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The Influence of Correctional Education, Skills, and Lifelong Learning on Social Outcomes

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Introduction

The United States has the largest prison population per capita than any other nation, with approximately 1.5 million prisoners at yearend 2015 (Carson & Anderson, 2016; Wagner & Rabuy, 2017). While many individuals are sentenced to serve time in prison each year, an equally large number of prisoners are released. In 2015, federal and state prisons admitted a total of 608,300 prisoners, while just over 640,000 were released (Carson & Anderson, 2016). Due to the large number of prisoners re-entering society each year, it is important that we determine what factors may contribute to a reduction in their likelihood of recidivating. One possibility is that increasing prisoners' level of education and skill proficiency, and thus their human capital, may increase their social outcomes, which, in turn, may potentially increase their likelihood of successful reintegration and decrease their likelihood of recidivating.

When discussing human capital, researchers often investigate the effect of education on economic productivity (Lau, Jamison, & Louat, 1991). However, the positive outcomes that result from education and training is a multifaceted phenomenon. Studies have shown that education can increase social outcomes in the form of civic engagement, healthy behavior, and volunteering (Hanushek, Schwerdt, Wiederhold, & Woessmann, 2013). An increase in such social outcomes may ultimately help returning prisoners better reintegrate into society.

The current study stems from a recent study conducted by the European Commission Research Centre, which used international data from The Programme for the International Assessment of Adult Competencies (PIAAC) (2012) to explore the relationship between educational attainment, adult skill proficiency, and social outcomes among the general public (Dinis da Costa, Rodrigues, Vera-Toscano, & Weber, 2014). Their study found a positive correlation between skill proficiency and social outcomes. Further, they found that the degree of association between numeracy and literacy skills and social outcomes—as measured by social trust, civic engagement, and health—was higher than the degree of association between educational attainment and social outcomes. The current study explores whether these findings can be replicated with a prison population using data from the U.S. PIAAC Survey of Incarcerated Individuals.

A study conducted by the National Center for Education Statistics (NCES) reports that the U.S. prison population differs from the U.S. general population on a range of characteristics, including, but not limited to, demographics and educational attainment (Kena et al., 2016). Analysis of data from the U.S. PIAAC Household Survey and the U.S. Survey of Incarcerated Individuals confirms their conclusions finding that males, Blacks and Hispanics, and individuals aged 25-44 were overrepresented in the prison population (Rampey et al., 2016). The data also found significant differences in terms of educational achievement. In the general population, 37% had beyond a high school education compared to only 6% of the incarcerated population. Given the significant differences between the two populations, it may be that the previous relationships found between education, proficiency skills, and social outcomes for the general population may differ for the prison population. Determining whether the relationship between educational attainment, skill development, and various social outcomes holds true for correctional populations has important policy implications, particularly for correctional programming.

Literature Review

History of Correctional Programming

Education has not only been recognized as one of the key indicators of economic success, but it has also been acknowledged as the main driving force in societal changes as well as in ways populations behave, consume, spend their leisure time, and achieve a sustainable lifestyle (Dinis Da Costa et al., 2014). Education increases access to information, which, in turn, helps individuals make well-informed decisions and become resilient in an ever-changing society. Knowledge has a direct effect on both an individual's "economic outcomes" such as productivity and earnings, as well as their "social/non-economic outcomes" such as civic engagement, health, volunteering, and enhanced interpersonal relationships (Dinis Da Costa et al., 2014; Pinder, 2014). Most prison administrators today acknowledge the importance of education for prisoners and have at least some programs in place to help offenders increase their level of education and skill proficiency (Davis et al., 2014; Harlow, 2003). However, the emphasis that administrators have placed on correctional education has fluctuated over time (Davis et al., 2014; Messemer, 2011).

In the United States, offender rehabilitation through education has been around since the first prisons were created in the late 18th and early 19th centuries (Messemer, 2011), though originally, the content was largely religious based (Allen, 1981; Gehring, 1995; Silva, 1994). Early correctional education programs focused on increasing literacy so that inmates could read and comprehend the Bible (Messemer, 2011). More secular education was introduced during the 1800s, with the primary focus on reading, writing, and math (Gehring, 1995). Post-secondary education was also first implemented in correctional settings during the 1800s (Wells, 2000). Throughout the early to mid-1900s, the number of correctional programs continued to grow. The industrial revolution sparked the development of vocational programs for inmates due to the growing demand for skilled laborers (Eggleston & Gehring, 1986).

There was a growing emphasis on post-secondary education beginning in the 1930s and continuing until the late 1960s and early 1970s. Beginning in the 1930s, college correspondence and distance learning courses became available to incarcerated individuals, though participation was often low as inmates were required to cover the cost themselves (Gehring, 1997). Shortly after, correctional facilities began to implement GED programs, with the first GED program being offered in Illinois in 1945. The 1960s and 1970s witnessed further expansion in correctional education and vocation programs, including offering "live" college courses and education furloughs, as a result of the growing belief that correctional education was a key factor in rehabilitation (Gehring, 1997; Ryan, 1995). Another reason for the expansion of correctional education, particularly post-secondary education, was the extension of Pell Grants to prisoners under the presidency of Lyndon B. Johnson (Ubah, 2004). These grants, which did not require repayment, provided inmates who would normally be unable to participate due to high tuition costs access to post-secondary education. The result was an increased number of inmates participating in correspondence and distance learning as they were now able to cover the costs. Additionally, a number of post-secondary programs began to operate in prison facilities. By 1976, there were 237 programs. This number expanded to 350 by 1982 (Wright, 2001).

Providing educational and vocational programs for prisoners remained an important goal in correctional institutions up until the 1990s. During this time, views on the benefits of prison programming began to change. Many believed that providing educational and vocational training to inmates was coddling the prisoners (Colgan, 2006). Others argued that it was unfair and too costly to provide these "luxuries" to offenders when many segments of the general law-abiding population did not have access to these things. As a result, Congress, along with many state

legislatures, began to slash prison budgets, thus greatly reducing the availability of both educational and vocational programs (Colgan, 2006; Messemer, 2011). A further blow to prisoners' access to education was the elimination of Pell Grants in 1993/1994 (Ubah, 2004). The elimination of this funding source greatly reduced the number of prisoners who could access post-secondary educational programs. Prison education programs were further impacted during the economic downturn of the late 2000s, when state-level spending on prison education programs was significantly reduced. According to a RAND Corporation study, nationally, spending on prison education declined on average by 6 percent from 2009 to 2012 (Davis et al., 2014).

In recent years, there has been a returned interest in prison education. In 2016, the Department of Education announced that a number of colleges and universities had agreed to participate in the revitalized Pell Grant program, entitled "Second Chance Pell". This pilot program allowed for 12,000 eligible incarcerated individuals to receive Pell Grants to pay for their post-secondary education (U.S. Department of Education, 2016). The program has continued to be renewed each year and Congress has also been considering a possible repeal of the ban on federal aid for incarcerated college students (Kreighbaum, 2018). Thus, it is possible that a renewed interest in offering educational opportunities to incarcerated individuals is on the horizon.

Educational and Vocational Availability and Inmate Participation

Despite the budget cuts, most correctional facilities continue to offer at least some type of educational programs to prisoners. According to data from the 2013 RAND Correctional Education Survey, of the 46 state correctional education directors who responded to the survey, the overwhelming majority (96%) indicated offering adult basic education, GED courses, and vocational skills training to adult state prisoners (Davis et al., 2014). A large percentage of the state systems also indicated offering adult secondary education (70%), college courses (70%), English as a second language (ESL) courses (72%), and special education courses (87%).

While educational and vocational programming is available in most correctional facilities, the rate of inmate participation in such programming has decreased over time (Davis, Bozick, Steele, Saunders, & Miles, 2013). In 1991, 56.6% of state prisoners indicated participating in some type of educational program since their most recent incarceration, with 27% indicating participation in GED/high school programs, 13.9% indicating participation in college courses, and 31.2% indicating participation in vocational training (Harlow, 2003). As of 2004, these numbers had declined. Only 52% of inmates reported having participated in some type of correctional education program since their most recent admission to prison. When looking at programs individually, 19% reported having participated in GED/high school programs, 7% reported having participated in college courses, and 27% reported having participated in vocational training (Crayton & Neusteter, 2008). Though the rate of participation in programming has decreased over time, the number of inmates educated in prison has actually increased. From 1991 to 1997, the number of state and federal inmates educated in prison increased by 37% and 39%, respectively (Harlow, 2003). A large factor that accounts for this disjunction between participation rates and the number of inmates educated may be the fact that the prison population during this time increased at a pace with which prison programming could not keep up.

While the increased prison population may be the most plausible explanation for the declining participation rates, a number of scholars have offered additional explanations for the decrease in participation. These include lack of programs of interest, lack of awareness about program opportunities, competing demands, and lack of mandatory participation (Crayton &

Neusteter, 2008; Davis et al., 2013; McGlone, 2002; Tolbert, 2002). This finding of decreased participation is of concern due to the positive benefits that participation in correctional programs has on prisoners, both while incarcerated and upon release.

Impact of Educational and Vocational Training on Post-Release Outcomes

Once released, prison inmates are faced with the challenging task of successfully reintegrating into society. Those prisoners who are returning to society after an extensive period of incarceration may be at an increased disadvantage as they must adapt to not only the new environment but also to the changes that occurred in society as well as the workplace while they were incarcerated. Faced with these challenges, returning prisoners are forced to take stock of a number of information processing skills to help them successfully reintegrate into society, particularly into the labor market. The available research suggests that providing educational, vocational, and social skills training while in prison can provide inmates with the skills needed to better cope with their return to society.

