial Skills, Fast Track*

Here I outline the origin of the psychosocial skill measures used in the analysis. For the most part, I rely on theoretically grounded measures of students' skills that have been already created and validated in published work.[A31] Much work has been done to validate these scales. In Table A4 I cite some of the relevant works that validate these measures. Those desiring more detail beyond these articles should reference the technical reports for the specific measures at the Fast Track website: `http://fasttrackproject.org/technical-reports.php`.

[A31] One exception is the grit scale. I generate this scale from four items that align with Duckworth et al. (2007).

Table A4 provides a brief overview of the psychosocial skills I consider. Column 1 shows the specific skill, listing the variable name from the Fast Track files. Column 2 provides a brief definition of the psychosocial skill. Column 3 tells who provided the measure, be it a teacher, subject or Fast Track rater. Column 4 provides some information on measurement of the construct. Column 5 provides relevant citations to work relating to or describing these constructs.

10.1 Fast Track: Teacher Measures of Psychosocial Skills*

Many of these measures come from teacher reports of students' skills. Teachers were asked to evaluate students on many skill dimensions. These included the teacher report form (TRF), the teacher social competence questionnaire (TSC), and the teacher rating of social adjustment. These "well-validated set of instruments" have been used in a number of studies and contexts (De Groot, Koot and Verhulst 1994). Items used from these surveys are listed below in Table A4.

The teacher report form (TRF)[A32] variables typically had a question stem like this:

> Below is a list of items that describe pupils. For each item that describes the pupil now or within the past 2 months, please circle the 2 if the item is very true or often true of the pupil. Circle the 1 if the item is somewhat or sometimes true of the pupil. If the item is not true of the pupil, circle the 0. Please answer all items as well as you can, even if some do not seem to apply to this pupil.

The items used on the TRF covered topics such as student performance in school, how hard the child worked, how the child behaved, and measures of the child's well-being.

Additionally, the teachers responded to the social competence questionnaire (TSC).[A33] This battery asked teachers to evaluate students on several dimensions, including their ability to function in a classroom setting. These questions generally had this structure:

> Compared to other [boys/girls] at this grade level, how often does [subject name] [characteristics and behaviors listed here] [Response Options: Almost Never–Almost Always (5 items)]

Finally, teachers responded to the teacher rating of social adjustment (TSA). These items focused on students specific skills. Teachers were asked to place students on a five-item spectrum from "poor, unsatisfactory skills in this area" to "excellent skills in this area."[A34]

[A32] The TRF for ages 6-18 is available online at: `http://www.aseba.org/forms.html`.

[A33] The technical report for the TSC can be found here: `http://fasttrackproject.org/techrept/t/tsc/`.

[A34] The TSA can be found here: `http://fasttrackproject.org/techrept/t/tsa/`.

10.2 Fast Track: Subject/Rater Measures of Psychosocial Skills*

In addition to teacher reports, Fast Track raters measured students' psychosocial skills on a variety of dimensions. These occurred in recorded interviews, which were then coded by Fast Track. The inter-coder reliability for these items tends to be quite high.

The subject/rater items included the emotion recognition questionnaire (ERQ).[A35] During this interview, raters showed students various pictures of children. Subjects were then asked to identify the emotion being exhibited by the child in the image—a commonly used proxy for individual empathy. Responses were coded as correct or incorrect.

The subjects/raters also went through an exercise to explore students emotional experiences (IEE).[A36] This interview explored students ability to manifest positive emotions. Additionally, students took the social problem solving questionnaire (SPS).[A37] This questionnaire "assesse[d] the way a child resolves problems encountered in typical social settings with other children." In this battery, students were shown images of children in social settings (i.e. "Jenny and Dave both want to use a swing at recess") and asked to respond how they would act if they were in one of the students' shoes. Responses were coded as appropriate, aggressive, or passive.

Students were also matched to public crime records.[A38] These documented the number and severity of juvenile and adult offenses.

Finally, students were given a general interview in their homes (HIC). This broached many topics, including a questions that allowed raters to rate students' hostile attributions. These were measured by giving students a situation where they experienced a negative event. Students were then asked how they would respond. Coders then rated whether students administered a hostile response.

[A35] The technical report for the emotion recognition questionnaire can be found here: `http://fasttrackproject.org/technical-reports.php#erq`.

[A36] The technical report for the interview on emotional experience can be found here: `http://fasttrackproject.org/techrept/i/ier/index.php`.

[A37] The technical report for the interview on emotional experience can be found here: `http://fasttrackproject.org/techrept/i/ier/index.php`.

[A38] The technical report for the match to crime records can be found here: `http://fasttrackproject.org/techrept/j/jcd/`.

