



## The Influence of High Schools on Developing Public Service Motivation

Stephen B. Holt

To cite this article: Stephen B. Holt (2018): The Influence of High Schools on Developing Public Service Motivation, International Public Management Journal, DOI: [10.1080/10967494.2018.1470120](https://doi.org/10.1080/10967494.2018.1470120)

To link to this article: <https://doi.org/10.1080/10967494.2018.1470120>



Accepted author version posted online: 29 May 2018.  
Published online: 19 Sep 2018.

---



Submit your article to this journal [↗](#)

---



Article views: 81

---



View Crossmark data [↗](#)

---

## THE INFLUENCE OF HIGH SCHOOLS ON DEVELOPING PUBLIC SERVICE MOTIVATION

STEPHEN B. HOLT   
UNIVERSITY AT ALBANY

***ABSTRACT:** Despite the theoretical importance of public service motivation (PSM) for the public sector, little is known about the malleability and causal determinants of PSM. Formal schooling is one possible determinant of PSM. Using longitudinal data, this study analyzes the effects of civics courses and school-based community service in high school on PSM-related values. A propensity score matching strategy that compares observationally similar individuals finds that participation in school-based service activities for credit increases students' reported prosocial values, such as helping others in the community, one underlying component of PSM-related values. However, taking a civics course does not affect PSM or associated values. The results suggest that PSM-related values are malleable and responsive to early service experiences. The values underlying PSM may evolve over time. That is, the development of prosocial values in adolescence may lead to the future development of other values important to PSM.*

---

### INTRODUCTION

For many decades, US adolescents have demonstrated persistent deficiencies in civics knowledge (Galston 2001). In 2010, only 24% of high school seniors scored at or above proficiency in civics knowledge on the NAEP (National Center for Education Statistics 2011, 2016). The lack of civics knowledge documented by the NAEP corresponds with troubling trends in youth engagement with civic institutions and democratic government, such as declining participation rates in elections (CIRCLE 2016; McDonald 2016), historically low trust in government (Pew Research Center 2015), and growing discontent with democracy (Foa and Mounk 2016). The disengagement of young people from civic engagement has driven a

---

Color versions of one or more of the figures in the article can be found online at [www.tandfonline.com/upmj](http://www.tandfonline.com/upmj).

renewed public interest in civics education as a potential means to reverse these problematic trends (Najmabadi 2017; Pondiscio 2016). Guided by Public Service Motivation theory, I argue that exposure to opportunities for public service changes underlying student values and motivates sustained future civic engagement and prosocial behaviors. I explore two potential high school treatments, civics coursework and credited school-based service, as potential mechanisms to cultivate the prosocial values that motivate engagement in public service.

Public management research on Public Service Motivation (PSM) theory has grown considerably (Ritz, Brewer, and Neumann 2016) and provides insights into the values that motivate public service. PSM refers to normative constructs “grounded primarily or uniquely in public institutions” that underlie the desire to serve public goals or contribute to activities that primarily benefit others (Perry 1996; Perry and Hondeghem 2008). Despite the growing recognition of the important role motivational values play in labor market decisions and public workforce performance, the factors contributing to the development of the values underlying PSM are poorly understood (Perry and Vandenabeele 2015; Ritz et al. 2016), and the extent to which PSM can be altered beyond early childhood remains an issue of some debate in the PSM literature (Belle 2013; Bozeman and Su 2015; Charbonneau and Van Ryzin 2016; Ward 2014). Moreover, many of the pre-labor market factors correlated with PSM documented in previous research, such as household religiosity and parental modeling, remain outside of the control of policymakers (Charbonneau and Van Ryzin 2016; Perry 1997).

Education provides a possible mechanism, within the control of policymakers, which may influence the cultivation of PSM (Bright 2011; Perry 1996; Seider, Rabinowicz, and Gillmor 2011). Evidence from education policy research indicates that student interest in academic subjects responds to course taking in high school (e.g., Adelman 2006; Altonji, Blom, and Meghir 2012; Long, Conger, and Iatarola 2012; Trusty 2002), which suggests that participation in civics coursework or credited school service may increase student interest in public service more generally (for a review, see Galston 2001). Since decision making, motivations, and preferences reflect the combination of prior information and values (Simon 1952), and rank-order preferences stabilize substantially after adolescence (Borghans et al. 2008; Low, Douglas, and Rounds 2007), changing social values, such as those that motivate public service, among adolescents represents an important step in ensuring the future health of civic institutions. Moreover, since engagement in public service also corresponds with other prosocial behaviors, such as volunteering and participating in civic groups (Brewer 2003; Houston 2000, 2006; Lee 2012), cultivating PSM among adolescents may provide social benefits beyond the needs of public sector workforce development.

I investigate the influence of civics courses and credited school-based community service on the cultivation of PSM-related values using data from a nationally representative sample of sophomores in high school in 2002. Following Park and Rainey (2008) and Vogel and Kroll (2015), I refer to the measures used in the study as PSM-related values to highlight that, although the measures resemble more

commonly used measures of PSM, they are not exact matches of traditionally used measures of PSM. Using a variety of identification strategies, I provide arguably causal evidence that participation in credited school-based community service increases the public interest dimension of PSM-related values. Moreover, I demonstrate that PSM-related values, particularly the public interest dimension affected by school-based community service, increase the likelihood that a student will persist in volunteering and civic engagement, such as joining a political group and voting in elections, through college and into adulthood.

The study makes a variety of contributions to both the PSM and civic engagement literatures. First, the study expands our understanding of how PSM-related values develop prior to labor market experiences. Although systematic differences in motivational bases between public and private sector workers are well-established (e.g., Brewer 2003; Brewer, Selden, and Facer 2000; Crewson 1997; Ertas 2014; Houston 2000, 2006; Lee 2012; Rainey 1982), the extent to which this is an effect of public sector work or attributable to motivated selection remains unclear. This study provides evidence that differences in individuals' motivational bases arise, in part, as a result of early exposure to civic institutions cultivating some PSM-related values. These values also drive related prosocial behaviors, such as volunteering, and may lay the foundation for future engagement in public service.

Second, the study introduces a novel outcome of interest for education interventions aimed at improving civic engagement. School and teacher evaluation measures place substantial weight on improving student performance on standardized tests designed to measure basic skills in certain subjects. Although an important student outcome, a growing body of literature highlights the importance of non-cognitive skills in educational and labor market outcomes (e.g., Deming 2009, 2011, 2015; Heckman and Rubinstein 2001; Jackson 2016; Jacob 2002). The cultivation of PSM-related values important for persistent public service and prosocial behaviors reflects an additional socially important outcome schools produce which is not accounted for in current measures of school performance. By demonstrating the direct relationship between PSM-related values in high school and long-run civic engagement, such as participating in government through voting and volunteering for political organizations, this study highlights the importance of PSM-related values for socially beneficial outcomes of education.

In the following sections, the article will introduce and review the PSM literature, discuss the theoretical framework guiding the study, summarize the data and methods used to test the theoretical propositions set forth in the study, and conclude with a discussion of the results and implications for future research and policy.

## **BACKGROUND AND LITERATURE REVIEW**

### **Public Service Motivation and Public Sector Workers**

The factors that motivate workers have been a central concern of management scholarship for decades (Behn 1995; Perry and Wise 1990). Due to the wide discretion and legal authority entrusted to many public officials, public management

scholars in particular have focused on the motivations that drive public sector workers' behavior and performance (Jackson 2009). Perry and Wise (1990) proposed public service motivation as a framework for understanding public sector workers' motives for pursuing careers in public service. They argue that public servants' base of motivation stems not only from rational self-interest (e.g., power, prestige, pecuniary rewards), but also normative (e.g., commitment to public interests) and affective (e.g., patriotism, mission) reasons important for consideration when devising management policies in public organizations. While early conceptualizations of PSM treated PSM as nearly synonymous with more general concepts such as altruism and prosocial motivation (Bozeman and Su 2015), a more recent common view has emerged that defines public service motivation as a subset of prosocial motivation in which the intended beneficiary of an individuals' actions is the broader community or society at large (Perry and Hondeghem 2008).

Three streams of interdisciplinary research have emerged investigating the function of public service motivation in workforce behaviors: testing instruments for measuring PSM, investigating the role of PSM in job choice and performance, and establishing the factors that develop PSM. A large and growing body of literature has established that high PSM workers cluster in public and nonprofit organizations (e.g., Anderfuhren-Biget et al. 2010; Barsoum 2016; Bright 2011, 2016; Carpenter et al. 2012; Christensen and Wright 2011; Holt 2018; Wright and Christensen 2010; see Ritz et al. 2016 for a review); public sector workers engage in more prosocial behaviors, such as volunteering, giving blood, and participating in civic groups (Ertas 2014; Houston 2006; Lee 2012); and high PSM workers are more satisfied in public sector work (Brewer and Selden 1998; Kim 2005; Kjeldsen and Andersen 2013; Norris 2003) and perform their jobs better (Andersen, Heinesen, and HolmPedersen 2014; Belle 2013) than their lower PSM peers. Applying insights from psychology and sociology, economists have begun to note the importance of culture and endogenous social preferences in market outcomes (e.g., Borghans et al. 2008; Delfgaauw and Dur 2007, 2008; Dur and Zoutenbier 2014; Fehr and Fischbacher 2002; Koehler and Rainey 2008; Vanberg 2008). Borghans et al. (2008) specifically note that the weight of evidence indicates that the fit between workers' motivations and job characteristics has a direct effect on job performance.

More important for the purposes of the current study is the demonstrated link between PSM and engagement in both public service and other civic behaviors (e.g., volunteering). Although much of the prior research relies heavily on cross-sectional comparisons (Perry and Vandenabeele 2015; Wright and Grant 2010), the weight of the evidence suggests a strong correlation between a normative concern for the broader community and prosocial behaviors. A much smaller body of research investigates the formation of PSM, and much of the literature on the antecedents of PSM focuses on the organizational factors that affect PSM among workers in or entering the labor market (Ritz et al. 2016).

In the literature examining the factors that affect PSM prior to the labor market, education, gender, race, age, and parental involvement in civic and religious

activities all reflect consistent predictors of higher PSM (Bright 2011; Charbonneau and Van Ryzin 2016; Naff and Crum 1999; Perry 1997). However, most of the research in this area relies on surveys of public sector workers asked to recall childhood experiences, leaving the reliability of the data an open question. In a notable exception, Ward (2014) employed panel data collected from participants selected for AmeriCorps and those who expressed interest but did not participate and found that, after accounting for initial PSM, AmeriCorps participants reported higher levels of PSM and greater civic participation rates years after participation. Seider et al. (2011) found similar results from college student participation in a service learning course (see also Markus, Howard, and King 1993).

Two important points must be made about the extant literature on the formation of PSM. First, many of the factors identified as influential, such as parental modeling and household religiosity, remain outside of the control of policymakers. Second, while much of the research identifies education as a potentially important predictor of PSM, less attention has been paid to the mechanisms through which education might cultivate PSM. Since policymakers can influence education policy to promote practices shown to be influential in producing PSM, identifying such practices is an important and timely next step in moving the PSM literature forward.

### Values, Motivations, and Traits

Recent progress in psychology, PSM, and education research has advanced knowledge of how personality traits, motivation, and values interact to drive workplace and broader social behaviors. Scholars in the field of psychology have made strides in aggregating interdisciplinary knowledge into a broader theory of personality built on five principles that provide helpful context (McAdams and Pals 2006). As McAdams and Pals (2006) highlight, evidence from evolutionary biology, neuroscience, and studies of within-family correlation of traits (likely operating through genetic inheritance) suggests that biological parameters bound variation in personality both within and across individuals. For instance, studies of brain plasticity in the context of education and learning indicate that brain development responds to environmental inputs, but neurological changes slow over time, losing impact at some point in the mid-twenties for the average person (for a review, see Nelson and Sheridan 2011). The combination of biological and environmental inputs (e.g., parental guidance, education, etc.) shapes broader personality traits that pattern behavior over different stages of a life cycle (Costa and McCrae 1994; Roberts, Walton, and Viechtbauer 2006; Terracciano, Costa, and McCrae 2006). Personality traits generally reflect consistent trends in individuals' responses to a variety of situations and contexts that cluster similar individuals into recognizable patterns of responses (McAdams and Pals 2006).

After accounting for overarching tendencies attributable to the interaction of biological inputs and personality traits, context contingent traits, such as motivation, attitudes, and beliefs (referred to as character adaptations by Costa and McCrae 1994) represent a third set of identifiable traits. As McAdams and Pals

note, considerably less is known about these contingent traits; however, Low, Douglas, and Rounds (2007) show that interest in particular jobs, an expression of values and motivation, begins to stabilize in the later years of high school and reaches peak stability in the late twenties. Properly understood, PSM represents a specific type of contingent trait that links latent personality traits and situational context to motivate certain behaviors. Indeed, recent research reveals that some personality traits correlate with certain dimensions of PSM (Van Witteloostuijn et al. 2017). Although PSM may be relatively stable over time (Vogel and Kroll 2015), the underlying traits that may be related to PSM can be instilled (Ward 2014), activated (Belle 2013; Pedersen 2015), or crowded out (Jacobsen, Hvitved, and Andersen 2014; Moynihan 2010; Moynihan and Pandey 2007; Pandey and Stazyk 2008) by managerial interventions or environmental context. As Perry (2000) notes, a combination of information, values, and individual characteristics motivates behaviors that primarily benefit others. In conjunction with lessons from research on the organizational and managerial factors that can activate or dampen existing PSM in workers (for a review, see Christensen, Paarlberg, and Perry 2017), research must explore the ways PSM may be effectively cultivated prior to work-force entry.

Several important points relevant to the current study and PSM theory emerge from the previous research about personality traits and motivation. First, a combination of biological factors and personality traits serve as the bounds on contingent traits, such as motivation generally and PSM in particular. Considering the compelling evidence that both biological and personality traits that bound motivation begin to stabilize beyond the mid-twenties, interventions targeted at adolescence, when both bounds are most malleable (Duncan and Magnuson 2011; Farkas 2011), may have the largest long-run effects on cultivating PSM that leads to sustained civic engagement. Implicit in the relationship between stable personality traits and PSM is that managers in public and nonprofit organizations may find PSM difficult to cultivate in employees who do not enter the organization with high levels of PSM (Vogel and Kroll 2015). Further, the heightened malleability of values, motivation, and personality traits in adolescence underscores the importance of considering education-related mechanisms for developing PSM and social benefits that may accompany higher PSM in the broader public. As Pedersen (2015) demonstrates in an experiment with Danish college students, existing PSM can be activated with small interventions in ways that significantly increase effort on a task. This underscores the potential importance for cultivating PSM in the broader workforce.