The majority of the research on the effectiveness of correctional education largely focuses on two main outcomes: recidivism and employment post-release (Davis et al., 2013; Gaes, 2008; Tyler & Kling, 2004). In regards to recidivism, research has consistently found that receiving effective education and skill development training while in prison reduces one's likelihood of reoffending (Mauer, 2004; Schanzenbach et al., 2016). For example, in a meta-analysis conducted by Mackenzie (2006), it was found that the odds of not re-offending were 16% higher among academic program participants than non-participants. Specific to vocational training, a meta-analysis of all U.S. studies reported between 1980 and 2011 found that inmates who participated in vocational training were 36% less likely to be re-incarcerated than those without training (Davis et al., 2013).

Research regarding correctional education programming on employment-related variables is also positive (Cho & Tyler, 2008; Lichtenberger, 2007; Visser & Kachnowski, 2007). A study exploring the effects of vocational training on employment found that inmates who participated in vocational training while in prison were 28% more likely to be employed (Davis et al., 2013). Not only are prisoners who participate in programming more likely to be employed post-release, it has also been found that participation in correctional programming leads to increased earnings. Tyler and Kling (2004) estimated the post-release economic effects of participation in prison-based GED programs. They found that participation in GED programs led to post-release quarterly earnings gains of about 15% for program participants relative to nonparticipants.

Impact of Educational and Vocational Training on Prison Outcomes

Though a majority of the research on the benefits of correctional education programming has focused on post-release outcomes, there have been a handful of studies that have explored the benefits of such programming on currently incarcerated offenders (French & Gendreau, 2006; Steiner & Wooldredge, 2008; 2014; Duwe, Hallett, Hays, Jang, & Johnson, 2015). Fine et al. (2001) conducted interviews with prison administrators, correctional officers, and women in prison. Each respondent group reported that the presence of a college program altered the prison environment for the better. It was reported that the prison environment became safer and more manageable, and there were fewer disciplinary incidents. Lahm (2009) found results to support this anecdotal data. In her study of 1,000 inmates, she found that participation in college programs reduced the likelihood of rule violations while in prison. Additionally, in a more recent study, Duwe and colleagues (2015) found that inmates who participated in a prison Bible college had fewer incidents of misconduct than nonparticipants.

Impact of Correctional Programs on Social Outcomes

Once prisoners are released, the ability to cope with both the freedoms of society and the restrictions of release increases the rate of successful reintegration, which is not only of prisoners' interest but also a matter of public safety and economic need. Providing inmates with access to educational and vocational training may impact their social outcomes which may, therefore, help with their reintegration. Research on the effect of education on prison inmates' *social outcomes* is sparse. However, assumptions regarding the relationship can be made by examining the limited research that has been conducted on the impact of education on the social outcomes of health, trust, and political engagement among the general public.

Health. A rich body of scientific data has shown that there is a significant causal relationship between individuals' education, socioeconomic status at an early age, and their health (Wolfe & Haveman, 2001). Land, Michalos, & Sirgy (2011) argued that education and skills often inform individuals to adopt a proactive approach to their personal health. For example, increasing ones' knowledge in analytic and problem-solving skills could have an overarching influence on one's quality of life; such skills can be transferred to numerous facets of life including health promotion and health maintenance (Mirowsky & Ross, 2005).

Research has found that personal health problems are more likely to be exacerbated by individuals' inability to obtain a job due to a preexisting health issue. For individuals who are unable to obtain jobs due to their health problems, it is possible that their health problems would be further exacerbated as they would likely have little to no access to health care or health insurance and would likely be struggling with poverty. This issue may be particularly salient to prisoners returning to society. Studies show that health issues may impede employment and access to housing opportunities for newly released prisoners (Mallik-Kane & Visser, 2008), which could—in turn—create an impossible situation for newly released prisoners' reintegration. Assuming the relationship between education and health remains true for incarcerated populations, it would be beneficial to continue to offer educational and vocational training in prisons.

While limited, the available research does tentatively support that there is a positive relationship between education and health for incarcerated populations. Access to education and training have been shown to have a positive effect on prisoners' health, especially when health issues stem from substance abuse (Casey & Jarman, 2011). Further research needs to be conducted, however, in order to further tease out this relationship.

Trust: Trust in prison is not commonplace; whether this is the result of individuals entering prison with low levels of trust or a result of the nature of the prison environment is unclear. Regardless, many inmates feel that they are unable to trust anyone and thus choose to withdraw from social engagement with others, including both fellow prisoners and correctional officers (Irwin, 2005; Jose-Kampfer, 1990). Haney (2006) notes that this generalized mistrust among prisoners, while potentially beneficial in a prison setting, is problematic in most other environments. Participation in educational programs may be one way to increase trust among prisoners.

Research has found education to be an important predictor of trust (Helliwell & Putnam, 2007; Huang, Massen van den Brink, & Groot, 2009). Huang et al. (2009) conducted a meta-analysis exploring the effects of education on social trust. They found that for each additional year of schooling, an individual's social trust increased by 4.6%. One posited explanation is that education helps individuals to become better informed and provides them with skills to better

interpret communication and behavior by others (Knack & Keefer, 1997). This may help them to become more open-minded and accepting of others (Huang, Massen van den Brink, & Groot, 2011). Thus, perhaps participation in educational and vocational programs while in prison may increase a prisoner's level of trust by increasing their general knowledge as well as providing them with the skills needed to interpret information and interact with others different from themselves.

Developing trust, particularly in regards to civic institutions and their respective communities, is of importance if the returning prisoner hopes to fully reintegrate into society (Wike & Holzwart, 2008). Most prisoners are released under some form of supervision in which they will need to abide by certain conditions of release (Hughes & Wilson, 2018). Research has found that trust has an influence on one's willingness to cooperate (Tyler & Blader, 2003). Thus, if a returning prisoner lacks trust, they may be less likely to cooperate and abide by their conditions of release, making them more likely to be charged with a violation and potentially returned to prison.

Political Efficacy: Political efficacy refers to an individual's belief that they can help create change in the government. Often times, people think of political efficacy in terms of the legal right to vote; however, there are a number of other diverse ways that one can participate in local issues and examine one's place and power in a democratic society. While returning prisoners may be able to affect change in the government in some ways, for many prisoners, the traditional way of affecting governmental change, voting, has been revoked due to their criminal convictions (Uggen, Larson & Shannon, 2016). As of 2016, approximately 6.1 million individuals were restricted from voting due to felony disenfranchisement laws. In some states, this restriction remains even after an individual has completed their sentence. Given that many prisoners are likely disenfranchised, it may be that they have lower levels of political efficacy than the general population despite still having access to other forms of governmental participation.

To fully reintegrate into society, it is important that released inmates are civically involved in the democratic society. Research on non-incarcerated populations has found a positive association between education and political efficacy, with more educated individuals exhibiting higher levels of political efficacy (Baker, 1973; Dinis da Costa et al., 2014; Hayes & Bean, 1993). Thus, the same relationship could be true for incarcerated populations. If increasing an inmate's education level can increase their political efficacy, then correctional education programs may be of great importance in terms of successful prisoner reintegration as education may encourage participation in the civic society and participation in civic society may thus encourage advocacy for the collective good.

Access to prison education may also impact returning inmates' ability to get their voting rights reinstated and thus perhaps increase their political efficacy. In recent years, there has been a push to overturn laws blocking those with a criminal record to vote (Coates, Ferber, & Brunsmas, 2017). However, currently, there is no federal law that outlines the rules and process for restoration of voting rights for incarcerated adults. The decision is made at the state level and often the process is complex and challenging (Vago, 2015). Mallicoat (2016) stated that the difficulty of reinstating voting rights often discourages many from completing or initiating the process. Correctional education could provide incarcerated adults with the skills needed to navigate the array of requirements needed for reinstating their voting rights.

Research Question

Policymakers concerned with the problems presented by recidivism such as economic costs, safety issues, and community instability, should consider the saliency of the argument that improving prisoners' social outcomes by increasing their education—a form of human capital—may lead to an increased likelihood of successful reintegration into the society. Recidivism can be the result of many factors, including a lack of social skills needed to reintegrate into the social structure of the community as well as structural barriers, such as lack of employment and housing. Deficiencies in social skills can be addressed during incarceration through participation in educational and vocational programs. If education and training affect social outcomes, then access to readiness classes and education become even more important for this population. Additionally, access to educational and vocational programs may also increase employability, which may further help with the reintegration of incarcerated individuals. This leads us to explore the relationship between skills, educational and vocational training, and social outcomes for both the prison and the general population. Our specific research questions were as follows:

- How do formal education, literacy and numeracy skills, and adult lifelong learning associate with prison inmates' social outcomes, such as political efficacy, interpersonal trust, and health?
- How does the impact of formal education, literacy and numeracy skills, and adult lifelong learning on social outcomes compare across the prison and household populations?

The PIAAC proved an excellent data source in which to explore our research questions. With its direct measure of cognitive skills, expanded definition of human capital, and wide range of demographic variables included in the background questionnaire, the PIAAC survey allowed for the opportunity to evaluate the relationship between education, cognitive skills, and social outcomes.

Methods

The Survey of Adult Skills (PIAAC) is the product of a multinational collaboration. For this study, we used data collected from U.S. respondents for the 2012/2014 PIAAC Household Study and the U.S. PIAAC Prison Study, which was collected from February through June 2014. The Household Study population included approximately 8,600 adults (ages 16-74) in the United States, while the Prison Study population consisted of 1,270 adult inmates (ages 18–74) detained in federal and state prisons in the United States.