Table A4: Fast Track's Psychosocial Skill Measures

psychosocial Skill	Short Definition	Reporter	Measurement	Citations
Grit (grit_prop)	Persistence toward long-term goals	Teacher (TRF)	TRF Items: 4, 8, 78, 100 (e.g., "Fails to finish things")	Achenbach (1991) Duckworth et al. (2007)
Emotion Recognition (erq-tnc)	Ability to identify others' emotions	Subject/Rater (ERQ)	Subject identifies emotions in pictures	Ribordy et al. (1988)
Self Efficacy (SEF-SES)	Belief that actions will yield results	Subject/Rater	Subject answers questions about belief in ability	CPPRG (2010)
Emotion Regulation (TSC-EMF)	Ability to control emotions (avoid negative, approach positive)	Teacher (TSC)	TSC Items: 1a, 3a, 4aR, 5aR (e.g., "copes well with failure", "calms down")	CPPRG (1999a)
Attentiveness (TRF-INN)	Ability to focus on task at hand	Teacher (TRF)	TRF Items: 1, 4, 8, 13, 17, 22, 49, 60, 61, 62, 72, 78, 80, 92, 100 (e.g., "Stares blankly")	Achenbach (1991)
Behavioral control (jcd-jil)	Engaging in delinquent behavior	Subject	Public crime records & self-reports	CPPRG (2010)
Hostility control (HIC-PHA)	Ability to avoid hostile behavior towards others	Subject/Rater (HIC)	Subject shown drawings of individuals being harmed. They were then asked why these negative events occurred and how they would respond. FT workers coded hostile responses.	CPPRG (1999a) Dodge et al. (1990)
Aggression control (HIC-PHA)	Control over outbursts	Subject/Rater (HIC)	Subject shown drawings of individuals being harmed. Asked how they would respond.	CPPRG (1999a) Dodge et al. (1990)
Self control (IEE-SCS)	Ability to control impulses	Subject/Rater (IEE)	Raters interviews child about experiences	CPPRG(1999a)
Social Problem Solving (sps-MPC)	Acting appropriately in groups	Subject/Rater (SPS)	Subject responds to social situations. Coders rate responses as competent if subject offers a direct, socially appropriate way of handling the situation.	Dodge et al. (1990) CPPRG (1999a)
Withdrawn (TRF-WDN)	Distant in social groups	Teacher (TRF)	TRF Items: 42, 65, 69, 75, 102, 103, 111 (e.g., "Would rather be alone than with others")	Achenbach (1991)
Internalizing (TRF-SIN)	Negative social behaviors	Teacher (TRF)	TRF Items: 11, 31, 32, 35, 42, 47, 50, 52, 60, 65, 69,71, 75, 80, 81, 99, 102, 103, 106, 108, 111, 112 (e.g., "Clings to adults or too dependent")	Achenbach (1991)
Anti Social (TRF-CAN)	Behaving inappropriately in social settings	Teacher (TRF)	TRF Items: 20, 21, 43, 82, 90 (e.g., "Swearing or obscene language")	Achenbach (1991)
Social Skills (m_t-k3)	Overall social skills	Teacher (TSA)	Teachers asked to evaluate subjects' overall social skills	
Social Problems (TRF-SPT)	Inability to get along with others	Teacher (TRF)	TRF Items: 1, 11, 25, 38, 48, 62, 64 (e.g., "Doesnt get along with other pupils")	Achenbach (1991)

11 Fast Track's Potential Individual Mechanisms*

Mediation models that allow for multiple mediators reveal that the psychosocial abilities account for somewhere between 20-50% of the Fast Track program effects, depending on the measures and comparison point used. This section considers various mediators individually, using the approach laid out by (Imai et al. 2011). It first considers the role of cognitive ability, then turns its attention to psychosocial abilities. As mentioned in the text, care should be taken in interpreting these results. Not only are mediation models inherently descriptive, but more so given that the Fast Track program was not designed with the goal of isolating individual factors.

Table A5 shows the differences across the treatment and control groups in mean levels of cognitive skills. The table shows that despite some small initial gains in math (a 0.74 percentage point increase) and letter-word identification (a 1.48 percentage point increase) in year 1 of the program, these increases appear to have faded rapidly and consistently (Rabiner and Malone 2004). There were no documentable differences across the treatment and control groups by the second grade. By the time students were in sixth grade—the last testing period—the Fast Track treatment appears to have had no noticeable impact on cognitive skills. Later-life proxies of cognitive ability show a similar pattern (CPPRG 2013). In short, by the time subjects in the treatment and control groups reached early adulthood and were becoming eligible to vote, they had similar levels of cognitive skills.[A39]

[A39] In year 1, the WJ items were administered to 446 in the control and 445 in the treatment (the whole sample). In year 2, a sample of 155 in the control and 155 treatment group were selected. In year 5, 383 in the control and 398 in the treatment were used. In year 6, the numbers were: 373 in the control and 387 in the treatment. In year 14, the "usual grades" item was asked to a sample of 156 in the control and 161 in the treatment.