Second, since normative and affective dimensions of PSM focus on service to society as the primary motivation for behavior, early values relating to society at large, those embedded in PSM, may pattern behaviors that solidify over time. I argue that values, motivation, and behavior operate in a cumulative fashion analogous to the development of hard skills. That is, a baseline set of values aligned with a prosocial objective motivates an engagement in prosocial behaviors. The resulting experiences strengthen the underlying valuation of prosocial goals, and

motivate continued engagement in prosocial behaviors. In the same manner that “skills beget skills” (Cooper et al. 1998), engagement with civic institutions may alter values and beget continued engagement.

The question for improving civic engagement and increasing social capital among adolescents then becomes how to change underlying values? Applying insights from the education literature on course taking and civics suggests two potential mechanisms to influence PSM-related values. First, since motivation to engage in a given behavior is a function of individuals’ values and information about that behavior, simply increasing students’ information might change their values and, ultimately, their PSM-related values. In this case, participation in coursework might expose students to more information about civic institutions and behaviors, and this new information might engage student interest in civic engagement and PSM.

Prior research has found that, after controlling for ability and family background, taking more advanced courses in high school predicts student persistence in college and earnings in the labor market (Adelman 2006; Altonji 1995, 2012; Bishop and Mane 2004; Long, Iatarola, and Conger 2009, 2012). In addition, some evidence suggests that taking advanced math and science courses in high school increases the likelihood of entering a technical major in college (Federman 2007; Trusty 2002). Broadly, this suggests that learning more about a subject may increase interest in that subject and may also increase related values. Civics coursework has often been proposed as a means to expand civic knowledge and cultivate a value for public institutions (Journell 2015; Kahne and Middaugh 2009; Niemi and Smith 2001; Youniss 2011; Zaff, Youniss, and Gibson 2009). Prior research indicates that participation in civics courses does increase knowledge about government and political expression (e.g., signing petitions or writing letters to elected officials) (Gimpel, Lay, and Schuknecht 2003; Manning and Edwards 2014), but little attention has been paid to other effects of civics coursework in the context of PSM.

H1: A high school student who takes a civics course will be more likely to express PSM-related values than an observationally similar student who does not.

School-based community service activities, such as mentoring other students, assisting teachers or office staff, or participating in student government, offer another avenue for affecting students’ values. Beginning in 1992, the federal Learn and Serve America program began awarding grants to the states to develop and implement school-based service programs for students, and by 1999, 46% of high schools reported that they offered school-based service programs (CNCS 2006). Hart et al. (2007) argue that community service in high school may provide a personal involvement with, and peer network in, civic and political issues that ensures further participation. Using data from the National Educational Longitudinal Study of 1988, they show that, relative to participation in civics coursework and



extracurricular activities, volunteering in high school is the strongest predictor of voting in elections and volunteering as an adult. They attribute the strength of the relationship to the effect of community service on students' identities, particularly in relation to society at large. Similarly, Morgan and Streb (2001) use data from 10 high schools in Indiana that implemented a service-learning initiative from the state, and found that service-learning projects improved participants' reported interest in future civic engagement (for a review of research on service and civic engagement, see Perry and Katula 2001). Indeed, by emphasizing service work outside of the realm of advocacy or politics per se, school-based service credits may effectively model for students the need for public service oriented around conducting work on behalf of others (Boyte and Kari 1996; Wilkenfeld and Torney-Purta 2012).

Other studies have found a similar correlation between volunteering in young adulthood and continued civic engagement years later (Astin, Sax, and Avalos 1999; Marks and Jones 2004; Smith 1999; Wilson and Musick 1997). However, as Marks and Jones (2004) note, while voluntary community service in high school strongly predicts continued volunteering in college, required community service is negatively correlated with continued volunteering. They suggest that volunteering that does not lead to a change in students' social values will not lead to a sustained increase in civic participation. However, they note that programs and policies that entice voluntary participation might lead to experiences that alter prosocial values. Moreover, several studies suggest that participation in service activities influences other aspects of adolescents' self-concept, such as personal efficacy, moral and political considerations, and government's responsibilities (Morgan and Streb 2001; Yates and Youniss 1996, 1998). Regarding the current context, credited school-based community service may provide experiential learning to students that changes their PSM-related values.

H2: A high school student who participates in school-based community service will be more likely to express PSM-related values than an observationally similar student who does not.

Of course, changing students' PSM-related values alone does not guarantee that the social benefits of increased PSM-related values will be realized. While some evidence suggests that public sector workers engage in prosocial behaviors, such as volunteering and participating in civic groups, more frequently than private sector peers (e.g., Ertas 2014; Houston 2006; Lee 2012), there is less evidence of PSM prior to labor market entry affecting volunteerism and civic engagement. As Perry and Katula (2001) note, the relationship between values potentially affected by service activities and civic engagement remains largely understudied. Theoretically, persistent volunteerism and civic engagement require a change in the values that motivate prosocial behavior and civic engagement (Marks and Jones 2004).

H3a: Higher PSM students will be more likely to persistently volunteer.

H3b: Higher PSM students will be more likely to vote in elections.

H3c: Higher PSM students will be more likely to engage in civic groups.

The next section discusses the data and methods used to test the proposed hypotheses informed by PSM theory and previous research.

## DATA AND METHODS

Data to test these hypotheses come from the Education Longitudinal Study of 2002 (ELS). The ELS:2002 provides rich education and employment data from a nationally representative sample of students who were high school sophomores in 2002. More importantly, the ELS:2002 provides rich transcript data on the courses students took in high school. The ELS:2002 collects data from students, parents, schools, and teachers about a wide range of topics, including household characteristics and student values, beliefs, and abilities. The ELS:2002 collected data first in the students' sophomore year in high school (2002) and again during their "on-time" senior year in high school (2004). In both high school surveys, students were asked to rate the importance of a variety of social values, ranging from helping others to having kids to professional success. Five of these items resemble items from the instrument proposed by Perry (1996) and Kim et al. (2013) to measure PSM. I describe these in more detail in the following.

### Dependent Variables

The outcomes of interest in the current study include the motivations associated with public service motivation and prosocial behaviors (e.g., volunteerism and community service). Using the PSM-related items in the ELS:2002, I measure public service motivation both as an index and as binary measures of its underlying dimensions. The PSM-related section on social values asks students to rate the importance of helping others in the community, correcting inequalities, being an informed citizen, protecting the environment, and being patriotic on a scale of "Not Important," "Somewhat Important," or "Very Important."<sup>1</sup> Exploratory factor analysis identified variation in responses to the PSM-related series of items attributable to a latent, unobserved variable.<sup>2</sup> Using the series of PSM-related items, I create a standardized index, with a mean of zero and a standard deviation of one. Although these items are not precise measures of PSM, they strongly resemble items from survey instruments widely used to measure PSM (Kim et al. 2013; Perry 1996). Using items outside of Perry's (1996) original scale may reflect a limitation of the study; however, as other scholars studying PSM have noted, closely aligned secondary data may provide insights into the dynamics of altruistic and prosocial values that drive PSM important for the advancement of PSM research (Ward 2014).

In addition to examining the effect of civics coursework or civic service activities on the PSM-related values index overall, I examine effects on the individual dimensions of PSM-related values. As Perry and Vandenabeele (2015) note, some

dimensions of PSM reflect social norms and values important for reasons beyond public service. For instance, engaging students in desiring to “help others in the community” provides substantial social value, even if such students never enter public sector employment. I measure the individual components of the PSM-related values index using a binary indicator equal to one if the student reports the component as “Very Important” to them, and zero otherwise.<sup>3</sup>

In addition to examining changes in PSM-related values and dimensions of PSM-related values attributable to participation in civics coursework or credited service activities, I also examine the relationship between PSM-related values and long-run prosocial behaviors. Accordingly, I follow Crewson (1997), Houston (2000), and Piatak (2015) and examine the effect of PSM-related values on volunteering. I measure volunteering at two points in time: during the senior year in high school, and during the spring of 2006 (the sophomore year of college for college goers). Volunteering at both points is measured using a binary variable equal to one if the student reports volunteering during the year, and zero otherwise.

In addition to looking at volunteering, I examine the relationship between PSM-related values and civic engagement. I measure civic engagement using both voting behavior and participation in political groups or organizations. The ELS:2002 cohort became eligible to vote in the 2004 presidential election and the 2006 midterm elections. In the spring of 2006, students were asked about voting in the elections. I measure voting behavior as a binary variable equal to one if the student reported voting in both elections, and zero otherwise. In addition, in the spring of 2006, students were asked about participation in a variety of organizations, including political organizations. I complement voting behavior with a binary variable equal to one if the student participated in a political organization, and zero otherwise. Together, I use voting behavior and participation in political organizations to capture civic engagement. Changes in students’ values are important to the extent that they lead to corresponding changes in behavior. Students’ volunteerism and civic engagement in the following year and into adulthood, therefore, captures the extent to which changes in PSM-related values also lead to changes in corresponding prosocial behaviors.

### **Independent Variables**

The independent variables of interest are participation in civic service activities or taking a civics course. I measure participation in these two treatments using a binary variable set equal to one if the student took any number of credits of civics service activities (civics coursework) during their junior year of high school. I specifically examine credits in the junior year because the outcome of interest is measured in both the sophomore (pre-treatment) and senior (post-treatment) school years. Credits are standardized (in Carnegie units) to control for variation in school calendars across schools (e.g., quarter, semester, trimester) and variation in the number and intensity of courses taken in each subject.<sup>4</sup> Using standardized credits, I create a binary variable equal to one if the student took one or more credits in civics service (civics courses) in their junior year of high school, and zero

otherwise.<sup>5</sup> I further add the restriction that students who took either treatment in their freshman or sophomore years are excluded from the analysis to control for the intensity of treatment participation.<sup>6</sup>

Of course, students do not randomly sort into courses, and both access to and participation in courses vary across schools and by observable student characteristics, such as socioeconomic status, race, gender, and ability (Conger, Long, and Iatarola 2009). This means that simple comparisons of outcomes might confuse the effect of the treatments with the effect of other confounders, such as students' unobserved motivation or pre-existing interests. Following Long et al. (2012), I match students on their propensity to participate in courses in the subjects of interest described earlier during their junior year of high school. The observable student characteristics I use for matching on the propensity to select into the treatment include student demographics (race, gender), socioeconomic status (parental education and household income), pre-treatment measures of ability (reading and math scores in tenth grade and GPA from ninth and tenth grades), student self-expectations of educational attainment, and the full set of values items asked in the sophomore year of high school. In addition, both parental involvement and religious affiliation correlate with PSM (e.g., Perry 1997); therefore, I also match on parents' reported religion and measures of parental involvement. I measure parental involvement using a series of items that ask parents how often they check the students' homework, attend school events, and participate in parent-teacher organizations. For each of these items, I use a binary variable equal to one if the parent reports they do a particular activity "Frequently," and zero otherwise.

Table 1 displays descriptive statistics for selected variables of the analytic sample overall and separately by treatment status (participation in civics coursework or school-based service activities). Columns 1 through 3 show the summary statistics for students with the option to take a civics course in their junior year, while columns 4 through 6 depict summary statistics for students with the option for credited school-based service activities in their junior year. As column 1 of the table indicates, the analytic sample contains approximately 5,380 students with non-missing data on observables and the option to take a civics course in their junior year.<sup>7</sup> Among students with the option to take a civics course in their junior year, about 21% opt to take one. Notably, participation in civics coursework does vary on observable characteristics, indicating non-random participation in both treatments. Consequently, matching on propensity scores is needed to account for this endogenous selection into the treatments. Students who take a civics course are predominantly female students and, on average, have higher GPAs in the previous academic year. While they are significantly more likely to be Black, the magnitude of the difference is not large (about one percentage point).

As column 4 indicates, among students with an option to participate in school service for credit, about 15% participate. The analytic sample for students with the option to receive credit for school-based community service contains about 4,470 students with complete data. Similar to the trends observed in civics coursework participation, the students who participate in school service are more likely to be

**TABLE 1**  
Summary Statistics of Selected Variables, Unweighted

	Civics coursework			School-based service		
	All (1)	Treatment (2)	Control (3)	All (4)	Treatment (5)	Control (6)
Took a civics course junior year	0.22	1	0	0.10	0.13	0.10
Credit for school service junior year	0.08	0.08	0.08	0.15	1	0
Male	0.48	0.45***	0.49	0.49	0.43***	0.50
White	0.64	0.66	0.64	0.64	0.67	0.63
Black	0.12	0.13***	0.12	0.08	0.07***	0.08
Hispanic	0.15	0.12	0.15	0.18	0.16	0.18
Native American	0.01	0.01	0.01	0.01	0.01	0.01
Asian	0.04	0.04	0.04	0.05	0.04	0.05
Other	0.04	0.04	0.04	0.04	0.04	0.04
Mother has HS or less	0.39	0.37	0.39	0.41	0.42	0.41
Mother has college degree or more	0.25	0.25	0.24	0.24	0.22	0.25
Low income (<\$20,000/yr.)	0.09	0.09**	0.09	0.08	0.06**	0.09
High income (>\$100,000/yr.)	0.12	0.12	0.13	0.13	0.14	0.13
Reading test	50.97 [9.83]	50.72 [10.01]	51.03 [9.78]	50.86 [9.85]	50.81 [9.45]	50.87 [9.93]
Math test	50.63 [9.78]	49.81 [9.69]	50.85 [9.79]	50.97 [9.78]	50.51 [9.66]	51.05 [9.80]
GPA 10th grade	2.67 [0.87]	2.72** [0.83]	2.65 [0.89]	2.69 [0.87]	2.77** [0.79]	2.67 [0.89]
Observations	5,650	1,230	4,420	4,610	680	3,920

*Note:* Number of observations rounded to the nearest ten in accordance with NCES rules. Standard deviations in square brackets; \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$  for t-tests on difference in means between treatment and control groups.

White, female, from higher-income households, and have a higher GPA in the previous year than their peers who do not participate in school-based service. Finally, columns 1 and 4 show that some students in each sample received both treatments. Since both treatments reflect different aspects of learning about civic service, one through classroom learning and the other through hands-on service activities, the treatments may enhance one another. I include them to investigate the extent to which the two treatments may be complementary.<sup>8</sup> I allow the treatment effect to vary between those who received one treatment and those who received both.

Table 2 summarizes the outcomes of interest in the analytic samples overall and separately by treatment status. To provide a comparison of pre- and post-treatment measures, I focus on the PSM-related sub-items asked in both survey years.