Dependent Variables

PIAAC's rich background questionnaire contains items related to persons' perceptions of social outcomes. In this study, we used interpersonal trust, political self-efficacy, and health perception to measure an individual's self-reported social outcomes. For **social trust**, we included individuals' perceptions of interpersonal social trust. The question emulates the standard trust indicator that has been used in the General Social Survey (GSS) and the World Values Survey (WVS) since 1981. The question asked the respondent how much they agree with the statement "There are only a few people you can trust completely." Response options ranged from strongly agree (1) to strongly disagree (5). Lower values represented less interpersonal trust, while higher values indicated more interpersonal trust. For individuals' perception of health, we used the PIAAC question self-reporting **health status**. Respondents were asked "In general, would you say your health is excellent, very good, good, fair, or poor?" Health included both physical and mental health. The Likert scale originally ranged from excellent (1) to poor (5), but was recoded to reflect an increase in the sense of health perception (poor (1) to excellent (5)). For **political efficacy**, participants were asked "To what extent do you agree or disagree

with the following statement? People like me don't have any say about what the government does.” Response options ranged from strongly agree (1) to strongly disagree (5), with higher values indicating greater levels of political efficacy.

Predictor Variables

PIAAC provides the opportunity to extend the human capital measure. Rather than having to rely solely on formal educational attainment as a measure of human capital, the PIAAC includes a number of additional measures of human capital, including direct cognitive measures, such as literacy and numeracy skills, as well as measures of adult lifelong learning (ALL), such as current participation in formal and non-formal education. Adult lifelong learning can additionally act as a proxy for human capital because participation in lifelong learning for adults is a likely indicator of an unobserved variable of motivation to participate in society as an active member. Participation in lifelong learning is also a likely indicator of an individual's ability, which, in turn, is an indicator of human capital. The inclusion of these variables allows for a better understanding of the association between human capital and social outcomes.

For the present study, the human capital predictor variables consisted of three measures: cognitive skills in numeracy and literacy, education degree/level attained, and adult lifelong learning. For proficiency in *numeracy* and *literacy* skills, we followed the OECD reporting convention for both the literacy and numeracy domain (explained in Table 1A). Literacy and numeracy proficiency levels are defined at Below Level 1 (scores of 0-175), Level 1 (176-225), Level 2 (226-275), Level 3 (276 – 325), Level 4 (326 – 375), and Level 5 (376 – 500) (for detailed description see OECD, 2011). For our analysis, we collapsed the variable into three categories: Below 225 (low), 226-325 (medium), and Above 326 (high). To measure *education* level, we relied on the PIAAC measure that reports the individual's level of education in three levels: less than high school education (<HS), high school education (HS), and greater than high school education (>HS). Lastly, measures of adult lifelong learning were included as measures of human capital. To measure adult lifelong learning (ALL) within the prison population, we relied on three PIAAC measures that assessed an individual's participation in any training or formal education that was offered during their incarceration: employment readiness classes, participation in job training, and participation in educational courses. For readiness class participation, we used the readiness class question that asked the participant to respond (Yes=1, No=2) to the following question, “During your current incarceration, have you attended employment readiness or re-entry classes (including how to find a job or interviewing skills)?” PIAAC provides additional information on job training participation among prisoners [P_Q220]. The question asked the participants, “During your current period of incarceration, have you participated in a job skills or job training program, for example, a computer skills program that teaches Microsoft Word?”, with dichotomous response options (Yes=1, No=2). Responses to these two questions were combined into one variable, *prison skill*, to represent participation in programs designed to increase their skills for post-release. For formal educational attainment during the individual's incarceration (*prison ed*), we used the education related variable [P_Q120] that asked the participants to respond to the following question, “During your current period of incarceration, what is the highest level of education you completed?” The original coding of this question was based on a Likert type scale with 12 response options (Grades 1-6=1; Grades 7-9=2; High school diploma or GED=3; Pre-associate, trade school, or university, no certificate=5; A certificate from a college or trade school for completion of a program prior to the associate/bachelor's degree=6; Associate degree=7; Bachelor's degree=8; Master degree=9; Professional degree=10; Doctoral degree=11; No further education completed=12). We dichotomized the formal education variable to indicate no participation in formal education (1)

and participation in formal education (2) to focus on attitude rather than the cognitive outcome. Participation in formal education might indicate individuals' taking control over their education and represent motivation toward self-improvement.

To measure *adult lifelong learning* for the household population, we utilized the PIAAC variable which reports whether the participant has taken part in any formal education during the past 12 months. For this study, we divided adults participating in lifelong learning into two major groups: lifelong learners and non-lifelong-learners. Lifelong learners consisted of those who participated in either formal or non-formal learning in the 12 months prior to PIAAC participation.

Control Variables

A number of socio-economic and demographic variables, including *age*, *gender*, *race*, *place of birth*, and *parent education* that could potentially correlate with both dependent and independent variables were included in the models. Table 2A provides the original and collapsed recoding of all included control variables; these variables were coded as dummy variables for the purpose of this study. *Gender* was originally reported as a dichotomous variable (1="male", 2="female"), but was dummy coded with "male" as the reference group. *Race* was originally reported in four categories (1="Hispanic", 2="White", 3="Black", 4="other race") and was dummy coded with "White" as the reference group. *Age* was originally measured as an ordinal variable; however, we collapsed the response options into a dichotomized response option (1=25-44, 2="other") for better contrast comparison. *Parent education* reports the highest level of education attained by the individual's mother or father (1="Neither parent has attained upper secondary" (<HS), 2="At least one parent has attained secondary and post-secondary, non-tertiary" (HS), 3="At least one parent has attained tertiary" (>HS)); here <High school was assigned as the reference group. Two additional variables, *release time* and *recidivism*, were included in the models for the prison population as we believe that these variables could potentially correlate with the social outcomes—political efficacy, health, and trust. We dichotomized *release time* from a seven-category variable (1="less than 2 years", 2="more than 2 years"). The *recidivism* variable reports whether the participant has ever served time in any correctional facility prior to their current incarceration (1="yes", 2="no").

Analytical Strategy

For this study, we used IDB Analyzer software (available for download at <https://www.iea.nl/data>) and SPSS 24. The IDB Analyzer software allowed for incorporation of plausible values for literacy and numeracy skill assessments as well as appropriate total weight to generate the required syntax for SPSS. To compare the mean differences between the two populations and to determine whether the two populations were significantly different, we merged the two datasets and compared their mean differences with t-tests using standard errors generated from the software, with 95 percent confidence threshold of twice the standard error. For statistical analysis, we mainly used SPSS 24 with the generated IDB Analyzer syntax that included the PIAAC complex sampling design feature employed.

To answer our research questions (i.e., to estimate the relationship between education, cognitive skills in literacy and numeracy, and adult lifelong learning and the social outcomes of political efficacy, trust, and health after controlling for a number of demographic, prison-related, and socio-economic variables), we conducted a series of hierarchical linear regressions for both the prison population and the household population separately. The hierarchical linear regressions were conducted with four hierarchical models predicting participants' social

outcomes (political engagement, social trust, and perception of health) sequentially, including (M1) education degree/level attained, (M2_1) M1 and proficiency in literacy skills only, (M2_n) M1 and proficiency in numeracy skills only (M3) M1 and proficiency in literacy and numeracy skills, and (M4) M3 and adult lifelong learning participation (ALL). Our model specification was based primarily on theoretical considerations rather than empirical or methodological considerations.

Results

To better understand the prison population, the household population, and the population of which they are representative, we first conducted a series of comparisons among these two populations (Table 1). Consistent with previous research, the results show that there is a recognizable difference between the household and prison population demographics. Unlike the household population, the prison population is predominately male, between the ages of 25 and 44, with an overrepresentation of Blacks and Hispanics.

Table 1. General Description of the Population Demographics

Characteristics & Control	Percent U.S. Prison	Percent U.S. Household
Gender		
Male	79.76	53.74
Female	20.24	46.26
Race		
Hispanic	20.24	12.70
White	39.04	60.77
Black	33.28	16.72
Other	9.97	9.97
Age		
<24	12.74	23.51
25-34	35.56	24.22
35-44	23.88	14.45
45-54	18.80	15.01
55-65	7.96	14.18
>66	1.06	8.64
Place of Birth		
Born in country	93.10	85.33
Not born in country	6.60	12.45
Education		
Less than HS diploma	30.33	19.84
HS diploma/some college	62.77	49.36
College degree or higher	6.44	30.80

Next, we compared the mean differences between the two populations for each social outcome (Table 2). The analysis of the mean differences between these two populations showed that the household population has a significantly higher level of political efficacy ($M = 3.02$, $SD = .02$) than the prison population ($M = 2.66$, $SD = .04$); $t(9,751) = 8.35$, $p < .05$. Similarly, the analysis of the mean differences for social trust showed that the household population has a significantly higher degree of interpersonal trust ($M = 2.32$, $SD = .02$) than the incarcerated population ($M = 1.97$, $SD = .03$); $t(9,751) = 8.61$, $p < .05$. No significant differences between the two populations were found for health perception. Both populations, on average, perceived themselves to be of relatively good health.

Table 2. Mean comparison between household and prison social outcomes

Social Outcome	Prison	SE	Household	SE	t-value	P-Value
Political Efficacy	2.66	.04	3.02	.02	8.35***	< .05
Social Trust	1.97	.03	2.32	.02	8.61***	< .05
Health Perception	3.53	.04	3.58	.02	1.48	> .05

Note. For analysis, PIAAC Prison 2014 and PIAAC Household 2012/2014 Full Population Weight and Plausible values with full replication was used. *** $p < 0.01$.