Table A5: Fast Track's Impact on Cognitive Skills

	Control	Treatment	$P(T \neq C \mid H_0)$
Test Score Measures of Cognitive Skills			
% Correct WJ calculation (1st grade)	3.42	4.16	0.01
% Correct WJ letter-word id. (1st grade)	21.01	22.49	0.00
% Correct WJ calculation (2nd grade)	13.71	13.60	0.90
% Correct WJ letter-word id. (2nd grade)	38.27	40.22	0.13
% Correct WJ calculation (5th grade)	32.05	32.19	0.81
% Correct WJ letter-word id. (5th grade)	63.66	64.38	0.43
% Correct WJ passage reading (5th grade)	51.92	52.40	0.62
% Correct WJ calculation (6th grade)	36.38	36.04	0.60
% Correct WJ letter-word id. (6th grade)	68.40	68.80	0.66
% Correct WJ passage reading (6th grade)	57.20	58.05	0.39
Other Measures of Cognitive Skills			
Usual Grades in school (High School + 1)	2.63	2.46	0.35

Means and test statistics are from a simple comparison of means. **WJ** items are the Revised Woodcock-Johnson Psycho-Educational Battery — a commonly used measure of childrens cognitive ability (Woodcock and Mather 1989). The "calculation" items measure the childs skill in performing mathematical calculations such as addition, subtraction, multiplication and division (59 questions). The "letter-word identification" items measure word recognition using pictorial representations, isolated letters, and isolated words (58 questions). The "passage reading" items measure the child's ability to select a word that would be appropriate given the context of a written passage (38 questions). The "usual grades" item was from a follow up survey in year 14 (just after graduation for on track students). This item asked what grades the student received on their last report card when in school (0-7 scale: 0 being mostly A's, 1 being half A's and half B's, 2 being mostly B's, 3 being half B's and C's, etc.).

Table A6 presents results for the individual mediators. This approach follows that outlined by (Imai et al. 2011). This estimates an average causal medication effect ("ACME") and an average direct effect ("ADE"). Their procedure also adds a sensitivity analysis, which shows how robust the mediation estimates are to unobserved heterogeneity.[A40]

Unfortunately, the Fast Track program can only go so far in determining which specific psy-

[A40] The key output of the sensitivity analysis is a parameter (ρ) from which "the original findings are deemed sensitive if the true effects are found to vary widely as a function of ρ" (Hicks and Tingley 2011).

chosocial skills helped contribute to this effect. While the Fast Track program has many advantages, it simply was not designed to allow us to isolate the impact of individual psychosocial skills.[A41] Still, examining these skills individually provides some—albeit, very suggestive—information for scholars seeking to study the relationship between individual psychosocial skills and adult turnout. Of the psychosocial skills measured post treatment, it appears that empathy may play an important role (ACME/ADE = 15.3%). Teaching participants the ability to put themselves in others' shoes appears to have a powerful long-run effect on turnout. Additionally, Fast Track's effect may have something to do with general self efficacy (ACME/ADE = 9.7%). That is to say, Fast Track taught students to believe that their actions across all domains would yield expected results. This may have been behind why individuals participated in politics. Similarly, measures of individuals' hostile attribution control (9.2%) and aggression control (9.0%) all seemed to have played an important role in why Fast Track increased turnout; suggesting that the ability to control emotions and behavior may encourage individuals to participate in politics. These estimates tend to be larger, more precise, and more robust than other channels.[A42]

Most of the measures used in Table A6—with the exception of the social status and resource measures, which were only available for one time period—are composites of the same measures taken over time.[A43] These are combined using principal factor analysis. Table A7 displays the years used to make the composite measures. As the intervention started when children in the sample were 3-7 years old, the age these measures covers can be identified by adding the year to the age range: so, a year 2 measure would be that taken when individuals are 5-9, whereas a year 15 measure would be when individuals were 18-22. Generally

[A41] This can be seen, partially, in the relatively low sensitivity parameters below (i.e. ρ). That the Fast Track intervention moved multiple psychosocial abilities makes it unlikely that any one mediator would stand out.

[A42] Some psychosocial skills including self control (1.4%) and grit (2.7%), however, have much smaller mediation estimates. The lack of an effect with grit is likely because Fast Track failed to move this psychosocial skill. As shown in Figure A4, grit is strongly related to participation. Hence, grit may still be important for participation; Fast Track, however, may not be the right program to evaluate the role of this attribute. Fast Track, did, however, improve subjects' levels of self control. However, it appears that the descriptive relationship between self control and participation shown in Figure A4 may be due to unobserved factors or this measure of self control's relationship with political participation may be conditional on other psychosocial abilities. When I use the exogenous variation Fast Track treatment assignment provides, self control's relationship with participation diminishes and becomes statistically insignificant.