**TABLE 2**  
Summary Statistics of Outcomes of Interest, Unweighted

	Civics coursework			School-based service		
	All (1)	Took civics (2)	No civics (3)	All (4)	School service (5)	No school service (6)
Helping others in the community not important (10th grade)	0.08	0.07**	0.08	0.09	0.06**	0.09
Helping others in the community somewhat important (10th grade)	0.57	0.55*	0.57	0.55	0.60	0.54
Helping others in the community very important (10th grade)	0.36	0.38	0.35	0.36	0.34	0.37
Helping others in the community not important (12th grade)	0.06	0.05	0.07	0.07	0.07	0.07
Helping others in the community somewhat important (12th grade)	0.52	0.54	0.52	0.53	0.49	0.54
Helping others in the community very important (12th grade)	0.41	0.41	0.42	0.40	0.44*	0.40
Working to reduce inequality not important (10th grade)	0.29	0.26	0.29	0.28	0.28	0.28
Working to reduce inequality somewhat important (10th grade)	0.54	0.55	0.54	0.53	0.56	0.52
Working to reduce inequality very important (10th grade)	0.18	0.19	0.18	0.19	0.16*	0.19
Working to reduce inequality not important (12th grade)	0.29	0.28	0.30	0.30	0.32	0.29
Working to reduce inequality somewhat important (12th grade)	0.51	0.53	0.51	0.51	0.53	0.51
Working to reduce inequality very important (12th grade)	0.21	0.19	0.20	0.19	0.15**	0.20
Volunteered at least once during the year (12th grade)	0.58	0.58	0.58	0.59	0.64***	0.58
Observations	5,650	1,230	4,420	4,610	680	3,920

Note: \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$  for t-tests on difference in means between treatment and control groups.

Again, columns 1 through 3 describe the civics coursework sample, while columns 4 through 6 describe the school service sample. Comparing columns 2 and 3, the two groups are broadly similar in pre-treatment measures of the relative importance of helping others in the community and working to correct inequality. However, students who take a civics course are more likely to report that “helping others” and “correcting inequality” are very important to them in the prior year. Perhaps surprisingly, comparing columns 5 and 6, students who select into school-based service activities are less likely to report “helping others in the community” and “correcting inequality” as important to them relative to students who do not participate in school-based service.

## EMPIRICAL STRATEGY

For a researcher estimating the effect of coursework or community service on student outcomes, a common approach is to calculate the average treatment effect (ATE) using OLS, controlling for a variety of student characteristics and school fixed effects (FE). A typical approach would be to estimate a reduced form model of PSM-related values ( $Y$ ) of student  $i$  in school  $s$  as the linear function:

$$Y_{is} = \beta T_i + \gamma X_i + \theta_s + \varepsilon_{is}, \quad (1)$$

where  $T$  represents whether the student took a civics course;  $X$  represents a vector of controls for tenth-grade student characteristics (e.g., demographics and socioeconomic status, academic ability, and motivational values);  $\theta$  represents a school FE to control for school-specific, unobserved characteristics that may affect PSM values and particular coursework; and  $\varepsilon$  represents an idiosyncratic error term. In (1),  $\beta$  is the parameter of interest and captures the estimated effect of civics coursework on students’ PSM values and volunteering behaviors. A common approach would be estimate (1) using linear probability models (LPM) to allow for the inclusion of school fixed-effects, and cluster standard errors at the school level to make inference robust to correlation of the error-term within schools.<sup>9</sup> School fixed-effects control for unobserved factors that vary across schools and may influence student values or the likelihood a student takes a civics course, such as school resources and culture, peers, and teacher quality.<sup>10</sup> However, such LPM estimates are likely to be biased by the correlation between student characteristics and selection into the treatments. Intuitively, students who choose to participate in either treatment may be different from those who do not in ways unobserved by the researcher. Such differences, left unaccounted for in the analysis, would bias LPM estimates of the ATE of the treatments.

In (1),  $\beta$  only captures the causal effect of the treatment (civics coursework) on  $Y$  if  $X$  effectively controls for selection into the treatment. Under conditions of random assignment, treatment and control groups will, in the aggregate, not differ systematically on either observable or unobservable characteristics, and  $\beta$  would be unbiased (Konisky and Reenock 2013; Rubin 2008). Of course, students are not randomly assigned into courses. Equation (1) may not control for unobserved

student characteristics correlated with selection into the treatment, and an LPM estimate of  $\beta$  will likely be biased due to unaccounted-for non-random selection into the treatment.<sup>11</sup>

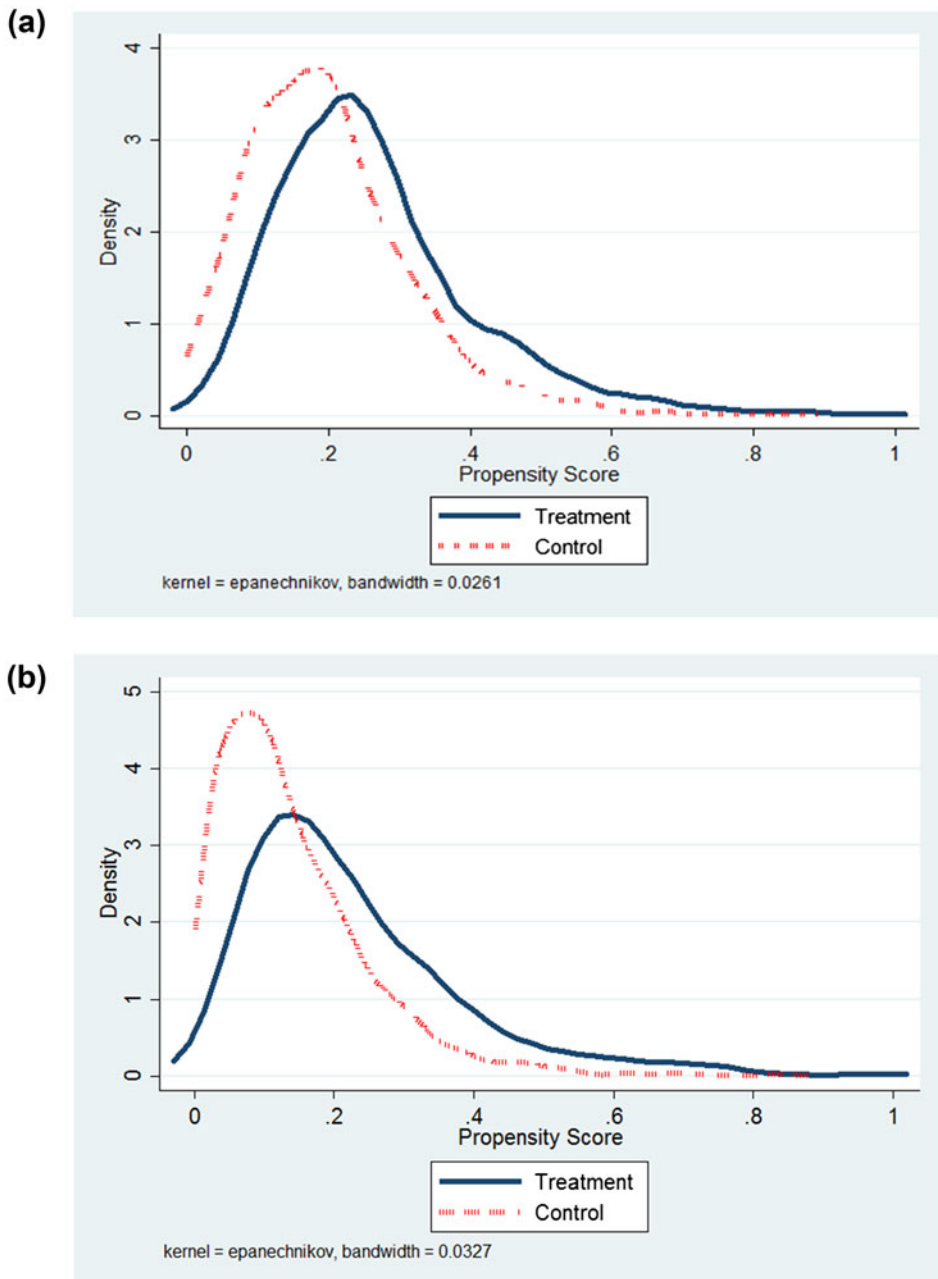
To overcome this type of selection bias, propensity score matching can be used to estimate the ATE by comparing the outcomes of treatment and control groups that, on average, do not systematically differ on observables (Caliendo and Kopeinig 2008; Heckman et al. 1998; Imbens 2015; Konisky and Reenock 2013; Smith and Todd 2005).<sup>12</sup> For unbiased causal inference when using propensity score matching, two conditions must be met. First, outcomes must be uncorrelated with treatment status conditional on observables, referred to as the conditional independence assumption. Second, for all observable characteristics, there must be a positive probability of being in either the treated or control condition, referred to as the common support assumption (Caliendo and Kopeinig 2008; Imbens 2015).

Intuitively, random assignment satisfies the requirements for causal inference by eliminating pre-existing differences between treatment and control groups and thereby eliminating alternative explanations for differences in observed outcomes between groups. Randomization ensures that all participants in a sample share equal probability of selection, and unobserved and observed characteristics are evenly distributed across both treatment and control groups. Since observed and unobserved characteristics are likely correlated, matching on characteristics measured before treatment allows for a closer approximation of randomized treatment and control groups. Similarly, restricting observations to those with common support on all characteristics ensures that matched treatment and comparison groups do not differ in their likelihood of selection for treatment. By employing the conditional independence (CI) and common support assumptions, matching on propensity scores to select into a treatment and comparing treatment and control group outcomes reduce bias relative to standard multivariate regression techniques that control for observables (Abadie and Imbens 2006, 2011; Heinrich 2010; Heinrich, Alessandro, and Gonzalo 2010; Imbens 2015; Konisky and Reenock 2013; Long et al. 2012). If the CI assumption holds, the ATE of coursework and school service can be derived, comparing matched treatment and control group students' outcomes.

I implement propensity score matching as follows. I first estimate students' propensity to select into civics coursework. Specifically, I use flexible logistic regression to estimate the propensity for student  $i$  to take at least one credit hour of civics coursework ( $T$ ) in year  $t$ . The logistic regression interacts all students  $X$  to provide semiparametric estimates of each student's propensity to take the treatment. As shown by Heckman et al. (1998), semiparametric models of selection, such as a flexible logit, estimated with a rich set of covariates and longitudinal data, can dramatically reduce selection bias (see also Imbens 2015).

After estimating propensity scores for each treatment, I examine the distribution of propensity scores to ensure that the common support condition is met. Figure 1a and b show the distribution of propensity scores by treatment and control status for taking a civics course and participating in credited school service, respectively. As the figures show, there is common support of treatment and control group





**Figure 1.** (a) Kernel density plot of distribution of propensity scores by treatment status, taking civics (b) kernel density plot of distribution of propensity scores by treatment status, school service credits.

observations for nearly the full range of propensity scores for both treatments considered. Intuitively, this indicates that the sample contains some students who, conditional on observable characteristics, appear highly likely to select the treatments but do not, and some students who appear highly unlikely to take the treatments but still select into them. This ensures that matches can be made between treatment and control students for all combinations of observable characteristics that influence selection into the treatments.

After assessing the propensity scores, I match treatment and control observations using nearest-neighbor matching with replacement. Nearest-neighbor matching ensures that observations are matched to the nearest possible propensity score and ensures that, in the aggregate, treatment and control groups are similar. The consistency of matching estimators can be sensitive to poor matches (e.g., the nearest-neighbor to a treated observation has substantially different propensity score) (Dehejia and Wahba 2002; Imbens 2015; Smith and Todd 2005). To ensure that the results are robust to the choice of matching algorithm, I also match on the nearest five neighbors, impose a caliper restriction on the nearest-neighbor, and match on all control observations within a caliper (commonly known as radius matching).<sup>13</sup>

Analyzing the treatment effects of voluntary programs offered at multiple sites (in this case, schools) presents a unique problem for matching on propensity scores. Since students systematically sort into different schools on observable dimensions potentially important for measuring the impact of treatments on outcomes, matching on propensity scores derived from the full sample may lead to comparing observationally similar students who received different treatments implemented in different contexts. As an illustrative example, a student in School A, in a high-poverty, urban neighborhood could have an identical propensity score to a student in School B, in a rural, demographically homogenous town. While both students may have an equal likelihood of selection into the treatment, the treatment may differ dramatically for both students.<sup>14</sup> In this instance, matching to the nearest-neighbor within the same school, rather than the nearest-neighbor in the sample, will yield more accurate estimates of the ATE. To account for this issue, I implement the matching algorithm discussed earlier within schools.<sup>15</sup>

If either treatment has a positive effect on PSM-related values (Hypotheses 1 and 2), the ATE will be positive. I begin with an analysis using matching to control for non-random selection into the treatment. After matching, I use propensity adjusted regressions to examine potential heterogeneity in treatment effects across subgroups of students. Finally, I present the estimated relationship between PSM-related values and long-run civic engagement.

## RESULTS

### Matching Estimates

I investigate the relationship between participation in school service activities and PSM-related values further using the propensity score matching strategies described in the previous section. To minimize bias introduced by motivated

selection into the treatment, matching on the propensity to select into the treatment requires balance between the treatment and control groups in observable characteristics. Assuming observed and unobserved variables that may affect both selection of the treatment and the outcome are correlated, reducing the difference in average characteristics between the treatment and control groups will ensure the least biased estimate of treatment effects.<sup>16</sup> Table 3 displays the propensity score matched estimates of the effects of participating in school service or taking a civics course on PSM-related values.<sup>17</sup> In Table 3, each row represents the outcomes of interest in the study, beginning with the PSM-related values index, each PSM-related value, volunteering in the following year, and ending in an extrinsic motivator that should be unaffected by the treatments. Each column of Table 3 indicates a different matching algorithm used to construct the control group, as described earlier. As a result, each cell is the estimated ATE of each treatment on a given outcome, allowing for the direct evaluation of the robustness of the results across matching estimators.

The results in the second row indicate that participating in school service activities leads to a 12-percentage-point increase in the likelihood that a student reports helping others in the community is very important the following year. The results are strongly significant and reflect a substantial change in prosocial values attributable to participation in school service activities. The estimated ATE represents an increase of 33% over the sample mean of the proportion of students who report helping others as very important in tenth grade. Moreover, as indicated in columns 2 through 4, the estimated ATE is robust to the use of alternative matching strategies, although the estimated effect shrinks in magnitude. Notably, when matching on propensity scores to account for potential selection bias, the magnitude of the estimated ATE of school service activities on prosocial values is 33% to 100% larger in magnitude than the effects suggested by the LPM estimates reported in Appendix Table A4, suggesting that the LPM estimates may understate the true effect of school service. Similarly, although the matching estimates of the ATE on the perceived importance of being patriotic remain positive, after accounting for selection, the effect is no longer statistically significant.

In contrast, making a lot of money reflects an extrinsic motivational base often considered uncorrelated with PSM (see Georgellis, Iossa, and Tabvuma 2011) and should be unaffected by participation in service activities. As the results indicate, participating in school service activities for credit corresponds with an eight-percentage-point increase in the likelihood that a student reports volunteering in the following school year. Again, the results are robust to alternative matching estimators and diverge from LPM estimates, suggesting that the LPM estimates may understate the effect of school service activities on continued volunteering as the result of selection bias. Finally, participation in school service activities has no significant effect on a student's perceived valuation of extrinsic motivators.