To better understand how cognitive skills affect individuals' perception of their social outcomes within and across the two populations, we extended the analysis using three skill levels: *Below 225* (low), *226-325* (medium), and *Above 326* (high) (Table 3 & 4; See Table 3A in the Appendix for a comparison of all five cognitive skill levels). The results showed that the degree of competency in cognitive skills correlated with each perceived social outcome both within and across the populations. To ensure the legitimacy of the comparison, the household population was compared to those with similar skill levels in the prison population, with those of low, medium, and high skill levels in the general population being compared to those of low, medium, and high skill levels in the prison population, respectively. For example, the household population at medium and higher skill levels showed a significantly higher degree of each social outcome than the prison population with similar skill levels, though health presented a slightly different pattern. The household population at the highest skill competencies reported a significantly higher degree of health status with a smaller variation within their population ($n=1,010$, $SD=.04$) than the prison population ($n=51$, $SD=.19$). The household population with the highest literacy reported a significantly better status of health ($M= 4.02$, $SD= .04$) than their incarcerated counterparts ($M= 3.65$, $SD=.19$); $t(9,751) = 2.1$, $p < .05$.

Table 3 and Table 4 summarize the mean differences between the two populations' social outcomes at three literacy and numeracy skill levels. Interesting patterns emerged when examining numeracy and literacy skill levels and social outcomes. While the household population had a higher level of political efficacy at all three literacy and numeracy skill levels, the difference at the lowest literacy and numeracy skill level was not statistically different for the two populations.

Table 3. Comparison of prison and household populations at various numeracy levels

Political Efficacy								
Prison Population				Household Population				
Numeracy	n	Mean	SE	n	Mean	SE	DIFF	SE
Low	651	2.68	.07	2,681	2.77	.03	.09	.07
Medium	592	2.65	.06	5,055	3.08	.03	.43***	.07
High	‡	2.54	.29	723	3.36	.07	.82***	.30
Social Trust								
Prison Population				Household Population				
Numeracy	n	Mean	SE	n	Mean	SE	DIFF	SE
Low	653	2.00	.06	2,690	2.07	.04	.07	.06
Medium	592	1.93	.05	5,064	2.36	.03	.44***	.06
High	‡	2.05	.28	722	2.77	.06	.72**	.29
Health (Recoded)								
Prison Population				Household Population				
Numeracy	n	Mean	SE	n	Mean	SE	DIFF	SE
Low	658	3.40	.05	2,689	3.10	.03	-.19***	.06
Medium	595	3.67	.05	5,063	3.63	.02	-.01	.06
High	‡	3.43	.30	721	4.02	.05	.60**	.31

Note. For analysis, PIAAC Prison 2014 and PIAAC Household 2012/2014 Full Population Weight and Plausible values with full replication was used. Below 225 indicates (Low), 226-325 indicates (Medium), Above 326 indicates (high). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The reference group for the comparison is the household population. ‡ refers to reporting standards not met

Similarly, while the household population had a higher social trust level at all three literacy and numeracy skill levels, the differences at the lowest literacy and numeracy skill level was not statistically different between the two populations. Individuals' health perception exhibited a slightly different behavior from the other two social outcome variables. Incarcerated individuals with low literacy and numeracy skills (skill level=226-325) had a significantly higher perception of their health status than the household population. On the other hand, the prison population exhibited a significantly lower perception of health at high (skill level>326) levels of literacy and numeracy skills.

Table 4. Comparison of prison and household populations at various literacy levels

Political Efficacy								
<i>Prison Population</i>				<i>Household Population</i>				
Literacy	n	Mean	SE	n	Mean	SE	DIFF	SE
Low	347	2.67	.11	1,613	2.70	.04	.03	.11
Medium	871	2.66	.05	5,835	3.02	.03	.36***	.05
High	51!	2.60!	.20!	1,011	3.44	.06	.85***!	.21!
Social Trust								
<i>Prison Population</i>				<i>Household Population</i>				
Literacy	n	Mean	SE	n	Mean	SE	DIFF	SE
Low	350	2.03	.09	1,619	2.04	.05	.01	.09
Medium	870	1.95	.04	5,847	2.31	.02	.36***	.05
High	51!	1.88!	.16!	1,010	2.75	.05	.88***	.16
Health								
<i>Prison Population</i>				<i>Household Population</i>				
Literacy	n	Mean	SE	n	Mean	SE	DIFF	SE
Low	353	3.36	.07	1,620	3.10	.03	-.26***	.08
Medium	876	3.59	.04	5,843	3.63	.02	.04	.04
High	51!	3.65!	.19!	1,010	4.02	.04	.37**	.19

Note. For analysis, PIAAC Prison 2014 and PIAAC Household 2012/2014 Full Population Weight and Plausible values with full replication was used. Below 225 indicates (Low), 226-325 indicates (Medium), Above 326 indicates (high). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The reference group for the comparison is the household population. "!" Interpret data with caution.

To compare the within population social outcome, we compared each population's social outcome individually (Figure 1). For a better comparison, the five Likert scale for political efficacy and social trust was recoded into two extreme values. For example, we labeled *strongly agree* and *agree* as "low" social outcomes and *disagree* and *strongly disagree* as "high" social outcomes, and excluded neither-agree-nor-disagree from the comparison analysis (Figure 1). By eliminating the neutral option (neither agree nor disagree) we excluded 19% of the sample for political efficacy and 9% for social trust. The self-rating health question did not include a neutral option, consequently, it was dichotomized by recoding poor and fair to "low" self-rated health and *good*, *very good*, and *excellent* as "high" self-rated health.

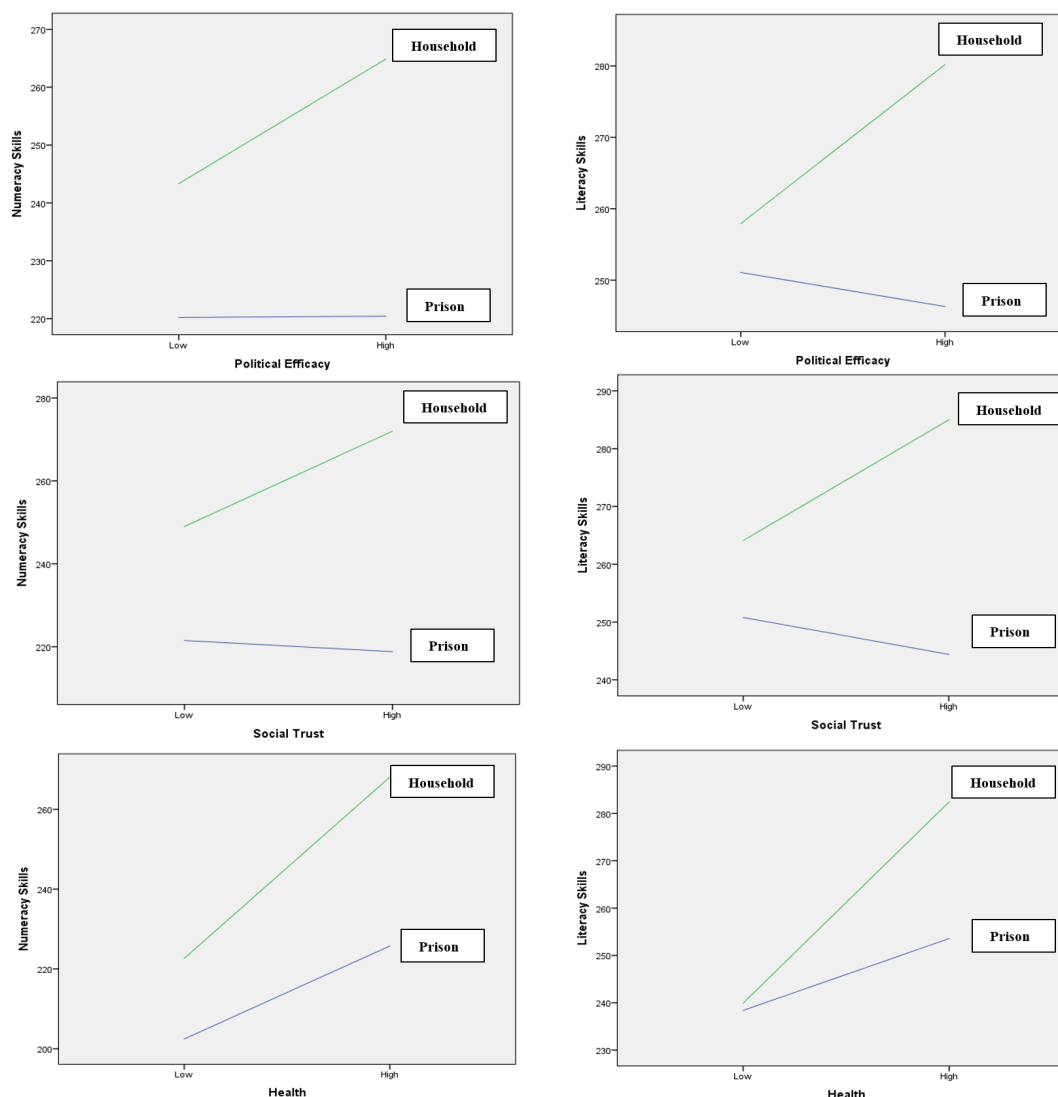


Figure 1. Population comparison of social outcome.

The within group analyses showed that the household population with higher degree of political efficacy, social trust, and health rating have significantly higher cognitive skills. On the other hand, the prison population showed a slight decline—not statistically significant—on their cognitive skills with higher social trust and political efficacy (Table 5).