[A43] Unfortunately, some psychosocial skills—such as, emotion recognition, hostility control, and aggression control—were not measured after the fourth year of follow up. However, as discussed in the text there is evidence that these gains persisted up until this point.

speaking, the number of the 891 participants responding declines over time: as would be expected.[A44]

[A44]The one exception is the behavioral control measures, which are based on matches to administrative records, and, thus, are less susceptible to missingness.

Table A6: Fast Track's Potential Individual Mechanisms

Potential Mediators	| ACME/ADE |	ρ: ACME=0
Social Status/Connectivity		
Religious Memberships[b]	1.7%	0.2
Non-Religious Memberships[b]	0.6%	0.1
Social Memberships[b]	0.4%	0.1
Club Memberships[b]	0.9%	0.1
Married[b]	1.5%*	-0.1
Resources		
Adult Educational Attainment[b]	5.7%*	0.2
Adult Income[b]	2.5%*	0.1
Cognitive Skills		
WJR: Math[d]	0.0%*	-0.7
WJR: Words[d]	3.3%*	0.1
WJR: Passage reading[d]	4.0%*	0.1
Psychosocial Skills		
Emotion Recognition/Empathy[b]	15.3%*	-0.2
General Self Efficacy[b]	9.7%*	0.2
Hostility Control[b]	9.2%*	-0.1
Aggression Control[a]	9.0%*	-0.2
Behavioral Control[c]	8.3%*	-0.3
Social Problem Solving[b]	2.8%*	-0.1
Social Problems[a]	2.8%*	-0.2
Grit/Perseverance[a]	2.7%*	0.2
Emotion Regulation[b]	2.4%	0.1
Attentiveness[a]	1.5%*	-0.2
Anti Social[a]	1.5%*	-0.2
Self Control[a]	1.4%*	0.0
Withdrawn[a]	1.4%*	-0.1
Internalizing[a]	0.9%	-0.1
Prosocial[a]	0.6%	0.1

$^{+}$ $p \leq .10$, * $p \leq .05$. Individual mediation models are based on the `medeff` and `medsens` commands; while the combined estimates (in parentheses next to the bolded titles) are from the `khb` command in `Stata`. Standard errors clustered to the original school level. Models based on reduced form treatment models. Third column is the |%| of the indirect effect size relative to the total effect. The fourth column shows the uncertainty parameter from the sensitivity analysis, which shows the correlation between the error terms of the mediator and outcome models that would make the mediation effect 0 (Imai et al. 2011; Hicks and Tingley 2011). More details about how the measures can be found in tables A4 and A7.

[a] Drawn from teacher evaluations of students.

[b] Drawn from a student survey conducted by Fast Track raters.

[c] Drawn from a match to public crime records.

[d] Drawn from Woodcock-Johnson standard tests of cognitive ability.

Table A7: Measurement Details for Table A6

Measures	Follow-up Years	N	μ	σ
Social Status				
Religious Memberships (1-6)	15	426	1.78	0.93
Non-Religious Memberships (1-6)	15	437	2.11	1.13
Social Memberships (1-6)	15	437	1.69	0.65
Club Memberships (1-6)	15	436	1.36	0.99
Married (0-1)	15	460	0.14	0.34
Resources				
Educational Attainment (1-6)	19	720	2.83	1.14
Income	19	624	11,708	14,660
Cognitive Skills				
WJR: Math	5, 6	724	0	0.85
WJR: Words	5, 6	725	0	0.94
WJR: Passage reading	5, 6	726	0	0.90
Psychosocial Skills				
Emotion Recognition	2, 3	784	0	0.58
Self Efficacy	8	669	0	1
Emotion Regulation	5, 6, 7, 8, 9	415	0	0.87
Self Control	1, 2, 3	807	0	0.32
Grit/Perseverance	3, 4, 5, 6	602	0	0.82
Attentiveness	2, 3, 4, 5, 6	596	0	0.87
Behavioral Control	8, 9, 10, 11, 12, 13	774	0	0.99
Hostility Control	2, 3, 4	762	0	0.75
Aggression Control	2, 3, 4	762	0	0.73
Social Problem Solving	2, 3, 4	760	0	0.70
Withdrawn	2, 3, 4, 5, 6	596	0	0.79
Internalizing	2, 3, 4, 5, 6	596	0	0.74
Anti Social	2, 3, 4, 5, 6	600	0	0.85
Social Skills	7, 8, 9, 10, 11, 12	263	0	0.87
Social Problems	2, 3, 4, 5, 6	595	0	0.83

Follow-up years is the year of the study that measurements were taken, age range: (3 + year, 7 + year). N is the number of observations in the the scale; μ is the mean of the scale; and σ is the standard deviation. Treatment N + Control N=891.

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