Columns 5 through 8 of Table 3 similarly evaluate the effect of civics coursework on PSM-related values, volunteering, and extrinsic motivation. After accounting for selection into civics coursework, simple exposure to information on

**TABLE 3**  
Propensity Score Matched Estimates of ATE of Treatments on Outcomes of Interest (Using Within-School Matching)

	School-based service credits				Civics courses			
	NN1 (1)	NN5 (2)	Caliper NN1 (0.1) (3)	Radius (0.1) (4)	NN1 (5)	NN5 (6)	Caliper NN1 (0.1) (7)	Radius (0.1) (8)
PSM	0.08 (0.07)	-0.01 (0.06)	0.01 (0.06)	0.02 (0.05)	-0.02 (0.06)	0.03 (0.05)	-0.05 (0.06)	-0.04 (0.05)
Helping others in the community	0.12 (0.03)***	0.08 (0.03)**	0.08 (0.04)**	0.08 (0.03)***	-0.04 (0.03)	-0.01 (0.03)	-0.04 (0.03)	-0.03 (0.02)
Working to correct inequality	-0.02 (0.03)	-0.02 (0.02)	-0.03 (0.03)	-0.03 (0.02)	-0.02 (0.02)	-0.00 (0.02)	-0.04 (0.02)	-0.04 (0.02)**
Being an informed citizen	0.06 (0.03)*	-0.01 (0.03)	0.02 (0.04)	0.02 (0.03)	0.00 (0.03)	0.01 (0.03)	-0.03 (0.03)	-0.03 (0.03)
Protecting the environment	0.03 (0.03)	-0.00 (0.03)	-0.02 (0.03)	-0.01 (0.02)	0.01 (0.03)	0.02 (0.02)	-0.01 (0.03)	-0.00 (0.02)
Being patriotic	0.04 (0.03)	0.03 (0.03)	0.03 (0.03)	0.04 (0.03)	0.01 (0.03)	0.02 (0.03)	-0.02 (0.03)	-0.02 (0.02)
Making a lot of money	-0.02 (0.03)	0.00 (0.03)	-0.00 (0.03)	-0.01 (0.03)	0.01 (0.03)	-0.00 (0.02)	-0.04 (0.03)	-0.04 (0.02)
N Observations	1,160	2,630	1,150	3,010	1,810	3,520	1,440	3,300
N Treatment	680	680	650	650	1,220	1,220	890	890
N Control	480	1,950	500	2,360	590	2,300	550	2,410

*Note:* Number of observations rounded to the nearest ten in accordance with NCES rules. Each cell represents a unique ATE estimate for each outcome using a given matching algorithm. Propensity score matched standard errors adjusted using Abadie-Imbens robust standard errors to account for propensity score being an estimate; \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

civic institutions does not significantly alter PSM-related values. While column 8 shows that students who took a civics course are four percentage points less likely to find correcting inequalities important the following year than those who did not, the estimate is sensitive to the specified matching algorithm, and should therefore be interpreted with caution.

### Heterogeneity

As previously noted, there may be variation in the effects of participation in school service activities and civics courses across schools. Students from different demographic and socioeconomic backgrounds may respond to service activities and course work in different ways (Ritz et al. 2016; Perry 1997). To test for heterogeneity in the effects of participation in service activities and civics coursework, I estimate propensity-adjusted regressions, which allow for the inclusion of interaction terms that allow the effect of each treatment to vary across groups (Wooldridge 2010:927). Intuitively, since the propensity score is a function of all observable characteristics of students ( $X$ ), the inclusion of the propensity score as a control ensures that the ATE is identified on comparisons to the nearest-neighbor in terms of propensity score. Since the propensity score is estimated, propensity-adjusted regressions may be less efficient than other matching methods (Wooldridge 2010). However, propensity-adjusted regressions provide a means to test for heterogeneous effects of the treatments while still reducing bias relative to LPM. I investigate potential heterogeneity of effects across demographic groups (gender and race) and household characteristics (parental education and religion) previously shown to be important predictors of PSM (Perry 1997).

Table 4 shows that there is relatively little heterogeneity in the estimated effects of participation in school service, with a few exceptions. One exception appears to be related to gender. As the results in the second row indicate, participation in school service activities has an even larger effect on males' PSM-related values than females. As the results in column 1 show, relative to females, participation in school service activities corresponds with an increase of .17 standard deviation on the PSM-related values index, and the effect is significant. The differential effect for males appears to be driven by a higher likelihood that they will find "reducing inequality" and "being patriotic" important the following year relative to females. The bottom row shows that students who took both treatments in their junior year present another exception.

Relative to students who only participated in school-based service and no civics courses, students who took both scored one-fifth of a standard deviation higher on the PSM-related values index, and the differential effect was marginally significant. Similarly, students who took both treatments were 10 percentage points more likely to report that "being patriotic" is important to them. The larger effects of school-based service on students who received both treatments suggest that civics coursework and service have multiplicative effects. That is, the experiences in active forms of service, such as mentoring or student government, can be augmented by formal

**TABLE 4**  
Propensity Adjusted LPM Regressions of Heterogeneous Effects of School-Based Service on Prosocial Values and Behavior

	PSM (1)	Help community (2)	Reduce inequality (3)	Informed citizen (4)	Protect environment (5)	Patriotic (6)
Credit for school	-0.10	0.07	-0.05	-0.00	0.01	0.02
service junior year	(0.11)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)
Male * Treatment	0.17	0.02	0.07	0.03	0.03	0.08
	(0.08)**	(0.04)	(0.03)**	(0.04)	(0.03)	(0.04)*
Black * Treatment	0.07	0.02	-0.01	0.09	-0.04	0.13
	(0.16)	(0.08)	(0.08)	(0.08)	(0.07)	(0.09)
Low income	-0.15	-0.04	0.02	-0.16	-0.06	-0.11
* Treatment	(0.15)	(0.07)	(0.06)	(0.08)**	(0.07)	(0.07)
Christian parents	-0.02	-0.03	-0.05	0.01	-0.04	-0.00
* Treatment	(0.11)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)
Parent advises on	-0.04	-0.04	0.05	-0.05	-0.01	-0.11
courses * Treatment	(0.09)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)***
Mother has college	0.07	0.04	0.03	0.04	-0.02	0.08
degree * Treatment	(0.11)	(0.05)	(0.04)	(0.06)	(0.04)	(0.05)
Student took both	0.20	0.09	0.00	0.07	0.09	0.10
treatments * Treatment	(0.12)*	(0.06)	(0.04)	(0.06)	(0.05)	(0.06)*
School FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls for	Yes	Yes	Yes	Yes	Yes	Yes
propensity score						
Adjusted R <sup>2</sup>	0.02	0.03	0.01	0.01	0.00	0.01
Observations	4,470	4,470	4,470	4,470	4,470	4,470

*Note:* Each column presents a unique regression. Number of observations rounded to the nearest ten in accordance with NCES rules. Robust standard errors clustered at the school level; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

classroom learning about civic participation and engagement in ways that reinforce changes in student values.

Notably, participation in school-based community service lowers the likelihood that low-income students will find “being an informed citizen” very important. Students whose parents are involved in their course-taking decisions show a similar negative effect of service on their perceived importance of “being patriotic.” The reason for these differential effects is unclear. The point estimates for both groups of students are all negative. Moreover, given the context of the two groups, their reasons for participation may be dramatically different from other students and, as a result, their response to the treatment is correspondingly different. For instance, students with parents heavily involved in their high school course taking may have entered school-based service involuntarily. For these students, the negative effects

are consistent with prior evidence that required community service reduces the likelihood of volunteering in the future (Marks and Jones 2004).

Table 5 presents the results of tests for heterogeneity in the effects of civics coursework on PSM-related values and volunteering. Similar patterns emerge in the heterogeneity of the effects of civics coursework on students' PSM-related values, with a few notable differences. First, for students whose parents provide advice on course taking, a civics course increases the likelihood that they find "helping others in the community" important, and the effect is marginally significant. The positive effect contrasts with the negative effects of community service for this group. The negative effect of parental advice on community service outcomes is consistent with previous research documenting negative responses to coerced volunteerism among adolescents (Marks and Jones 2004). Second,

**TABLE 5**

Propensity Adjusted LPM Regressions of Heterogeneous Effects of Civics Coursework on Prosocial Values and Behavior

	PSM (1)	Help community (2)	Reduce inequality (3)	Informed citizen (4)	Protect environment (5)	Patriotic (6)
Took a civics course junior year	-0.01 (0.08)	-0.02 (0.04)	0.03 (0.03)	-0.05 (0.04)	0.01 (0.03)	-0.06 (0.04)
Male * Treatment	0.07 (0.06)	-0.04 (0.03)	-0.02 (0.03)	0.04 (0.03)	0.02 (0.03)	0.10 (0.03)***
Black * Treatment	-0.03 (0.11)	-0.01 (0.06)	-0.07 (0.05)	-0.01 (0.06)	-0.05 (0.05)	0.01 (0.05)
Low income * Treatment	-0.07 (0.12)	-0.06 (0.06)	-0.09 (0.05)**	-0.02 (0.07)	-0.03 (0.05)	-0.00 (0.06)
Christian parents * Treatment	-0.08 (0.08)	-0.00 (0.04)	-0.04 (0.03)	0.00 (0.04)	-0.04 (0.03)	0.01 (0.04)
Parent advises on courses * Treatment	0.09 (0.07)	0.06 (0.04)*	0.03 (0.03)	0.03 (0.04)	0.01 (0.03)	0.02 (0.04)
Mother has college degree * Treatment	-0.06 (0.08)	-0.04 (0.04)	-0.02 (0.03)	0.03 (0.04)	0.01 (0.03)	-0.05 (0.04)
Student took both treatments * Treatment	0.13 (0.11)	0.12 (0.06)**	-0.03 (0.04)	0.07 (0.06)	0.07 (0.05)	0.11 (0.05)**
School FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls for propensity score	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.02	0.03	0.01	0.00	0.01	0.01
Observations	5,490	5,490	5,490	5,490	5,490	5,490

*Note:* Each column presents a unique regression. Number of observations rounded to the nearest ten in accordance with NCES rules. Robust standard errors clustered at the school level; \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

consistent with the heterogeneous effects of community service, students who took both treatments show positive effects from the civics course relative to those who only took a civics course. Specifically, students who took both treatments are significantly more likely to find “helping others in the community” and “being patriotic” important than their peers who took only a civics course. While the positive effect on the perceived importance of helping others can likely be attributed to participation in community service, as the effects broadly resemble the ATE of participation in community service on this value, the positive effect on the perceived importance of being patriotic is likely caused by the combination of the two treatments.

### **PSM, Volunteering, and Long-Run Civic Engagement**

Finally, [Table 6](#) presents the estimated relationship between PSM-related values, measured in the senior year of high school, and prosocial behaviors and long-run civic engagement for the full sample of students for whom there is complete data.<sup>18</sup> The odd-numbered columns examine the relationship between PSM-related values, using the index described previously, and prosocial behaviors and civic engagement. The even-numbered columns estimate the model using the binary measures of the dimensions of PSM-related values, as previously discussed.

First, consistent with theoretical expectations, PSM-related values strongly predict engagement in prosocial behaviors, such as volunteering not for school credit. As the results in column 1 show, an increase of one standard deviation in PSM-related values corresponds with a six-percentage-point increase in the likelihood a student volunteers during their senior year in high school, and the relationship is significant at all conventional levels. Moreover, as the results in column 3 demonstrate, the positive relationship between PSM-related values and volunteering persists two years later. Similarly, the results in columns 5 and 7 show that PSM-related values correspond with civic engagement behaviors beyond high school. Column 5 shows that an increase of one standard deviation in PSM-related values corresponds with an increase of three percentage points in the likelihood a student will vote in both midterm and presidential elections. Column 7 depicts a similar positive and significant relationship between PSM-related values and participating in political organizations two years after high school. However, the treatments examined in the current study only affected one dimension of PSM-related values: commitment to the public interest.

Second, to explore the extent to which the underlying dimensions of PSM-related values affect persistence in volunteerism and civic engagement, columns 2, 4, 6, and 8 estimate the same model using binaries of each underlying dimension (coded as being “very important” to the student, as described previously).<sup>19</sup> Notably, for all but one outcome, the PSM-related value significantly affected by participation in credited school service activities—commitment to the public interest from the PSM literature—has a positive, significant relationship. Students for whom helping others in the community was “very important” in their senior year are 11 percentage points more likely to volunteer not for credit during their senior



**TABLE 6**  
School Fixed-Effect Estimates of Relationship between PSM and Long-Run Prosocial Behavior and Civic Engagement

	Volunteer senior yr.		Volunteer in 2006		Vote both elections		Join political org.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PSM	0.06 (0.00)***		0.05 (0.00)***		0.03 (0.00)***		0.04 (0.00)***	
Helping others in the community	-	0.11 (0.01)***	-	0.08 (0.01)***	-	-0.00 (0.01)	-	0.05 (0.01)***
Working to correct inequality	-	0.02 (0.01)***	-	0.01 (0.01)***	-	0.02 (0.01)**	-	0.02 (0.01)***
Being an informed citizen	-	0.04 (0.01)***	-	0.06 (0.01)***	-	0.06 (0.01)***	-	0.05 (0.01)***
Protecting the environment	-	-0.02 (0.01)	-	-0.03 (0.01)**	-	-0.00 (0.01)	-	-0.00 (0.01)
Being patriotic	-	0.03 (0.01)***	-	0.00 (0.01)	-	0.03 (0.01)***	-	-0.01 (0.01)
Student demographics and SES	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Academic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Motivational base in 10th grade	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.15	0.16	0.12	0.12	0.04	0.05	0.07	0.07
Observations	10,820	10,820	10,880	10,880	10,880	10,880	10,880	10,880

*Note:* Each column presents a unique regression. Number of observations rounded to the nearest ten in accordance with NCES rules. Robust standard errors clustered at the school level; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

year, and eight percentage points more likely to continue volunteering two years after high school. Similarly, those same students who report a high commitment to the public interest are five percentage points more likely to participate in a political organization. Of the prosocial and civic engagement behaviors examined in this study, only voting in national elections remains unrelated to a commitment to the public interest.

## DISCUSSION

Rich, nationally representative data collected from high school students show the effects of participation in school-based community service and civics courses on PSM-related values. Participation in school-based service activities significantly increases student attitudes toward helping others in the community, an important normative component of PSM-related values, while taking civics courses had no discernible effect on PSM-related values. The results lead to the rejection of Hypothesis 1 while providing some support for Hypothesis 2, and underscore the deficiencies in the US civics education noted in the introduction. Although credited school-based service activities do not increase all dimensions of PSM-related values, they significantly increase the public interest dimension. The effect remains consistent across specifications and estimators, and can arguably be given a causal interpretation.