Table 5. Within group mean comparison of social outcomes

		Political Efficacy			Social Trust			Health		
		Low (SE)	High (SE)	Mean Diff	Low (SE)	High (SE)	Mean Diff	Low (SE)	High (SE)	Mean Diff
Literacy	Prison	251 (1.8)	246 (2.7)	-4.80	250 (2.7)	244 (2.1)	-6.4*	238 (3.1)	253 (1.8)	15.2***
Numeracy		220 (2.6)	220 (2.6)	.23	221 (2.2)	218 (4.8)	-2.70	202 (4.2)	225 (2.4)	23.3***
Literacy	HH	257 (1.4)	280 (1.3)	22.3***	264 (1.1)	284 (1.1)	20.9***	239 (1.9)	282 (1.2)	42.5***
Numeracy		243 (1.4)	264 (1.5)	21.6***	249 (1.2)	271 (2.1)	23.0***	222 (1.1)	268 (1.1)	45.4***

Note. For analysis, PIAAC Prison 2014 and PIAAC Household 2012/2014 Full Population Weight and Plausible values with full replication was used. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The reference group for both household and prison population are the low.

The result of self-rating of health for the prison population was consistent with the household population, suggesting that individuals with higher health perception have higher cognitive skills.

Relating Human Capital to Social Outcomes

In order to assess the relationship between the human capital variables and each social outcome, a number of hierarchical linear regressions were conducted. Each social outcome variable was modeled as a function of the three human capital variables—education, cognitive skills, and adult lifelong learning—while controlling for multiple socio-economic and demographic variables. The prison models also included two prison-specific control variables. Tables 5-7 present the results for each of the social outcomes.¹

Political efficacy. Table 6 presents the results of the hierarchical multivariate analysis for political efficacy. Table 6 is divided into two panels, panel 1 (prison population) and panel 2 (household population). Each panel presents the results of a specific model in a hierarchical order from left to right. The baseline model (M1), which includes education only, shows that education was significantly related to political efficacy for both populations. For the prison population, prisoners who reported having greater than a high school diploma were more likely to report higher levels of political efficacy than prisoners with less than a high school diploma. Interestingly, simply having a high school diploma did not impact political efficacy for this population. Similar results were found with the household population, with the exception of the fact that both having a high school diploma and having greater than a high school diploma were significantly related to political efficacy, with both indicating a greater level of political efficacy than those without a high school diploma.

In Model 2, literacy skills were added to the baseline model (M2_1). The addition of literacy did not change the effect of education on predicting political efficacy for the prison population or the household population. However, while the education variables remained significant predictors for both populations, for the household population, their effect decreased slightly with the addition of literacy skills. Additionally, our results indicated that, while not significant, an increase in literacy levels resulted in a slight decrease in prisoners' political efficacy. When the literacy skills variable was replaced in the model with numeracy skills, it was found that numeracy skills had no impact on political efficacy for the prison population. However, the numeracy skills variable was significantly related to political efficacy for the household population, finding that individuals with increased numeracy levels indicated higher levels of political efficacy.

When adding both numeracy skills and literacy skills to Model 3, numeracy remained non-significant for the prison population and was no longer significant for the household population, thus indicating that individuals' literacy skills may be more strongly associated with

¹ Tables 4A through 7A in the Appendix provide more detailed results of the hierarchical regression models. Specifically, the unstandardized beta and the beta for the unstandardized standard error are included.

political efficacy than their numeracy skills. Interestingly, the inclusion of both numeracy and literacy skills resulted in a significant relationship between literacy and political efficacy for the prison population. Recall that in M2_1, which only included literacy and education, literacy had not been a significant predictor. Specifically, in M3, it was found that prisoners with higher literacy skills were more likely to indicate lower political efficacy. The relationship between literacy skills and political efficacy remained the same when both literacy and numeracy were included in the model. Additionally, for both the prison and household populations, the relationship between the education variables and political efficacy remained.

For the final model, the adult lifelong learning (ALL) variables were added. The ALL variables for the prison population were found to be positively correlated with political efficacy. However, no significant relationship was found for the household ALL variable. Consistent with Model 3, for the prison population, having a high school diploma and literacy remained significant predictors with their relationships remaining the same. Similarly, for the household population, the education variables and literacy remained significant predictors. Surprisingly, numeracy became a significant predictor of political efficacy when ALL was added to the model for the household population. Individuals with higher numeracy levels were more likely to indicate greater levels of political efficacy. The final model for the prison population explained 4% of the variance in political efficacy, while for the household population, 7% of the variance was explained. For the prison population, none of the included demographic variables were found to be significantly related to political efficacy. However, the prison variable, release time was significantly related, with those having more than two years left on their sentence indicating lower levels of political efficacy than those with less than two years. A number of demographic variables were found to be significantly related to political efficacy within the household population. Individuals' gender, age, race, and socioeconomic status were found to be significantly related to political efficacy, with females, older individuals, Blacks and Hispanics, and individuals of higher SES reporting higher levels of political efficacy than their counterparts.

Social trust. Table 7 summarizes the results of the multivariate analysis of interpersonal trust. The baseline model (M1) indicated that education, to some extent, was associated with social trust. For the prison population, both having a high school diploma and having greater than a high school diploma were significant predictors, with both groups of prisoners being more likely to indicate higher levels of social trust compared to prisoners with less than a high school diploma. Having greater than a high school diploma was the only significant predictor for the household population. It is important to note that while educational attainments have a similar influence on both populations, this influence presents different patterns between the two populations. For the household population, while attaining higher than a high school education influenced their level of social trust, the prisoner population showed that even obtaining a GED or high school diploma could affect their social trust significantly ($p < .1$). The results also revealed a different pattern in the degree of influence that educational attainment has on the two populations' level of trust. While attaining higher than a high school education influences both populations' social trust, the degree of influence was greater for the household population ($\beta = .18$) than the prison population ($\beta = .10$).

Similar to political efficacy, the addition of literacy skills significantly impacted prisoners' social trust, with prisoners with higher literacy skills reporting lower levels social trust. Literacy skills had the opposite effect on the household population, however, with

increased literacy skills being correlated with increased levels of social trust. The same education variables found to be significant in Model 1 remained significant predictors for both the prison and household populations when literacy skills was added to the model (M2_1). A similar relationship was found when literacy skills was replaced with numeracy skills (M2_n). Specifically, a negative correlation was found between numeracy skills and social trust for the prison population, while a positive correlation was found for the household population. An interesting finding was the interaction between education and cognitive skills as the degree of the relationship between educational attainments fluctuated after considering individuals' skill level in both literacy and numeracy. However, the results showed an opposite effect in the two populations. For the household population, the addition of cognitive skills tended to decrease the effect of educational attainment on the individuals' social trust, while for the prison population, it increased the effect on these social trust.

A particularly interesting finding resulted when adding both numeracy and literacy skills to the model (M3). For the prison population, literacy continued to significantly influence the level of social trust, with prisoners with higher literacy levels reporting lower levels of social trust. However, for the household population, neither literacy nor numeracy skills had a significant relationship with social trust. Numeracy was not found to be a significant predictor of social trust for the prison population. As in the previous model, both education variables remained significant for the prison population, while having greater than a high school diploma remained significant for the household population.

In the final model (M4), the results indicated that prisoners' social trust was influenced by the type of ALL participation. Participation in programs that were focused on job skills or job training (i.e., computer skills program that teaches Microsoft Word) was correlated with an individuals' social trust, while attending educational courses did not significantly influence their degree of social trust. For the household population, participation in ALL was significantly correlated with social trust, with those who indicated participating in ALL reporting higher levels of social trust. While having greater than a high school diploma remained a significant predictor in the final model for the prisoner population, simply having a high school diploma was no longer a significant predictor. The negative relationship that was found in Model 3 between literacy and social trust remained in the fully specified model for the prison population. The only other human capital variable found to be significantly correlated with social trust in the fully specified model was having greater than a high school diploma. A positive correlation between having greater than a high school diploma and social trust remained for both populations. The prison variable recidivism was found to be significantly related to social trust, with first time offenders reporting greater levels of social trust than repeat offenders. Of the demographic variables, only age was found to be significantly related, with individuals falling outside of the 25-44 age range indicating more social trust than those between the ages of 25-44. For the household population, gender, age, and parent education were significantly related, with females, individuals falling outside of the 25-44 age range, and individuals with parents with greater than a high school diploma indicating greater levels of social trust. The final model for the prison population explained 4% of the variance in political efficacy, while for the household population, 7% of the variance was explained.

Health perception. The final social outcome examined was the reported health status for both the prison and household populations. Health perception showed a different pattern than the

previous two social outcomes (Table 8). In the baseline model (M1), while education was a significant predictor of health perception for both the prison and household populations, the degree of the effect of educational attainment differed in the two populations. Prisoners with a high school diploma had higher health perceptions than those with less than a high school diploma. Interestingly, having greater than a high school diploma did not significantly correlate with health perceptions for prisoners. The opposite was true for the household population. Individuals with greater than a high school diploma had greater health perceptions than those with less than a high school diploma. Simply having a high school diploma was not significantly correlated with health perceptions. The result might be influenced by prisoners' age, where older adults have greater opportunity to advance their education.

In Model 2_1, literacy was found to be a significant predictor of health perceptions for both populations, with higher literacy scores correlating with greater health perceptions. The same was true when literacy was replaced with numeracy skills (M2_n), with increased numeracy skills being associated with greater health perceptions. For both populations, education remained a significant predictor in both M2_1 and M2_n.

In Model 3, when both literacy and numeracy skills were added, literacy and education were no longer significant predictors for the prison population. However, they remained significant predictors for the household population. Numeracy, on the other hand, remained a significant predictor for the prison population, though not for the household population. In the final model, ALL was added and found to be significantly correlated with health perceptions for both populations, though again, for the prison population, it was found that the type of ALL was important. A positive association was found between participation in programs focused on job skills and training and health perceptions, while a negative association was found between participation in formal educational classes and health perceptions. For the household population, a positive association was found between participation in ALL and health perceptions. Consistent with Model 3, numeracy remained significant, while education and literacy remained non-significant for the prison population. Also, consistent with the previous model, education and literacy remained significant for the household population, while numeracy was not. The addition of each human capital variable increased the model's ability to explain the variability within the data. For the prison population, the R-square increased from 8% to 10%. For the household population, it increased from 8% to 12%. A number of the demographic variables were found to be significantly related to health perceptions. For both the prison and household populations, age, race, and parent educations were all found to be significantly related. Individuals outside of the 25-44 age range had a lower health perception compared to those 25-44. Hispanics reported a greater health perception than Whites for both populations, while Blacks in the prison population reported a greater health perception than whites. For both populations, those with parents with a high school diploma or greater reported a higher health perception compared to those with parents without a high school diploma. Release time was also found to be significantly related, with those having more than two years left on their sentence reporting lower health perceptions than those with less than two years left.