In conjunction with the null results for participation in civics coursework, the findings suggest that early experiences in public service matter more than classroom learning in cultivating the values that motivate public service. Moreover, the results provide some preliminary evidence that suggests that students who participated in both civics courses and service activities experienced even larger changes in PSM-related values, implying that civics curricula may be enhanced by offering more hands-on activities and assignments as part of the coursework. These results are consistent with the enhancement effects of service components documented by Markus et al. (1993). Indeed, the null effect of civics coursework may be attributable to previously documented quality issues with civics education in the US (Kahne and Sporte 2008). The results for school-based service credits are consistent with evidence from studies using AmeriCorps participants (Ward 2014) and college service learning programs (Markus et al. 1993; Seider et al. 2011).

Of course, interest in students' PSM-related values is motivated in part by potential social benefits accrued through increased volunteerism and civic engagement (Perry and Katula 2001). The results of this study demonstrate that PSM-related values, measured in the senior year of high school, correlate with both volunteerism and civic engagement, consistent with Hypotheses 3a, 3b, and 3c. Seniors with high PSM-related values are more likely to vote in both the presidential and midterm elections, more likely to volunteer in their senior year and two years after high school, and more likely to participate in a political organization after high school. Moreover, the importance of helping others in the community was the strongest predictor of volunteering and participating in a political

organization. Indeed, the commitment to the public interest dimension of PSM-related values, measured using this item, had a stronger relationship with these behaviors than academic aspirations, academic ability, and socioeconomic status.

The results observed here are consistent with recent evidence provided by Holbein (2017). Holbein examines the long-run voting patterns of students randomly assigned to an intensive educational program in North Carolina focused on improving students' noncognitive skills. The program involved hands-on activities to teach students' noncognitive and social skills and had a sizable effect on a variety of these skills. In addition, students who participated in the program voted at higher rates, largely attributable to the observed change in noncognitive skills. Here, I demonstrate that, in a national sample of students, hands-on service activities also shape PSM-related values, and these values also increase the likelihood of future political participation.

Broadly, the results presented here are consistent with a "values begetting values" argument of how values pattern motivation and behavior over time. The current study demonstrates that participation in a service activity for school credit can increase values consistent with continued service. Further, the study demonstrates that the values affected by student experiences in service activities motivate persistent engagement in future service, such as volunteering without credit and joining political organizations. While the analysis does not directly address this broader theoretical question, as the data in the ELS preclude such analysis, the results presented here provide some suggestive evidence for further research. Left open are the extent to which these later experiences alter PSM or PSM-related values and what factors in later experiences can build upon existing PSM-related values.

## CONCLUSIONS

When examining the index of PSM-related values that captures the range of values aligned with public institutions, both participation in a civics course and participation in school-based activities have no significant effect on PSM-related values among adolescents. However, using separate measures of the dimensions underlying PSM-related values, school-based community service activities increase the importance of helping others in the community among adolescents. Importantly, this suggests that PSM-related values are malleable, at least in adolescence, and respond to experiences in service roles, such as assisting teachers or office staff, mentoring other students, or running a high school student government.

The malleability of PSM documented here is consistent with the results in previous research documenting contextual factors that can influence existing PSM (Moynihan 2010; Moynihan and Pandey 2007; Pedersen 2015). Moreover, the values that drive PSM may develop additively over time. While participating in school-based community service changed neither students' perceived importance of public values, such as correcting inequalities or protecting the environment, nor the civic duty dimension of PSM-related values, such as the importance of being an informed citizen, the observed increase in commitment to the public interest

could indicate that the development of PSM-related values begins with the desire to help others. As adolescents grow and continue their education, the pursuit of helping others leads to consideration of the means available to help their communities. Prosocial goals developed early on may provide the foundation for PSM, with additional values specific to participation in public service developing over time in pursuit of those goals. Considering the broader consensus that personality and motivational base tend to gain rigidity later in life (Terracciano et al. 2006), interventions that can cultivate prosocial motivation earlier in life play an important role in building and maintaining social capital and increasing civic engagement.

These results carry important implications for research, policy, and practice. For researchers, more attention must be paid to the social forces and individual characteristics that contribute to the development of PSM and PSM-related values. Evidence suggests that PSM correlates with better employee outcomes, such as satisfaction and engagement, in some occupations in the public sector (e.g., Mostafa, Gould-Williams, and Bottomley 2015; Naff and Crum 1999; Vandenabeele 2009). Since prosocial motives aligned with context-specific public institutions lay at the center of PSM, investigating the social inputs that cultivate PSM will provide insights for public managers and policymakers alike for training the public service corps of today and tomorrow. While the current study provides evidence about the role of two aspects of education—civics coursework and service activities—in developing PSM, other mechanisms, such as family inputs or political environment, may play important roles as well. In addition, the current study examines only United States adolescents. The development of PSM may be different in other nations with different forms of government.

Finally, further investigation into the development of PSM may improve how we understand and apply PSM. For instance, if prosocial goals, such as helping others, form the foundation of PSM, public managers might structure tasks that provide staff with more opportunities for direct provision of services beneficial to the public (Belle 2013; Grant 2008; Grant et al. 2007). Alternatively, if different elements of PSM develop based on different inputs or experiences, PSM may influence not only entry into the public sector broadly, but sorting into specific occupations within the public sector. It could be the case that, with some social inputs, attraction to the policy process develops first and guides the development of other PSM values, leading a person to enter a political occupation (e.g., legislative staff, running for office) in place of a street-level or technocratic position in the bureaucracy. If the latter is the case, the lessons for public managers on how to benefit from PSM would be more context specific. Future research illuminating the order in which the elements of PSM form and affect later outcomes would greatly improve our theoretical understanding of the way PSM interacts with public sector occupations.

The findings presented here also offer important considerations for policymakers. The study provides robust evidence that school-based service activities rewarded with credit lead to substantial changes in students' prosocial values and behaviors. As Marks and Jones (2004) note, the most effective assurance that students will continue to engage in socially beneficial behaviors, such as volunteering,

is ensuring that the service experience leads to a change in social values. The findings presented here suggest that offering school credit for community service activities may be an effective strategy for cultivating the social values important for persistent volunteerism and public service in the future.

As previously highlighted, many schools do not offer credits for school-based service activities. Expanding access to credited service activities likely provides large returns in social capital. Despite the potential benefits of school-based community service, limited school resources and time in a school day imply the potential trade-offs involved in community service programs. Mandated volunteering programs would not necessarily generate positive effects for all students (Marks and Jones 2004), and might displace time allocated to other beneficial subjects. As Marks and Jones (2004) note, mandatory community service may disengage student interest in future volunteering, as the obligation might lead students to associate volunteering with inconvenience. However, the results presented here suggest that expanding service opportunities for credit across more schools may induce more students to engage in service activities without mandatory service participation. Although receipt of credit may represent an extrinsic reward that induces some students into community service for reasons besides PSM-related values, the experience in credited service activities shapes PSM-related values, which, in turn, leads to higher rates of future volunteering. Moreover, in the absence of credited service activities, students would still need to fill their credit obligation with other courses; thus, rather than school credit reflecting a purely extrinsic reward, the offer of credit for community service may simply aid in making participation in service activities a more viable choice for students as they substitute away from other credited courses. Nevertheless, future research should examine the possibility that extrinsic benefits associated with early service experiences crowd out some intrinsic motivations to engage in volunteering or service.

Although civics coursework alone does not appear to affect students' values in an appreciable way, previous research has documented other important benefits from civics coursework, such as improved knowledge of government (Gimpel et al. 2003; Manning and Edwards 2014). As others have noted, the quality of civics education in the United States varies substantially across schools (Kahne and Spote 2008), which carries problematic implications for the socioeconomic distribution of engaged, active citizens with a strong knowledge of their government. In democratic governments, the production of engaged, active citizens from all corners of society represents an important component of healthy, sustainable self-governance, underscoring the importance of future research exploring effective means for improving civics education. One area of future research to build on this study could investigate different civics curricula and practices with an eye toward the effect on students' PSM and related values and behaviors. Indeed, the larger effects observed in this study among students who participated in both treatments suggest that hands-on civic activities and classroom learning may complement one another. Civics curricula that incorporate hands-on activities, such as participating in a local city council meeting, may be an effective way to build on traditional classroom learning.

## NOTES

1. Table A1 in the Appendix lists the items in the social values section of the ELS:2002 and maps the items to the closest item in the Perry (1996) instrument. Notably, the items cover four dimensions of the original six dimensions of PSM proposed by Perry and four of the five dimensions in the more recent instrument proposed by Kim et al. (2013). Moreover, as Wright, Christensen, and Pandey (2013) demonstrate, more global measures of PSM that use fewer items are strongly correlated with PSM measured using longer instruments.
2. Among the full set of items in the values section of the survey, five latent factors were identified. The PSM factor has a Cronbach's alpha of 0.72, which suggests that responses to the public service motivation related items are highly correlated. After identifying the latent factors using principal components factor analysis, I conducted confirmatory factor analysis on the PSM items to evaluate the reliability of the items in measuring the underlying PSM factor. Following Kim et al. (2013), I evaluate the reliability of each factor per the comparative fit index (CFI), root mean square error of approximation (RMSEA), and the standardized root mean residual (SRMR), which are robust to the use of large samples. The PSM factor in the ELS has a CFI of 0.97, RMSEA of 0.08, and SRMR of 0.03, all of which suggest that the model of PSM using the ELS items fit the data well.
3. Using a binary indicator for the highest level of a given dimension allows for the identification of movement in a consistent direction and eases the intuition of inference made when interpreting the estimated coefficients. Multinomial logistic regressions with controls for observables provide estimates consistent with the primary findings of the analysis presented here. However, multinomial logistic regressions, appropriate for estimating models with a discrete categorical set of outcomes, do not account for potential selection bias.
4. Carnegie units of credits are provided by the ELS. A Carnegie unit measures the equivalent of taking one secondary-level course that meets every day for a full year. For instance, a 0.5 Carnegie unit of civics course work would be equivalent to being in a civics course that met every day for half of the year.
5. See Appendix Table A2 for a list of civics courses and credited school-based service activities used in the analysis.
6. A small number of students take either treatment in their freshman or sophomore years. Including them in the analysis yields strongly similar results.
7. Note that the full sample with non-missing data on relevant variables includes approximately 10,880 students; however, I restrict the sample to schools in which there is variation in participation in civics coursework and school-based service activities. If all students or no students participate at a given school, the school is dropped from the sample. All instances in which schools are dropped is due to no participation in civics coursework or civics service within the school, rather than complete participation. In line with prior research (e.g., Kahne and Middaugh 2009), overall in the sample, only

about 11% of students take a civics course their junior year, and these students tend to be from higher SES backgrounds. Similarly, about 7% of students participate in school-based service activities in their junior year and are also more likely to come from higher SES backgrounds. As a result, this study is generalizable to the extent that it reflects national gaps in access to civics coursework and credited school-based service activities; however, observed effects of civics coursework and school service are limited to those who attend a school with a civics course or school service for credit available. Consistent with NCES regulations on restricted-use data, the number of observations is rounded to the nearest ten.

8. Table A7 in the Appendix recreates the main results, excluding students who took both treatments, and demonstrates that the results are robust to their exclusion.
9. Logit estimates of (1) in Appendix Table A8 are similar to OLS estimates in Table A4 in direction and significance. The coefficients of logit regressions are not directly comparable to OLS estimates. The inclusion of school fixed-effects makes the calculation of average partial effects (APE) comparable to OLS impossible.
10. Appendix Table A4 contains LPM estimates of (1).
11. The same concern applies to logistic and probit regression estimators. While nonlinear estimators account for the binary nature of the outcome variable, they do not account for unobserved characteristics that drive selection into the treatments.
12. An alternative approach to account for endogenous selection into the treatment follows an instrumental variable (IV) approach proposed by Altonji (1995). Since student course selection might be, in part, attributable to endogenous selection into the school based on average course offerings, Altonji proposes using school-level average credits per subject in eight subjects as an instrument for participation in a given course. However, as Altonji notes, variation in curricula across schools is likely to be correlated with student and family characteristics and, as a result, the IV estimate might also be biased. While the IV approach accounts for endogenous selection into the school, it fails to account for endogenous student-level factors associated with sorting into the treatment. Appendix Table A4 implements Altonji's IV approach using two-stage least squares (2SLS).
13. A caliper is a cut-point in the allowable distance in propensity score between a treatment and control observation for a match to be made. Observations without a match within the defined caliper are dropped from the analysis. As Dehejia and Wahba (2002) show, estimated effects can vary substantially, conditional on the caliper chosen. Since caliper selection can lead to significant reductions in the sample size, the choice of a caliper involves tradeoffs between bias and efficiency (Caliendo and Kopeinig 2008). I present estimates using a caliper of 0.1, which resulted in the lowest estimated bias. Appendix Table A6 presents the primary results using

calipers of .01 and .001, respectively. As shown in the Appendix, the direction of the estimates is consistent across matching estimators; however, using more restrictive calipers, the estimates are less precise due to the substantial reduction in sample size.

14. One could also consider the possibility that schools that do not offer the treatment could serve as a good control group. That is, examining the effect of either treatment relative to a student who would be equally likely to take the treatment, but did not have the opportunity, could also be insightful. Appendix Table A9 replicates the baseline results, but matches treatment students with controls from schools that did not have civics courses or service activities observed at their school during the junior year. The results are strikingly similar to the baseline results.
15. Matching with replacement ensures that control group observations most closely resemble the treatment observations with which they are matched. While there is common support across most of the range of propensity scores, some “bins” of scores have fewer observations than others. Thus, matching without replacement would likely lead to less similar matches. Moreover, matching within schools using outcome measures collected in the same survey instrument for both treatment and control groups satisfies the requirements for consistent matching estimators identified by Heckman et al. (1998) and Smith and Todd (2005). Appendix Table A5 replicates Table 6 in the main text using a matching strategy that allows matches to occur across schools, and the results are strikingly consistent.
16. Appendix Tables A10 and A11 present the difference in average characteristics between treatment and control groups before and after matching on propensity scores using a variety of matching algorithms. Intuitively, the differences in the effectiveness of the matching algorithms represent a trade-off between the precision offered by a larger sample of students and the increased bias of using control group observations which may not be as well-matched. The Rosenbaum and Rubin (1985) measure of bias, the standardized percent of the average difference between treatment and control on observables commonly used in evaluating matching on propensity scores, is reported in the final two rows.
17. Conducting multiple hypothesis tests increases the likelihood of Type I or family-wise error. That is, the likelihood of finding false positive results increases as the number of hypothesis tests increases. These concerns are unlikely to apply to the primary results of the current study. First, the primary findings, regarding both the effect of service credits on the public interest dimension of PSM and the relationship between PSM and civic engagement, are robust to both Bonferroni and Benjamini-Hochberg adjustments of the t-test (see Schochet 2009 for a discussion of these adjustments). Second, there is strong theoretical grounding and support for both the analysis and results. Third, the results are robust to a variety of estimators and matching approaches.



18. The results presented here are consistent in both the school-service and civics coursework analytic samples.
19. The results are robust to the inclusion of all categories of responses (e.g., adding a binary for “somewhat important” responses to each item in the PSM index). However, for clarity and consistency with previous analyses, the estimates using only binaries for the highest category versus all others are taken as the preferred estimates.

## ORCID

Stephen B. Holt  <http://orcid.org/0000-0002-9162-661X>

## REFERENCES

- Abadie, A., and G. W. Imbens. 2006. “Large Sample Properties of Matching Estimators for Average Treatment Effects.” *Econometrica*, 74(1):235–267.
- Abadie, A., and G. W. Imbens. 2011. “Bias-Corrected Matching Estimators for Average Treatment Effects.” *Journal of Business and Economic Statistics*, 29(1):1–11.
- Adelman, C. 2006. *The Toolbox Revisited: Paths to Degree Completion from High School Through College*. Washington DC: U.S. Department of Education.
- Altonji, J. G. 1995. “The Effects of High School Curriculum on Education and Labor Market Outcomes.” *The Journal of Human Resources*, 30(3):409–438.
- Altonji, J. G., E. Blom, and C. Meghir. 2012. *Heterogeneity in Human Capital Investments: High School Curriculum, College Major, and Careers* (NBER: Working paper No. 17985).
- Anderfuhren-Biget, S., F. Varone, D. Giauque, and A. Ritz. 2010. “Motivating Employees of the Public Sector: Does Public Service Motivation Matter?” *International Public Management Journal*, 13(3):213–246.
- Andersen, L. B., E. Heinesen, and L. HolmPedersen. 2014. “How does Public Service Motivation among Teachers Affect Student Performance in Schools?” *Journal of Public Administration Research and Theory*, 24(3):651–671.
- Astin, A., L. Sax, and J. Avalos. 1999. “Long-Term Effects of Volunteerism During the Undergraduate Years.” *The Review of Higher Education*, 22(2):187–202.
- Au, W. 2007. “High-Stakes Testing and Curricular Control: A Qualitative Metasynthesis.” *Educational Researcher*, 36(5):258–267.
- Barsoum, G. 2016. “The Public Sector as the Employer of Choice among Youth in Egypt: The Relevance of Public Service Motivation Theory.” *International Journal of Public Administration*, 39(3):1–11.
- Behn, R. D. 1995. “The Big Questions of Public Management.” *Public Administration Review*, 55(4):313–324.
- Belle, N. 2013. “Experimental Evidence on the Relationship between Public Service Motivation and Job Performance.” *Public Administration Review*, 73(1):143–153.
- Bishop, J. H., and F. Mane. 2004. “The Impacts of Career-Technical Education on High School Labour Market Success.” *Economics of Education Review*, 23(4):381–402.
- Borghans, L., A. L. Duckworth, J. J. Heckman, and B. Weel. 2008. “The Economics and Psychology of Personality Traits.” *The Journal of Human Resources*, 43(4):972–1059.

- Boyte, H. C., and N. N. Kari. 1996. *Building America: The Democratic Promise of Public Work*. Philadelphia, PA: Temple University Press.
- Bozeman, B., and X. Su. 2015. "Public Service Motivation Concepts and Theory: A Critique." *Public Administration Review*, 75(5):700–710.
- Brewer, G. A., and S. C. Selden. 1998. "Whistle Blowers in the Federal Service: New Evidence of the Public Service Ethic." *Journal of Public Administration Research and Theory*, 8(3):413–440.
- Brewer, G. A., S. C. Selden, and R. L. Facer II. 2000. "Individual Conceptions of Public Service Motivation." *Public Administration Review*, 60(3):254–264.
- Brewer, G. A. 2003. "Building Social Capital: Civic Attitudes and Behavior of Public Servants." *Journal of Public Administration Research and Theory*, 13(1):5–26.
- Bright, L. 2011. "Does Public Service Motivation Effect the Occupation Choices of Public Employees?" *Public Personnel Management*, 40(1):11–24.
- Bright, L. 2016. "Is Public Service Motivation a Better Explanation of Nonprofit Career Preferences Than Government Career Preferences?" *Public Personnel Management*, 45(4):405–424.
- Caliendo, M., and S. Kopeinig. 2008. "Some Practical Guidance for the Implementation of Propensity Score Matching." *Journal of Economic Surveys*, 22(1):31–72.
- Carpenter, J., D. Doverspike, and R. F. Miguel. 2012. "Public Service Motivation as a Predictor of Attraction to the Public Sector." *Journal of Vocational Behavior*, 80(2):509–523.
- CIRCLE. 2016. *Young Voters in the 2016 General Election: Data and Analysis of Youth Turnout, Vote Choice, and Composition of the Electorate*. Tufts University: The Center for Information and Research on Civic Learning and Engagement.
- Conger, D., M. C. Long, and P. Iatarola. 2009. "Explaining Race, Gender, and Poverty Disparities in Advanced Course-Taking." *Journal of Policy Analysis and Management*, 28(4):555–576.
- Cooper, H., J. J. Lindsay, B. Nye, and S. Greathouse. 1998. "Relationships among attitudes about homework, amount of homework assigned and completed, and student achievement." *Journal of Educational Psychology*, 90(1):70–83.
- Costa, P. T. Jr., and R. R. McCrae. 1994. "Set Like Plaster? Evidence for the Stability of Adult Personality." Pp. 21–40 (Vol. 86) in *Can Personality Change?*, edited by T. F. Heatherton and J. L. Weinberger. Washington, DC, US: American Psychological Association.
- Charbonneau, E., and G. G. Van Ryzin. 2016. "Exploring the Deep Antecedent of Public Service Motivation." *International Journal of Public Administration*, 35(1):1–7.
- Christensen, R. K., L. Paarlberg, and J. L. Perry. 2017. "Public Service Motivation Research: Lessons for Practice." *Public Administration Review*, 77(4):529–542.
- Christensen, R. K., and B. E. Wright. 2011. "The effects of Public Service Motivation on Job Choice Decisions: Disentangling the Contributions of Person-Organization Fit and Person-Job Fit." *Journal of Public Administration Research and Theory*, 21(4):723–743.
- CNCS. 2006. *Youth Helping America: Educating for Active Citizenship: Service Learning, School Based Service, and Youth Civic Engagement*. Washington DC: Corporation for National and Community Service.
- Crewson, P. E. 1997. "Public-Service Motivation: Building Empirical Evidence of Incidence and Effect." *Journal of Public Administration Research and Theory*, 7(4):499–518.
- Dehejia, R. H., and S. Wahba. 2002. "Propensity Score Matching Methods for Non-Experimental Causal Studies." *The Review of Economics and Statistics*, 84(1): 51–161.

- Delfgaauw, J., and R. Dur. 2007. "Signaling and Screening of Workers' Motivation." *Journal of Economic Behavior and Organization*, 62(4):605–24.
- Delfgaauw, J., and R. Dur. 2008. "Incentives and Workers' Motivation in the Public Sector." *The Economic Journal*, 118(525):171–91.
- Deming, D. J. 2009. "Early Childhood Intervention and Life-Cycle Skill Development: Evidence from Head Start." *American Economic Journal: Applied Economics*, 1(3):111–134.
- Deming, D. J. 2011. "Better Schools, Less Crime?" *The Quarterly Journal of Economics*, 126(4):2063–2115.
- Deming, D. J. 2015. *The Growing Importance of Social Skills in the Labor Market*. National Bureau of Economic Research. No. w21473.
- Duncan, G. J., and K. Magnuson. 2011. "The nature and impact of early achievement skills, attention skills, and behavior problems." Pp. 47–70 in *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*, edited by Greg J. Duncan and Richard J. Murnane. New York, NY: Russell Sage Foundation.
- Dur, R., and R. Zoutenbier. 2014. "Working for a Good Cause." *Public Administration Review*, 74(2):144–155.
- Ertas, N. 2014. "Public Service Motivation Theory and Voluntary Organizations: Do Government Employees Volunteer More?" *Nonprofit and Voluntary Sector Quarterly*, 43(2):254–271.
- Farkas, G. 2011. "Middle and High School Skills, Behaviors, Attitudes, and Curriculum Enrollment, and their Consequences." in *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*, edited by Greg J. Duncan and Richard J. Murnane. New York, NY: Russell Sage Foundation.
- Federman, M. 2007. "State graduation requirements, high school course taking, and choosing a technical college major." *The BE Journal of Economic Analysis & Policy*, 7(1):1935–1682.
- Fehr, E., and U. Fischbacher. 2002. "Why Social Preferences Matter - The Impact of Non-Selfish Motives on Competition, Cooperation and Incentives." *The Economic Journal* 112(478):C1– C33.
- Foa, R. S., and Y. Mounk. 2016. "The Democratic Disconnect." *Journal of Democracy*, 27(3):5–17.
- Galston, W. A. 2001. "Political Knowledge, Political Engagement, and Civic Education." *Annual Review of Political Science*, 4, 217–234.
- Georgellis, Y., E. Iossa, and V. Tabvuma. 2011. "Crowding Out Intrinsic Motivation in the Public Sector." *Journal of Public Administration Research and Theory*, 21(3):473–493.
- Gimpel, J. G., J. C. Lay, and J. E. Schuknecht. 2003. *Cultivating Democracy: Civic Environments and Political Socialization in America*. Washington DC: Brookings Institute.
- Grant, A. M. 2008. "Employees without a Cause: The Motivational Effects of Prosocial Impact in Public Service." *International Public Management Journal*, 11(1):48–66.
- Grant, A. M., E. M. Campbell, G. Chen, K. Cottone, D. Lapedis, and K. Lee. 2007. "Impact and the art of Motivation Maintenance: The Effects of Contact with Beneficiaries on Persistence Behavior." *Organizational Behavior and Human Decision Processes*, 103(1):53–67.
- Hart, D., T. M. Donnelly, J. Youniss, and R. Atkins. 2007. "High School Community Service as a Predictor of Adult Voting and Volunteering." *American Educational Research Journal*, 44(1):197–219.

- Heckman, J. J., H. Ichimura, J. Smith, and P. Todd. 1998. "Characterizing Selection Bias Using Experimental Data." *Econometrica*, 66(5):1017–1098.
- Heckman, J. J., and Y. Rubinstein. 2001. "The Importance of Noncognitive Skills: Lessons from the GED Testing Program." *American Economic Review*, 91(2):145–149.
- Heinrich, C. J. 2010. "Third-Party Governance Under No Child Left Behind: Accountability and Performance Management Challenges." *Journal of Public Administration Research and Theory*, 20(1):59–80.
- Heinrich, C. J., M. Alessandro, and V. Gonzalo. 2010. *A Primer for Applying Propensity-Score Matching A Primer for Applying Propensity-Score Matching Impact-Evaluation Guidelines*. Inter-American Development Bank, 1–59.
- Holbein, J. B. 2017. "Childhood Skill Development and Adult Political Participation." *American Political Science Review*, 111(3):572–583.
- Holt, S. B. 2018. "For Those Who Care: The Effect of Public Service Motivation on Sector Selection." *Public Administration Review*, 78(3):457–471.
- Houston, D. L. 2000. "Public-Service Motivation: A Multivariate Test." *Journal of Public Administration Research and Theory*, 10(4):713–728.
- Houston, D. L. 2006. "'Walking the Walk" of Public Service Motivation: Public Employees and Charitable Gifts of Time, Blood, and Money." *Journal of Public Administration Research and Theory*, 16(1):67–86.
- Imbens, G. W. 2015. "Matching Methods in Practice: Three Examples." *The Journal of Human Resources*, 50(2):373–419.
- Jackson, M. 2009. "Responsibility versus accountability in the Friedrich-Finer debate." *Journal of Management History*, 15(1):66–77.
- Jackson, C. K. 2016. *What do Test Scores Miss? The Importance of Teacher Effects on Non-test Score Outcomes* (NBER Working Paper No.22226).
- Jacob, B. 2002. "Where the Boys aren't: Non-Cognitive Skills, Returns to School, and the Gender Gap in Higher Education." *Economics of Education Review*, 21(6):589–598.
- Jacobsen, C. B., J. Hvitved and L. B. Andersen. 2014. "Command and Motivation: How the Perception of External Interventions Relates to Intrinsic Motivation and Public Service Motivation." *Public Administration*, 92(4):790–806.
- Journell, W. 2015. "We Still Need You! An Update on the Status of K-12 Civics Education in the United States." *PS: Political Science and Politics*, 48(4):630–634.
- Kahne, J., and E. Middaugh. 2009. "Democracy for Some: The Civic Opportunity Gap in High School." Pp. 29–58 in *Engaging Young People in Civic Life*, edited by Jim Youniss and Peter Levine. Nashville, TN: Vanderbilt University Press.
- Kahne, J. E., and S. E. Sporte. 2008. "Developing Citizens: The Effect of Civics Learning Opportunities on Students' Commitment to Civic Participation." *American Educational Research Journal*, 45(3):738–766.
- Kim, S. 2005. "Individual-Level Factors and Organizational Performance in Government Organizations." *Journal of Public Administration and Theory*, 15(2):245–261.
- Kim, S., W. Vandenabeele, B. E. Wright, L. B. Andersen, F. P. Cerase, R. K. Christensen, C. Desmarais, M. Koumenta, P. Leisink, B. Liu, et al. 2013. "Investigating the Structure and Meaning of Public Service Motivation across Populations: Developing an International Instrument and Addressing Issues of Measurement Invariance." *Journal of Public Administration Research and Theory*, 23(1):79–102.
- Kjeldsen, A. M., and L. B. Andersen. 2013. "How pro-social motivation effects job satisfaction: An international analysis of countries with different welfare state regimes." *Scandinavian Political Studies*, 36:153–176.