Table 6. Nested regression model for Political Efficacy

		Prison Population					Household Population				
		Education (M1)	Education + Lit. Skill (M2_1)	Education + Num. Skill (M2_n)	Education + Lit. & Num. Skills (M3)	Education + Lit & Num. Skills + ALL (M4)	Education (M1)	Education + Lit. Skills (M2_1)	Education + Num. Skill (M2_n)	Education + Lit. & Num. Skills (M3)	Education + Lit & Num. Skills + ALL (M4)
		β	β	β	β	β	β	β	β	β	β
Human Capital											
Education	=HS	-.02	.001	-.01	-.02	.03	.12***	.08***	.08***	.08***	.08***
	>HS	.09**	.11**	.10**	.09**	.08**	.27***	.19***	.20***	.19***	.19***
Literacy		--	-.05	--	-.09*	-.10*	--	.17***	--	.17***	.15***
Numeracy		--	--	-.02	.06	.06	--	--	.15***	.06	.03***
Prison Skill (ALL)		--	--	--	--	.06**	--	--	--	--	--
Prison Ed (ALL)		--	--	--	--	.06**	--	--	--	--	--
HH- ALL		--	--	--	--	--	--	--	--	--	.02
Prison Variables											
Recidivist		-.02	-.02	-.02	-.02	-.02	--	--	--	--	--
Release time		-.05*	-.05*	-.06**	-.05*	-.05**	--	--	--	--	--
Demographic											
Gender		.04	.03	.03	.04	.04	.05***	.05***	-.04**	.04***	.05***
Age		.02	.01	.01	.01	.02	.05***	.06***	.06***	.12***	.06***
Race	His	.03	.01	.01	.01	.02	.09***	.12***	.11***	.12	.12***
	Blk	.01	-.01	-.01	-.20	-.01	.06***	.09***	.10***	.09***	.09***
Parent Ed (SES)	=HS	-.01	-.01	-.01	-.00	-.01	.01	.01	.01	-.01	.00
	>HS	.04	.05	.05	.05	.05*	.03*	.04*	.06**	.05*	.04*
R-Square		2%	2%	1%	2%	4%	5%	7%	7%	7%	7%

Note. For analysis, PIAAC Prison 2014 and PIAAC Household 2012/2014 Full Population Weight and Plausible values with full replication was used. The dichotomous variables and categorical variables were dummy coded. The reference groups are: < high school, repeat offender, release time <2 years, male; ages 25-44; White. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7. Nested regression model for Trust

		Prison Population					Household Population				
		Education (M1)	Education + Lit. Skills (M2_1)	Education + Num. Skill (M2_n)	Education + Lit. & Num. Skills (M3)	Education + Lit & Num. Skills + ALL (M4)	Education (M1)	Education + Lit. Skills (M2_1)	Education + Num. Skill (M2_n)	Education + Lit. Skills (M3)	Education + Lit & Num. Skills + ALL (M4)
		β	β		β	β	β	B		β	β
Human Capital											
Education	=HS	.04*	.06*	.06**	.07**	.07	.01	-.01	-.01	-.01	-.03
	>HS	.10***	.12***	.12***	.12***	.12***	.18***	.13***	.12***	.12***	.11***
Literacy		--	-.09**	--	-.10*	-.10*	--	.11***	--	.06	.06
Numeracy		--	--	-.07*	-.01	-.01	--	--	.11***	.06	.06
Prison Skill (ALL)		--	--	--	--	.08**	--	--	--	--	--
Prison Ed (ALL)		--	--	--	--	.05	--	--	--	--	--
HH- ALL		--	--	--	--	--	--	--	--	--	.03***
Prison Variables											
Recidivist		.04*	.05*	.04*	.04	.04*	--	--	--	--	--
Release time		-.01	-.02	-.02	-.01	.001	--	--	--	--	--
Demographic											
Gender		.001	-.01	-.01	.04	.04	.03*	.03**	.03	.04**	.04***
Age		.02	.05	.06	.06	.06*	.05***	.05***	.05***	.05**	.06***
Race	His	.02	.02	.02	.06	.03	-.04**	-.02*	-.02	-.02	-.02
	Blk	-.01	-.04	.03	.03	.04	-.05***	-.03*	-.02	-.02***	-.02
Parent Ed (SES)	=HS	.02	.03	.02	.03	.03	.05*	.03	.03	.03	.03
	>HS	.03	.04	.03	.04	.04	.10***	.07**	.07***	.06***	.06***
R-Square		2%	3%		4%	4%	6%	6%	6%	7%	7%

Note. For analysis, PIAAC Prison 2014 and PIAAC Household 2012/2014 Full Population Weight and Plausible values with full replication was used. The dichotomous variables and categorical variables were dummy coded. The reference groups are: < high school, repeat offender, release time < 2 years, male; ages 25-44; White. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8. Nested regression model for Health Perception

		Prison Population					Household Population				
		Education (M1)	Education + Lit. Skills (M2_1)	Education + Num. Skill (M2_n)	Education + Lit. & Num. Skills (M3)	Education + Lit & Num. Skills + ALL (M4)	Education (M1)	Education + Lit. Skills (M2_1)	Education + Num. Skill (M2_n)	Education + Lit. & Num. Skills (M3)	Education + Lit & Num. Skills + ALL (M4)
		β	β		β	β	β	β		β	β
Human Capital											
Education	=HS	.10***	.07**	.03	.06	.05	.01	-.04	-.03	-.04*	.00
	>HS	.04	.02	-.02	.001	.00	.17***	.07***	.08***	.07***	.11***
Literacy		--	.09***	--	.003	.00	--	.22***	--	.18***	.16***
Numeracy		--	--	.11***	.13**	.12**	--	--	.20***	.04	.04
Prison Skill (ALL)		--	--	--	--	.05**	--	--	--	--	--
Prison Ed (ALL)		--	--	--	--	-.01**	--	--	--	--	--
HH- ALL		--	--	--	--	--	--	--	--	--	.11***
Prison Variables											
Recidivist		.04	.04	.04	.04	.05	--	--	--	--	--
Release time		-.07**	-.08**	-.05	-.08**	-.07**	--	--	--	--	--
Demographics											
Gender		-.04*	-.03	-.03	-.03	-.03	-.03**	-.03*	-.02	-.02	-.02
Age		-.18***	-.17***	-.17***	-.17***	-.16***	-.04***	-.03**	-.03**	-.02*	-.03**
Race	His	.06*	.08**	.04	.09**	.09**	.03	.07***	.06***	.07***	.06***
	Blk	.12***	.14***	.15***	.16***	.15***	-.03	.01	.02	.01	.004
Parent Ed (SES)	=HS	.08**	.08**	.04	.07**	.07**	.15***	.10***	.11***	.10***	.09***
	>HS	.14***	.14***	.10***	.13***	.13***	.24***	.17***	.18***	.17***	.14***
R-Square		8%	9%	8%	10%	10%	8%	11%	10%	11%	12%
<p>Note. For analysis, PIAAC Prison 2014 and PIAAC Household 2012/2014 Full Population Weight and Plausible values with full replication was used. The dichotomous variables and categorical variables were dummy coded. The reference groups are: < high school, repeat offender, release time <2 years, male; ages 25-44; White. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.</p>											

Discussion

The present study explored the relationship between a number of human capital variables and various social outcomes for both an incarcerated population and a general household population. This study extended the findings of previous literature in a number of ways. First, the study included a number of important human capital variables that have received minimal attention in the existing literature, including proficiency in numeracy and literacy skills and adults participating in lifelong learning (ALL). Further, this study is unique in that it explored how various human capital variables impacted the social outcomes for a prison population. Of the research that has been conducted using such a population, most focuses on the relationship between human capital (typically education) and employment prospects and earnings for returning prisoners (Giles & Le, 2009; Tyler & Kling, 2004; Visher, Debus, & Yahner, 2008). While employment prospects and earnings are important social outcomes for the success of prisoners reentering society, other important social outcomes such as civic engagement and interpersonal trust could potentially increase prisoners' successful reintegration into society. To fill the existing gap in the literature, this study aimed to explore the association between prisoner human capital, measured as education attainment, numeracy and literacy skills, and adult lifelong learning participation, and three social outcomes that may be of importance to successful prisoner reintegration: political efficacy, social trust, and health. Lastly, the present study compared whether the relationship between human capital and social outcomes for the prison population was similar to that of the household population. Such comparisons are rare within the current available research.

There are a number of important findings from the present study. Our study confirms that there are recognizable differences in demographics between prison and household populations. Consistent with prior research, our study found that males, Blacks and Hispanics, and younger individuals are overrepresented within the prison population compared to the general population. Additionally, our findings are consistent with previous studies which indicate that the prison population is less educated than the general population (Harlow, 2003). For example, Harlow (2003) found that a little over 40% of all incarcerated individuals had less than a high school diploma compared to only 18% of the general population. Our study findings are comparable in that we found 30% of the incarcerated population had less than a high school diploma compared to only 14% of the general population.