- Koehler, M., and H. G. Rainey. 2008. "Interdisciplinary Foundations of Public Service Motivation." Pp. 33–55 in *Motivation in Public Management*, edited by J. L. Perry and A. Hondeghem. New York, NY: Oxford University Press.
- Konisky, D. M., and C. Reenock. 2013. "Case Selection in Public Management Research: Problems and Solutions." *Journal of Public Administration Research and Theory*, 23(2):361–393.
- Lee, Y. 2012. "Behavioral Implications of Public Service Motivation: Volunteering by Public and Nonprofit Employees." *American Review of Public Administration*, 42(1): 1–18.
- Long, M. C., D. Conger, and P. Iatarola. 2012. "Effects of High School Course-Taking on Secondary and Postsecondary Success." *American Educational Research Journal*, 49(2):285–322.
- Long, M. C., P. Iatarola, and D. Conger. 2009. "Explaining Gaps in Readiness for College-Level Math: The Role of High School Courses." *Education Finance and Policy*, 4(1):1–33.
- Low, K., S. Douglas, and J. Rounds. 2007. "Interest Change and Continuity from Early Adolescence to Middle Adulthood." *International Journal for Educational and Vocational Guidance*, 7(1):23–36.
- Manning, N., and K. Edwards. 2014. "Does Civic Education for Young People Increase Political Participation? A Systematic Review." *Educational Review*, 66(1):22–45.
- Marks, H. M., and S. R. Jones. 2004. "Community Service in the Transition: Shifts and Continuities in Participation from High School to College." *The Journal of Higher Education*, 75(3):307–339.
- Markus, G. B., J. P. Howard, and D. C. King. 1993. "Integrating community service and classroom instruction enhances learning: Results from an experiment." *Educational Evaluation and Policy Analysis*, 15(4):410–419.
- McAdams, D. P., and J. L. Pals. 2006. "A New Big Five: Fundamental Principles for an Integrative Science of Personality." *American Psychologist*, 61(3):204–217.
- McDonald, M. P. 2016. *Voter Turnout Demographics*. Retrieved ([Electionproject.org](http://Electionproject.org)).
- Morgan, W., and M. Streb. 2001. "Building Citizenship: How Student Voice in Service-Learning Develops Civic Values." *Social Science Quarterly*, 82(1):154–169.
- Mostafa, A. M. S., J. S. Gould-Williams, and P. Bottomley. 2015. "High-performance human resource practices and employee outcomes: The mediating role of public service motivation." *Public Administration Review*, 75(5):747–757.
- Moynihan, D. P. 2010. "A Workforce of Cynics? The Effects of Contemporary Reforms on Public Service Motivation." *International Public Management Journal*, 13(1):24–34.
- Moynihan, D. P., and S. K. Pandey. 2007. "The Role of Organizations in Fostering Public Service Motivation." *Public Administration Review*, 67(1):40–53.
- Naff, K. C., and J. Crum. 1999. "Working for American: Does Public Service Motivation Make a Difference?" *Review of Public Personnel Administration*, 19(4):5–16.
- Najmabadi, S. 2017. *How Colleges Can Teach Students to Be Good Citizens*. Washington, D.C: The Chronicle of Higher Education.
- National Center for Education Statistics. 2011. *The Nation's Report Card: Summary of Major Findings*. Washington, DC: Institute of Education Sciences, U.S. Department of Education.
- National Center for Education Statistics. 2016. *The Nation's Report Card: Overview*. Retrieved ([www.nationsreportcard.gov](http://www.nationsreportcard.gov)).
- Nelson, C. A. III, and M. A. Sheridan. 2011. "Lessons from Neuroscience Research for Understanding the Causal Links between Family and Neighborhood Characteristics and Educational Outcomes." In *Whither Opportunity? Rising Inequality, Schools, and*

- Children's Life Chances*, edited by Greg J. Duncan and Richard J. Murnane. New York, NY: Russell Sage Foundation.
- Niemi, R. G., and J. Smith. 2001. "Enrollments in High School Government Classes: Are We Short-Changing Both Citizenship and Political Science Training?" *PS: Political Science and Politics*, 34(2):281–287.
- Norris, P. 2003. "Is There Still a Public Service Ethos? Work Values, Experience, and Job Satisfaction among Government Workers." Pp.72–89 in *For the People- Can We Fix Public Service?*, edited by John D. Donahue and Joseph S. Nye Jr. Washington, DC: Brookings Institute.
- Pandey, S. K., and E. C. Stazyk. 2008. "Antecedents and Correlates of Public Service Motivation." Pp. 33–55 in *Motivation in Public Management*, edited by James L. Perry and Annie Hondeghem. New York, NY: Oxford University Press.
- Park, S. M., and H. G. Rainey. 2008. "Leadership and Public Service Motivation in US Federal Agencies." *International Public Management Journal*, 11(1):109–142.
- Pedersen, M. J. 2015. "Activating the Forces of Public Service Motivation: Evidence from a Low-Intensity Randomized Survey Experiment." *Public Administration Review*, 75(5):734–746.
- Perry, J. L. 1996. "Measuring Public Service Motivation: An Assessment of Construct Reliability and Validity." *Journal of Public Administration Research and Theory*, 6(1):5–22.
- Perry, J. L. 1997. "Antecedents of Public Service Motivation." *Journal of Public Administration Research and Theory*, 7(2):181–197.
- Perry, J. L. 2000. "Bringing in Society: Toward a Theory of Public Service Motivation." *Journal of Public Administration Research and Theory*, 10(2):471–488.
- Perry, J. L., and A. Hondeghem. 2008. *Motivation in Public Management: The Call of Public Service*. New York, NY: Oxford University Press.
- Perry, J. L., and M. Katula. 2001. "Does Service Affect Citizenship?" *Administration & Society*, 33(3):330–365.
- Perry, J. L., and W. Vandenberg. 2015. "Public Service Motivation Research: Achievements, Challenges, and Future Directions." *Public Administration Review*, 75(5):692–699.
- Perry, J. L., and L. R. Wise. 1990. "The motivational bases of public service." *Public Administration Review*, 50(3):367–373.
- Pew Research Center. 2015. *Beyond Distrust: How Americans View Their Government*. Washington, D.C: Pew Research.
- Piatak, J. S. 2015. "Altruism by Job Sector: Can Public Sector Employees Lead the Way in Rebuilding Social Capital?" *Journal of Public Administration Research and Theory*, 25(3):877–900.
- Pondiscio, R. 2016. "Now or Never for Civics Education." *U.S. News and World Report*, November 22.
- Rainey, H. G. 1982. "Reward Preferences among Public and Private Managers: In Search of the Public Service Ethic." *American Review of Public Administration*, 16(4):288–302.
- Ritz, A., G. A. Brewer, and O. Neumann. 2016. "Public Service Motivation: A Systematic Literature Review and Outlook." *Public Administration Review*, 76(3):414–426.
- Roberts, B. W., K. E. Walton, and W. Viechtbauer. 2006. "Patterns of Mean-Level Change in Personality Traits Across Life Course: A Meta-Analysis of Longitudinal Studies." *Psychological Bulletin*, 132(1):1–25.
- Rosenbaum, P. R., and D. B. Rubin. 1985. "Constructing a Control Group Using Multivariate Matched Sampling Methods That Incorporate the Propensity Score." *The American Statistician*, 39(1):33–38.

- Rubin, D. B. 2008. "For Objective Causal Inference, Design Trumps Analysis." *The Annals of Applied Statistics*, 2(3):808–840.
- Schochet, P. Z. 2009. "An Approach for Addressing the Multiple Testing Problem in Social Policy Impact Evaluations." *Evaluation Review*, 33(6):539–567.
- Seider, S. C., S. A. Rabinowicz, and S. C. Gillmor. 2011. "The Impact of Philosophy and Theology Service-Learning Experiences upon the Public Service Motivation of Participating College Students." *The Journal of Higher Education*, 82(5):597–628.
- Simon, H. A. 1952. "A comparison of organisation theories." *The Review of Economic Studies*, 20(1):40–48.
- Smith, E. 1999. "The Effects of Investments in the Social Capital of Youth on Political and Civic Behavior in Young Adulthood: A Longitudinal Analysis." *Political Psychology*, 20(3):553–580.
- Smith, J. A., and P. Todd. 2005. "Does Matching Overcome LaLonde's Critique of Nonexperimental Estimators?" *Journal of Econometrics*, 125(1–2):305–353.
- Terracciano, A., P. T. Costa, and R. R. McCrae. 2006. "Personality Plasticity After Age 30." *Personality and Social Psychology Bulletin*, 32(8):999–1009.
- Trusty, J. 2002. "Effects of High School Course-Taking and Other Variables on Choice of Science and Mathematics College Majors." *Journal of Counseling and Development*, 80(4):464–474.
- Vanberg, V. J. 2008. "On the Economics of Moral Preferences." *American Journal of Economics and Sociology*, 67(4):605–628.
- Vandenabeele, W. 2009. "The mediating effect of job satisfaction and organizational commitment on self-reported performance: more robust evidence of the PSMâ performance relationship." *International Review of Administrative Sciences*, 75(1):11–34.
- Van Witteloostuijn, A., M. Esteve, and G. Boyne. 2017. "Public sector motivation ad fonts: Personality traits as antecedents of the motivation to serve the public interest." *Journal of Public Administration Research and Theory*, 27(1):20–35.
- Vogel, D., and A. Kroll. 2015. "The Stability and Change of PSM-Related Values across Time: Testing Theoretical Expectations against Panel Data." *International Public Management Journal*, 19(1):53–77.
- Ward, K. 2014. "Cultivating Public Service Motivation through AmeriCorps service: A Longitudinal Study." *Public Administration Review*, 74(1):114–125.
- Wilkenfeld, B., and J. Torney-Purta. 2012. "A Cross-Context Analysis of Civic Engagement Linking CIVED and U.S. Census Data." *Journal of Social Science Education*, 11(1):1–14.
- Wilson, J.M. A. Musick. 1997. "Work and volunteering: The long arm of the job." *Social Forces*, 76(1):251–272.
- Wooldridge, J. 2010. *Econometric Analysis of Cross Section and Panel Data*. Cambridge: MIT Press.
- Wright, B. E., and R. K. Christensen. 2010. "Public Service Motivation: A Test of the Job Attraction-Selection-Attrition Model." *International Public Management Journal*, 13(2):155–176.
- Wright, B. E., R. K. Christensen, and S. K. Pandey. 2013. "Measuring Public Service Motivation: Exploring the Equivalence of Existing Global Measures." *International Public Management Journal*, 16(2):197–223.
- Wright, B. E., and A. M. Grant. 2010. "Unanswered Questions about Public Service Motivation: Designing Research to Address Key Issues of Emergence and Effects." *Public Administration Review* 70(5):691–700.

- Yates, M., and J. Youniss. 1996. "Community Service and Political-Moral Identity in Adolescents." *Journal of Research on Adolescence*, 6(3):271–284.
- Yates, M., and J. Youniss. 1998. "Community Service and Political Identity Development in Adolescence." *Journal of Social Issues*, 54(3):495–512.
- Youniss, J. 2011. "Civic Education: What Schools Can Do to Encourage Civic Identity and Action." *Applied Developmental Science*, 15(2):98–103.
- Zaff, J., J. Youniss, and C. M. Gibson. 2009. *An Inequitable Invitation to Citizenship*. Washington DC: Philanthropy for Active Civic Engagement.

### ABOUT THE AUTHOR

**Stephen B. Holt** (sbholt@albany.edu) is an assistant professor of public management at the Rockefeller College of Public Affairs and Policy, University at Albany, SUNY. He received his Ph.D. in public administration from the School of Public Affairs, American University. His current research focuses on the dynamics of motivation and representation in the public sector workforce.

### APPENDIX

**TABLE A1**  
ELS Items Measuring Motivational Bases

Index	ELS:2002 Item	Weight	Perry Item (1996) [Dimension]
Public Service Motivation	Importance of helping others in community	0.65	I unselfishly contribute to my community [Public Interest]
	Importance of working to correct inequalities	0.73	If any group does not share in the prosperity of our society, then we are all worse off [Social Justice]
	Importance of being an active/ informed citizen*	0.71	I believe everyone has a moral commitment to civic affairs no matter how busy they are [Civic Duty]
	Importance of supporting environmental causes*	0.78	Much of what I do is for a cause bigger than myself [Self-sacrifice]
	Importance of being patriotic*	0.42	To me, the phrase "duty, honor, and country" stirs deeply felt emotions [Civic Duty]

\*Item not asked in sophomore year of high school, but added for senior year survey.



**TABLE A2**  
Credited Courses and Activities Included in Civics Coursework and School-Based Service Activities

	CRN	Course title
Civics courses	451000	Political Science and Government, Other
	451001	Civics
	451002	State and Local Government
	451003	Government, Basic
	451004	American Government
	451005	Presidency
	451006	Framework of the Constitution
	451007	Individual vs. State
	451008	National State and Local Elections
	451009	Elections, Politics and Morality, Honors
	451010	Contemporary World Affairs
	451011	American Foreign Policy
	451012	Decision Making in a Crisis
	451013	American Heritage, Honors
	451014	Contemporary American Political Issues
	451015	Contemporary American Political Issues, Honors
	451016	American Government and Economics, Basic
	451017	American Government and Economics
	451018	American Government and Economics, Honors
	451019	Comparative Political Systems, Basic
	451020	Comparative World Governments
	451021	Americanism vs. Communism
	451022	Americanism vs. Communism, Honors
	451023	Communism and Its Growth
	451024	Civics, Honors
	451025	Writings Influencing Government
	451026	Government Internship
	451027	Model Senate
	451028	Political Leadership
	451029	Political Science
	451030	Political Science, Advanced Placement
	451031	Political Science and Government: Local/Regional Gov
	451032	Political Turmoil
451033	Contemporary Issues, Basic Skills	
School-based service	330100	Citizenship/Civic Activities, Other
	330111	Student Assistant
	330121	Pep Squad
	330131	Student Government
	330141	Tutoring
	330151	Community Service

**TABLE A3**  
First Stage Regression Results for 2SLS Models

	Service activities (1)	Civics courses (2)
Average number of credits in art	-0.01 (0.01)	0.00 (0.02)
Average number of credits in history	-0.01 (0.01)	0.03 (0.03)
Average number of credits in community service	0.38 (0.07)***	0.05 (0.10)
Average number of credits in civics	0.03 (0.02)	0.21 (0.07)***
Average number of credits in science	-0.05 (0.01)***	-0.01 (0.03)
Average number of credits in social science	0.02 (0.02)	0.08 (0.04)*
Average number of credits in math	-0.00 (0.02)	-0.09 (0.04)**
Average number of credits in English	-0.02 (0.02)	0.02 (0.03)
Joint F-test on instruments	12.12***	2.21***
All controls	Yes	Yes
Adjusted R <sup>2</sup>	0.06	0.04
Observations	4,500	5,490

*Note:* \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$ .

**TABLE A4**

LPM and 2SLS Regressions on Effect of Participation in Treatments on Outcomes of Interest, Unweighted

	School-based service credits			Civics course credits		
	LPM (1)	LPM with FE (2)	IV (3)	LPM (4)	LPM with FE (5)	IV (6)
PSM	0.00 (0.04)	-0.01 (0.04)	-0.05 (0.20)	0.01 (0.03)	0.02 (0.04)	-0.07 (0.20)
Helping others in the community	0.05 (0.02)***	0.06 (0.02)***	-0.02 (0.08)	-0.00 (0.02)	-0.01 (0.02)	0.01 (0.08)
Working to correct inequality	-0.03 (0.02)*	-0.02 (0.02)	-0.06 (0.08)	-0.00 (0.01)	-0.01 (0.02)	-0.07 (0.07)
Being an informed citizen	-0.00 (0.02)	0.00 (0.02)	-0.05 (0.09)	-0.02 (0.02)	0.00 (0.02)	-0.05 (0.09)
Protecting the environment	0.01 (0.02)	0.00 (0.02)	0.00 (0.08)	0.01 (0.01)	0.01 (0.02)	0.02 (0.08)
Being patriotic	0.03 (0.02)	0.04 (0.02)*	0.02 (0.12)	0.02 (0.02)	0.01 (0.02)	0.06 (0.09)
Student demographics and SES	No	Yes	Yes	No	Yes	Yes
Academic characteristics	No	Yes	Yes	No	Yes	Yes
Motivational base in 10th grade	No	Yes	Yes	No	Yes	Yes
School FE	No	Yes	No	No	Yes	No
Joint F-test on instruments	N/A	N/A	12.12***	N/A	N/A	2.21**
Observations	4,610	4,610	4,500	5,540	5,540	5,490

*Note:* Number of observations rounded to the nearest ten in accordance with NCES rules. Each cell represents a unique ATE estimate for each outcome. Robust standard errors clustered at school level; \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

**TABLE A5**  
Propensity Score Matched Estimates of ATE of Treatments on Outcomes of Interest (Using Across-School Matching)

	School-based service credits				Civics courses			
	NN1 (1)	NN5 (2)	Caliper NN1 (0.1) (3)	Radius (0.1) (4)	NN1 (5)	NN5 (6)	Caliper NN1 (0.1) (7)	Radius (0.1) (8)
PSM	-0.01 (0.08)	0.06 (0.07)	-0.01 (0.08)	0.04 (0.04)	-0.04 (0.05)	-0.02 (0.04)	-0.04 (0.05)	-0.01 (0.03)
Helping others in the community	0.07 (0.04)**	0.10 (0.03)***	0.07 (0.04)**	0.07 (0.02)***	-0.03 (0.03)	-0.02 (0.02)	-0.03 (0.03)	-0.01 (0.01)
Working to cor- rect inequality	-0.02 (0.03)	-0.01 (0.03)	-0.02 (0.03)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.01)
Being an informed citizen	0.00 (0.04)	0.02 (0.03)	0.00 (0.04)	0.01 (0.02)	-0.03 (0.03)	-0.03 (0.02)	-0.03 (0.03)	-0.03 (0.01)*
Protecting the environment	-0.01 (0.03)	0.02 (0.03)	-0.01 (0.03)	0.01 (0.02)	-0.00 (0.02)	-0.01 (0.02)	-0.00 (0.02)	-0.01 (0.01)
Being patriotic	0.01 (0.03)	0.02 (0.03)	0.01 (0.03)	0.04 (0.02)*	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.02 (0.01)
Volunteer during the school year	0.05 (0.03)	0.04 (0.03)	0.05 (0.03)	0.03 (0.02)*	-0.03 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.01)
Making a lot of money	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.03 (0.01)*
N Observations	1,250	3,550	1,230	4,340	2,200	6,080	2,200	5,560
N Treatment	680	680	680	680	1,220	1,220	1,220	1,220
N Control	580	2,880	550	3,660	980	4,860	980	4,340

Note: Number of observations rounded to the nearest ten in accordance with NCES rules. Propensity score matched standard errors adjusted using Abadie-Imbens robust standard errors to account for propensity score being an estimate; \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

**TABLE A6**  
Propensity Score Matched Estimates of ATE of Treatments on Outcomes of Interest (Using Within-School Matching)

	School-based service credits				Civics courses			
	Caliper NN1 (0.01) (1)	Radius (0.01) (2)	Caliper NN1 (0.001) (3)	Radius (0.001) (4)	Caliper NN1 (0.01) (5)	Radius (0.01) (6)	Caliper NN1 (0.001) (7)	Radius (0.001) (8)
PSM	0.07 (0.08)	0.07 (0.07)	0.06 (0.08)	0.06 (0.07)	-0.08 (0.08)	-0.08 (0.06)	-0.06 (0.08)	-0.06 (0.06)
Helping others in the community	0.07 (0.05)	0.07 (0.04)*	0.06 (0.05)	0.06 (0.04)	-0.03 (0.04)	-0.04 (0.04)	-0.03 (0.04)	-0.03 (0.04)
Working to correct inequality	0.00 (0.04)	0.01 (0.03)	0.00 (0.04)	0.00 (0.03)	-0.04 (0.03)	-0.04 (0.02)	-0.03 (0.03)	-0.03 (0.03)
Being an informed citizen	0.02 (0.05)	0.02 (0.04)	0.01 (0.05)	0.01 (0.04)	-0.03 (0.05)	-0.03 (0.04)	-0.03 (0.05)	-0.03 (0.04)
Protecting the environment	-0.01 (0.04)	-0.01 (0.03)	-0.02 (0.04)	-0.02 (0.03)	-0.03 (0.04)	-0.03 (0.03)	-0.02 (0.04)	-0.02 (0.03)
Being patriotic	0.01 (0.04)	0.01 (0.04)	0.00 (0.04)	0.00 (0.04)	-0.05 (0.04)	-0.05 (0.03)	-0.05 (0.04)	-0.05 (0.03)
Volunteer during the school year	0.07 (0.05)	0.07 (0.05)	0.06 (0.05)	0.06 (0.05)	-0.00 (0.05)	-0.01 (0.04)	-0.00 (0.05)	-0.00 (0.04)
Making a lot of money	-0.01 (0.04)	-0.01 (0.04)	-0.01 (0.04)	-0.01 (0.04)	-0.07 (0.04)*	-0.07 (0.03)**	-0.08 (0.04)**	-0.08 (0.03)**
N Observations	660	870	640	840	720	900	680	860
N Treatment	350	350	340	340	390	390	370	370
N Control	310	520	300	500	330	510	310	490

*Note:* Number of observations rounded to the nearest ten in accordance with NCES rules. Propensity score matched standard errors adjusted using Abadie-Imbens robust standard errors to account for propensity score being an estimate; \*\*\*,  $p < 0.01$ , \*\*,  $p < 0.05$ , \*  $p < 0.1$ .

**TABLE A7**  
Propensity Score Matched Estimates of ATE of Treatments on Outcomes of Interest (Using Within-School Matching), Restricted to Observations with Only One Treatment

	School-based service credits				Civics courses			
	NN1 (1)	NN5 (2)	NN1 (0.1) (3)	Radius (0.1) (4)	NN1 (5)	NN5 (6)	NN1 (0.1) (7)	Radius (0.1) (8)
PSM	0.05 (0.07)	-0.01 (0.06)	0.02 (0.07)	0.01 (0.06)	-0.04 (0.06)	0.02 (0.05)	-0.08 (0.06)	-0.07 (0.05)
Helping others in the community	0.10 (0.04)***	0.07 (0.03)**	0.07 (0.04)*	0.07 (0.04)*	-0.04 (0.03)	-0.02 (0.03)	-0.05 (0.03)*	0.05 (0.03)*
Working to cor- rect inequality	-0.02 (0.03)	-0.02 (0.02)	-0.02 (0.03)	-0.03 (0.02)	-0.02 (0.02)	0.00 (0.02)	-0.04 (0.02)*	-0.04 (0.02)**
Being an informed citizen	0.06 (0.03)*	-0.01 (0.03)	0.03 (0.04)	0.02 (0.04)	-0.01 (0.03)	0.01 (0.03)	-0.05 (0.03)	-0.04 (0.03)
Protecting the environment	0.02 (0.03)	-0.01 (0.03)	0.01 (0.03)	0.00 (0.03)	0.00 (0.03)	0.01 (0.02)	-0.01 (0.03)	-0.01 (0.02)
Being patriotic	0.04 (0.04)	0.02 (0.03)	0.04 (0.04)	0.03 (0.03)	0.01 (0.03)	0.02 (0.03)	-0.03 (0.03)	-0.03 (0.02)
Volunteer during the school year	0.09 (0.03)***	0.06 (0.03)**	0.08 (0.04)*	0.08 (0.04)*	-0.01 (0.03)	-0.02 (0.03)	-0.01 (0.04)	-0.00 (0.03)
N Observations	990	2,250	880	2,320	1,660	3,230	1,290	2,910
N Treatment	570	570	500	500	1,120	1,120	790	790
N Control	420	1,680	380	1,820	540	2,110	500	2,120

Note: Number of observations rounded to the nearest ten in accordance with NCES rules. Propensity score matched standard errors adjusted using Abadie-Imbens robust standard errors to account for propensity score being an estimate; \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

**TABLE A8**  
 Logistic Regressions on Effect of Participation in Treatments on Outcomes of  
 Interest, Unweighted

	School-based service credits		Civics course credits	
	(1)	(2)	(3)	(4)
Helping others in the community	0.23 (0.08)***	0.30 (0.10)***	-0.02 (0.07)	-0.06 (0.10)
Working to correct inequality	-0.19 (0.11)*	-0.14 (0.13)	0.01 (0.09)	-0.12 (0.12)
Being an informed citizen	-0.00 (0.09)	0.02 (0.10)	-0.07 (0.06)	0.01 (0.09)
Protecting the environment	0.04 (0.10)	0.01 (0.12)	0.03 (0.08)	0.03 (0.11)
Being patriotic	0.13 (0.09)	0.22 (0.10)**	0.11 (0.08)	0.05 (0.10)
Student demographics and SES	No	Yes	No	Yes
Academic characteristics	No	Yes	No	Yes
Motivational base in 10th grade	No	Yes	No	Yes
School FE	No	Yes	No	Yes
Observations	4,470	4,360	5,490	5,290

*Note:* Number of observations rounded to the nearest ten in accordance with NCES rules; coefficients not directly comparable to OLS estimates; \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

**TABLE A9**  
Propensity Score Matched Estimates of ATE of Treatments on Outcomes of Interest (Using Matching with Students Who Did Not have Treatments Observed in School)

	School-based service credits				Civics courses			
	NN1 (1)	NN5 (2)	Caliper NN1 (0.1) (3)	Radius (0.1) (4)	NN1 (5)	NN5 (6)	Caliper NN1 (0.1) (7)	Radius (0.1) (8)
PSM	0.10 (0.08)	0.07 (0.07)	0.10 (0.08)	-0.02 (0.04)	0.05 (0.09)	0.06 (0.10)	0.05 (0.09)	0.03 (0.06)
Helping others in the community	0.08 (0.04)**	0.09 (0.04)**	0.08 (0.04)**	0.06 (0.02)***	0.01 (0.05)	0.02 (0.05)	0.01 (0.05)	0.01 (0.03)
Working to cor- rect inequality	0.01 (0.04)	-0.00 (0.03)	0.01 (0.04)	-0.03 (0.02)*	0.02 (0.04)	0.03 (0.03)	0.02 (0.04)	0.01 (0.02)
Being an informed citizen	0.04 (0.04)	0.01 (0.04)	0.04 (0.04)	-0.02 (0.02)	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.03)
Protecting the environment	0.04 (0.04)	0.01 (0.03)	0.04 (0.04)	-0.01 (0.02)	0.03 (0.04)	0.02 (0.04)	0.03 (0.04)	0.01 (0.02)
Being patriotic	0.06 (0.04)	0.05 (0.04)	0.06 (0.04)	0.04 (0.03)	-0.02 (0.05)	-0.01 (0.04)	-0.02 (0.05)	-0.01 (0.03)
Making a lot of money	-0.01 (0.04)	-0.02 (0.03)	-0.01 (0.04)	-0.03 (0.02)	-0.04 (0.05)	-0.01 (0.04)	-0.04 (0.05)	-0.03 (0.03)
N Observations	714	1,041	1,100	3,350	1,510	2,760	1,510	1,680
N Treatment	630	630	630	630	1,200	1,200	1,200	1,200
N Control	84	411	470	2,720	310	1,560	310	480

*Note:* Number of observations rounded to the nearest ten in accordance with NCES rules. Each cell represents a unique ATE estimate for each outcome using a given matching algorithm. Propensity score matched standard errors adjusted using Abadie-Imbens robust standard errors to account for propensity score being an estimate; \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .



**TABLE A10**  
Difference between Treatment and Control Group for School-Based Service Sample

	Unmatched (1)	NN1 (2)	NN1 Caliper (0.1) (3)	Radius caliper (0.1) (4)
Male	-0.10***	-0.09***	-0.08***	-0.07***
White	0.03	0.02**	0.04***	0.02
Black	0.00	0.00	0.00	0.00
Hispanic	-0.03*	-0.03**	-0.04***	-0.02
Native American	-0.00	-0.00***	0.00**	0.00**
Asian	0.02	0.02	0.02	0.02
Multiple races	-0.01	-0.01***	-0.01*	-0.02**
Mother has HS diploma or less	0.04	0.03***	0.01	0.00
Mother has college or more	-0.05***	-0.05***	-0.04**	-0.01
HH income less than \$20,000 per year	-0.02*	-0.02***	-0.02***	-0.02**
HH income \$100,000 or more	0.00	0.00*	0.01***	0.04***
Reading score	-0.76*	-0.75	-0.30*	-0.18*
Math score	-0.84**	-0.84*	-0.21	-0.09*
10th grade GPA	0.07**	0.05***	0.10***	0.08***
10th grade helping others not important	-0.03***	-0.03***	-0.04***	-0.03***
10th grade helping others somewhat important	0.04**	0.04	0.03***	0.03
10th grade helping others very important	-0.01	-0.01***	0.00	0.00
N Treatment	680	680	650	650
N Control	3,920	480	500	2,360
Mean bias	5.1	4.7	4.4	4.4
Median bias	4.4	4.1	3.5	2.4

*Note:* Bias calculated as standardized differences between treatment and control group subsamples, using Rosenbaum and Rubin (1985) calculation. The calculated bias is used to test for balance between treatment and control groups on observed variables. Calculated bias reported in table based on full set of matching variables.

**TABLE A11**  
Difference between Treatment and Control Groups for Civics Coursework Sample

	Unmatched (1)	NN1 (2)	NN1 Caliper (0.1) (3)	Radius caliper (0.1) (4)
Male	-0.02	-0.01	-0.03**	0.01
White	0.06***	0.04	0.04	0.00***
Black	-0.01	-0.02*	-0.02**	-0.02
Hispanic	-0.02***	-0.02*	-0.02**	0.02***
Native American	0.00	0.00*	-0.01	-0.01
Asian	-0.02**	-0.01**	0.00	0.02**
Multiple races	0.00	0.00	0.00**	-0.01***
Mother has HS diploma or less	-0.02	-0.02**	0.00	-0.03*
Mother has college or more	0.00	0.01***	-0.01**	0.02***
HH income less than \$20,000 per year	-0.01	-0.02**	-0.01**	0.00**
HH income \$100,000 or more	-0.01	0.00**	-0.01	0.01***
Reading score	-0.10	0.01	-0.14	0.42
Math score	-0.61*	-0.47***	-0.41	0.36
10th grade GPA	0.07***	0.10	0.06	0.14
10th grade helping others not important	0.01	0.01***	0.03***	0.03**
10th grade helping others somewhat important	-0.01	-0.02	-0.02	-0.01
10th grade helping others very important	0.01	0.00	-0.01	-0.01
<i>N</i> Treatment	1,230	1,220	890	890
<i>N</i> Control	4,420	590	550	2,410
Mean bias	4.5	4.0	4.1	4.3
Median bias	4.4	3.3	3.9	3.9

*Note:* Bias calculated as standardized differences between treatment and control group subsamples, using Rosenbaum and Rubin (1985) calculation. The calculated bias is used to test for balance between treatment and control groups on observed variables. Calculated bias reported in table based on full set of matching variables.