Of additional importance is the finding that prison and household populations differ in terms of their perceptions of social outcomes. Specifically, as expected, we found that prisoners indicated lower levels of both political efficacy and social trust. The findings for political efficacy may be partially explained by the United States use of felony disenfranchisement, or laws denying those with a felony conviction the right to vote (Uggen, Larson, & Shannon, 2016). Felony disenfranchisement is not a new phenomenon; in fact, it has been in place since the founding of the United States in 1776 (Liles, 2007). Currently, the number of states overturning their felony disenfranchisement laws are increasing, though they differ in terms of to whom the law applies, the length of time for which the ban remains in place, and the mechanisms for restoring the right to vote (Uggen, Larson, & Shannon, 2016). Given that these laws are in place

and that the number of individuals affected by such laws has increased over the past several decades, it is no surprise that prisoners maintain lower levels of political efficacy compared to the general population.

In terms of differences in interpersonal trust, it was also not surprising to find that prisoners indicated lower levels of trust. This explanation could be twofold. First, it could be that incarcerated individuals lacked trust prior to entering prison. Many prisoners come from disadvantaged and marginalized groups and these two segments of the society are often among the least trusting groups (e.g., Gereke, Schaub, & Baldassarri, 2018; Rothstein & Uslaner, 2005; Taylor, Funk, & Clark, 2007), which could be one of the explanations for their involvement in crime. An additional explanation for lower levels of social trust could be due to the incarceration experience. While minimal research has explored trust among prisoners (Lafferty, Treloar, Butler, Guthrie, & Chambers, 2016; Liebling & Arnold, 2012), the breakdown in social relationships with individuals outside of prison as well as the nature of prison itself in which the inmate code is often to “trust no one” may also impact prisoners’ levels of trust (Haney, 2001; Haney, 2006; Harman, Smith, & Egan, 2007; Liebling & Arnold, 2012).

While the analysis showed no significant differences between the prison and household populations reported health status as a whole, individuals in the general population with the highest competency skills reported a significantly higher perceived health status with a much smaller variation within the population than their incarcerated counterparts. The distinct pattern presented by the health variable could potentially be explained by four pertinent possibilities. The relatively small population size for the incarcerated population, specifically at the highest and lowest skill competency level, could contribute to the inconsistency of the results. Secondly, while both populations were randomly selected, access to the prison population could have been restricted to individuals who did not have a high probability of violence or mental illness, based on safety issues. Thirdly, interviews could have been disrupted if the prisoners were moved within or across facilities to a less or more restricted setting (White, 2012). Finally—perhaps the most important influencing factor—is the high number of individuals within the prison population with a mental disorder (American Psychological Association, 2013; Durcan, 2008), who might not have had the capacity to accurately assess their personal health status.

Besides a simple comparison of the prison and household populations on social outcomes, the present study sought to explore whether the relationship between human capital and the three social outcome variables was consistent across the two populations. This was a partial replication of Vera-Toscano, Rodrigues, and Costa’s (2017) study which explored the impact of human capital variables on social outcomes using a European population. Similar to the findings of Vera-Toscano et al. (2017), the present study found that some of the human capital variables were significantly related to at least one social outcome for both the household and the prison population.

Focusing specifically on the education variables and social outcomes for the prisoner population, it was found that prisoners who had obtained higher than a high school diploma were more likely to report greater levels of political efficacy and social trust. Education had no relationship with health perceptions of prisoners. Similar findings, though not exact, were found for the U.S. household population. Consistent with the prison population, having greater than a

high school diploma was associated with higher levels of political efficacy and social trust. Divergent findings were found for health perceptions, however. For the household population, individuals with greater than a high school diploma reported a better health perception. These findings are relatively consistent with the findings from Vera-Toscano et al. (2017) of the European population.

While for the prison population, numeracy skills did not show any significant correlation with political efficacy and social trust, prisoners' perception of health was significantly and positively influenced by their numeracy skills. This finding is consistent with the recent call for increased research on the effect of numeracy skills on health status. Rothman, Montori, Cherrington, and Pignone (2008) argued that the capacity to use numbers in daily life is an important skill and a commonly required task in healthcare. Individuals' ability to read and understand nutrition information, interpret ones' clinical data such as blood pressure and blood sugar readings, properly adjust medications, and estimate the proportions of medication adjustment are important yet understudied topics (Institute of Medicine Committee on Health Literacy, 2004). These findings suggest a need for further study of the relationship between numeracy and individuals' various healthcare behaviors. For example, future study is needed to understand how poor numeracy skills could relate to individuals' decision making in regards to health related options, information seeking behavior, health outcome, healthy lifestyle, and nutrition. To help patients with poor numeracy skills better understand their healthcare needs, health care providers may consider developing easier to understand tools or provide an intervention to improve patients' relevant numeracy skills.

The findings for the relationship between literacy skills and political efficacy as well as social trust showed an opposite association for the two populations under study. Unlike the household population, prisoners with higher literacy skill levels were more likely to report lower levels of political efficacy and social trust. While these findings are, in some aspect, inconsistent with the findings from prior studies conducted using household populations which have found a positive association between cognitive skills and various social outcomes (Vera-Toscano et al., 2017), they are aligned with the existing studies on the impact of incarceration on individuals' political and social isolation (Johnson, 2005; Wildra, 2017). Incarcerated adults often feel socially and politically isolated. Weaver and Lerman (2010) argued that incarceration at any level creates a long-lasting source of distrust and antagonistic view towards the government and society. Such mistrust impacts individuals' relationship with their government that goes beyond explicit political disenfranchisement and could extend to involvement in a democratic citizenship and political voice (Wildra, 2017). Additionally, most unlawful encounters carry with them a substantial civic penalty, creating an environment of mistrust between the government and the incarcerated citizens (Weaver & Lerman, 2010). Incarcerated adults often become withdrawn from political and civic engagement. Interaction with the criminal justice system often decreases individuals' participation in civic groups, expression of political voice in elections, and trust in the government (Miles, 2004).

The findings of the negative impact of literacy skills on incarcerated adults' political engagement and social trust are of particular importance. They indicate that incarcerated

individuals with higher literacy skills feel more disenfranchised and have lower levels of social trust than their peers. One possible explanation for the negative relationship between literacy skills and political engagement could be that increasing an inmate's competency in literacy may lead to a greater understanding of the barriers that are faced by many prisoners prior to, during, and after incarceration. Gaining an understanding of the limitations on one's civil liberties could lead to a reduction in one's belief that they have an influence on the government and the society they live in.

The final human capital variable considered in this study was adults' participation in lifelong learning. Recall that for the prison population there were two ALL participation indicators, participation in employment readiness courses and participation in correctional education. Participation in an employment readiness course was positively associated with all three social outcome variables. Prisoners who participated in an employment readiness course were more likely to indicate greater levels of political efficacy, social trust, and health perception. Significant associations were also found between participation in prison education and two of the three social outcome variables, political efficacy and health. Consistent with participation in employment readiness classes, a positive association presented for participation in prison education and political efficacy, with inmates who participated in a prison education program indicating higher levels of political efficacy. Inconsistent, however, was the finding that prisoners who participated in prison education indicated lower perceptions of health. This finding may be a result of the uniqueness of prison population itself. Research has found that those who are incarcerated have substantially more health conditions, both mental and physical, than those of the general public (Binswanger, Krueger, & Steiner, 2009; Maruschak & Beck, 2001). However, in many cases, prisoners are uninsured prior to their incarceration and thus likely to have not received medical care with any regularity (Wang, White, Jamison, Goldenson, Estes, & Tulskey, 2008). Thus, it could be that prisoners become aware of their medical conditions while receiving medical care in prison. Those who participate in prison education programs may be able to better comprehend their illnesses and the implications of them and thus with this recognition indicate a lower perception of their health status.

For the U.S. household population, participation in adult lifelong learning was significantly associated with trust and health. Both relationships were positive, with individuals who participated in adult lifelong learning indicating greater levels of trust and more positive views of their health. Overall, our findings are generally consistent with those of prior research which have also found a positive relationship between adult lifelong learning and social outcomes (Dinis da Costa et al., 2014; Vera-Toscano et al., 2017).

Limitations

The main limitation of this study relates to the analytical approach of using secondary data, and using standard multivariate analysis to identify the degree of the relationship while controlling for common demographics rather than implementing an experimental or quasi-experimental approach. Such analysis limits the findings to a correlational outcome. The ideal approach would be to isolate the causal impact of human capital on social outcomes. Isolating

the effect of human capital could help control for confounding variables that systematically correlate with unobserved factors, such as cognitive abilities (i.e., intelligence) and non-cognitive ability (i.e., grit, perseverance). To control the confounding variables and obtain the most reliable findings, future studies should attempt to isolate the influence of education by utilizing an experimental approach with randomized sampling.

Two additional limitations stem from our measure of participation in adult lifelong learning for the prison population. First, some institutions might give participation preference to those who are within five years of release and have not committed a violent crime (Giles et al., 2004). Given that it is possible that participation in prison education classes is limited to a subset of the prison population, our results should be viewed with caution as our findings may not generalizable to the entire prison population. An additional limitation stems from our measure of prison skills. This variable included both participation in employment readiness classes, which are classes focused on teaching inmates general skills such as resume writing, interview skills, and searching for a job that will help them to obtain and retain employment once released and participation in job training, which refers to prisoners acquiring skills and knowledge for a specific job or trade (i.e., carpentry, welding, masonry, etc.) while working in prison. Due to the combination of both types of participation into one variable, we were unable to look at the unique impact of participation in each type of adult lifelong learning class offered in prison. Future research should explore the impact of these programs, as well as others, individually on social outcomes.

A final limitation stems from our measure of self-rated health. The background question from PIAAC's general household survey was used to measure prisoners' perception of their health. The question inquired about the prisoners' general health, rather than asking prisoners to rate their mental health and physical health separately. Given the higher rates of both mental illnesses and chronic medical conditions among prisoners (Binswanger et al., 2009; James & Glaze, 2006), future studies should pars out chronic health from mental health.

Policy Implications

Despite the exploratory nature of the present study, our findings hold implications for correctional programming policy. Correctional programming has faced many challenges over the past few decades, with the most recent being reduced state spending (Colgan, 2006; Davis et al., 2014; Messemer, 2011). Based on our finding, improved skills and participation in adult lifelong learning while in prison not only increases individuals' educational skills, it also increases inmates' social outcomes. It could be argued that states should reinvest in correctional programming in order to improve social outcomes. Improvement in inmates' social outcomes may help offenders successfully reintegrate into society. Given the limited funding that is currently available for prison programming, our results may also offer some insight on which types of programs should be funded.

Our findings offer tentative support for an increased focus on job training programs and employment readiness classes. Recall that the adult lifelong learning variable, prison skills

(ALL), was significantly related to improved political efficacy, trust, and health perceptions. Given this finding, it may be worthwhile for prison administrators to focus their limited resources on job training and employment readiness classes. Even though we have included prisoners' release time in the analysis to control for the influence of prisoners' scheduled release dates on prisoners' level of social outcomes, it could be argued that job training classes are sometimes offered only to prisoners approaching their scheduled discharge dates. Thus, their impact may be minimal for the majority of the prison population who did not have access to such courses. However, institutions vary in their approach toward offering such courses. Some institutions offer job trainings to help inmates prepare for their release; others offer intermediate programs to all prisoners—with the prospect of release—for a gradual reentry into society (Reid, 2015). However, more research needs to be conducted to better understand the relationship between the various types of adult lifelong learning classes and social outcomes before a more concrete recommendation can be made.

Another recommendation for correctional programming is an increased focus on political literacy. Our results suggest that high literacy skills could increase individuals' understanding of the existing barriers for their civil liberties. Providing political literacy combined with opportunities to actively engage in political discourse could potentially increase incarcerated adults' political efficacy.

A final recommendation for correctional programming stems from our findings regarding health perceptions. Recall that there was much inconsistency in the findings for the health variable. This may indicate that both the household population and the prison population have limited skills in assessing their personal health. This suggests that both populations could benefit from simplified health information that is effective, accessible, and easy to understand for adults with low literacy skills. Policymakers play a role in improving the health of individuals in prison. Providing easily accessible health-related information to inmates may help foster a more health-conscious prison population as well as help individuals make informed health decisions, which may lead to improved health outcomes and lower health-related expenses. Policymakers should consider investing in health curriculum for inmates that targets health literacy and engages inmates in healthy behaviors. Education and literacy levels influence health, healthy behaviors, and many social factors (OECD, 2011), which makes providing health literacy and promoting a higher level of health-related topic discussion in prison even more relevant and important.

Our findings show that while educational attainments influence individuals' social trust, the degree of the influence is much lower for the prison population than the household population. This finding could have an implication for policymakers that while focusing on schools and education could increase individuals' social trust and consequently civic engagement in adulthood, considering prisoners' lower degree of trust and political efficacy, there seems to be confounding variables that correlate with social outcomes. Prisoners might benefit from direct instructions on civic engagement, issues related to a democratic system, or national and international politics. They might also further benefit from direct instruction on philosophy and ethics courses that aim to look into the human dilemmas related to existence, trust, and moral values that govern a person's behavior. If not addressed, these confounding factors lower the

effect of education on social outcomes indicating that policymakers need to take other measures—such as direct instructions of ethics and value of civic engagements—to increase prisoners’ civic engagement and social trust since mere focusing on education does not increase inmates’ interpersonal trust, political efficacy, and health perception.

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Appendix

Table 1A. Proficiency levels: Literacy and numeracy (From OECD)

Level	Score range	Literacy	Numeracy
Below Level 1	Below 176 points	Tasks at this level require the respondent to read brief texts on familiar topics and locate a single piece of specific information. There is seldom any competing information in the text. Only basic vocabulary knowledge is required, and the reader is not required to understand the structure of sentences or paragraphs or make use of other text features.	Tasks at this level require the respondent to carry out simple processes such as counting, sorting, performing basic arithmetic operations with whole numbers or money, or recognising common spatial representations.
1	176 to less than 226 points	Tasks at this level require the respondent to read relatively short digital or print texts to locate a single piece of information that is identical to or synonymous with the information given in the question or directive. Knowledge and skill in recognising basic vocabulary, determining the meaning of sentences, and reading paragraphs of text is expected.	Tasks at this level require the respondent to carry out basic mathematical processes in common, concrete contexts where the mathematical content is explicit. Tasks usually require one-step or simple processes involving counting; sorting; performing basic arithmetic operations; and identifying elements of simple or common graphical or spatial representations.
2	226 to less than 276 points	Tasks at this level require the respondent to make matches between the text, either digital or printed, and information, and may require paraphrasing or low-level inferences.	Tasks at this level require the application of two or more steps or processes involving calculation with whole numbers and common decimals, percents and fractions; simple measurement and spatial representation; estimation; and interpretation of relatively simple data and statistics in texts, tables and graphs.
3	276 to less than 326 points	Texts at this level are often dense or lengthy. Understanding text and rhetorical structures is often required, as is navigating complex digital texts.	Tasks at this level require the application of number sense and spatial sense; recognising and working with mathematical relationships, patterns, and proportions expressed in verbal or numerical form; and interpreting data and statistics in texts, tables and graphs.
4	326 to less than 376 points	Tasks at this level often require the respondent to perform multiple-step operations to integrate, interpret, or synthesise information from complex or lengthy texts. Many tasks require identifying and understanding one or more specific, non-central idea(s) in the text in order to interpret or evaluate subtle evidence-claim or persuasive discourse relationships.	Tasks at this level require analysis and more complex reasoning about quantities and data; statistics and chance; spatial relationships; and change, proportions and formulas. They may also require understanding arguments or communicating well-reasoned explanations for answers or choices.
5	Equal to or higher than 376 points	Tasks at this level may require the respondent to search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; or evaluate evidence based arguments. They often require respondents to be aware of subtle, rhetorical cues and to make high-level inferences or use specialised background knowledge.	Tasks at this level may require the respondent to integrate multiple types of mathematical information where considerable translation or interpretation is required; draw inferences; develop or work with mathematical arguments or models; and critically reflect on solutions or choices.

Table 2A. Characteristics of variables used for the analysis

	Original Code	Recoded	Reference (Dummy Code)
Education[B_Q01AUS_C]	< High school=1; High school=2; > High school=3		< High school
Recidivism [P_Q170]	Yes = 1; No=2		Yes
Release Time [P_Q180]	< 6 month = 1; 6-12 months=2; 1-2 years=3; >2years=4; 2-5 years=5; >5years=6; Never=7	<2 years=1; ≥2years=2	<2 years
Parent Education [PARED]	< High school=1; High school=2; > High school=3		< High school
Gender [GENDER_R]	Male = 1; Female = 2		Male
Age[AGEG10LFSEXT]	< 24 = 1; 25-34 = 2; 35-44 = 3; 45-54 = 4; 55-65 = 5; > 66 = 6	25 – 44 =1; others=2	25 – 44
Race[RACETHN_4CAT]	Hispanic = 1; White = 2; Black = 3; Other Race = 4		White
Prison population Employment readiness class [P_Q190A]	Yes=1; No=2		No
Prison population: Formal Ed [P_Q120]	Grade1-6=1; Grade 7-9=2; High school diploma or GED=3; Pre-associate no certificate=5; Certificate from college or trade school=6; Associate degree=7; Bachelor degree=8; Master's degree=9; Professional degree=10; Doctorate degree=11; No further education=12	No= No further education; Yes=participated in any form of education	No
Household population: Formal Ed B_Q02A [ALL]	Yes = 1; No=2		No

Table 3A. Comparison of Prison and Household Populations at various literacy and numeracy levels

	Literacy								Numeracy							
	Prison Population			Household Population			DIF	SE	Prison Population			Household Population			DIF	SE
	n	Mean	SE	n	Mean	SE			n	Mean	SE	n	Mean	SE		
Political Efficacy																
Below 176	67	2.89	.22	341	2.62	.10	.27	.25	224	2.68	.11	792	2.68	.06	.00	.13
176 - 225	290	2.62	.12	1,317	2.72	.05	.10	.13	435	2.68	.08	1,940	2.81	.04	.13	.09
226-275	540	2.68	.08	2,919	2.87	.04	.19*	.07	431	2.59	.08	2,830	2.96	.04	.38*	.08
276 -325	323	2.63	.07	2,912	3.17	.04	.54*	.08	152	2.81	.14	2,199	3.22	.04	.41*	.14
Above 326	49	2.60	.21	970	3.45	.06	.84*	.22	25	2.56	.28	698	3.36	.07	.8*	.279
Social Trust																
Below 176	67	2.26	.16	344	1.99	.09	-.26	.19	227	2.05	.09	796	2.03	.07	-.04	.11
176 - 225	290	1.96	.10	1,321	2.06	.06	.09	.10	435	1.98	.07	1,945	2.09	.04	-.12	.07
226-275	540	1.97	.06	2,925	2.18	.03	.21*	.07	432	1.92	.06	2,836	2.26	.03	.34*	.07
276 -325	323	1.92	.08	2,917	2.43	.03	.52*	.09	152	1.93	.12	2,202	2.49	.04	.55*	.13
Above 326	49	1.87	.17	969	2.76	.05	.88*	.19	25	2.02	.27	697	2.78	.06	.77*	.28
Health Status																
Below 176	71	3.14	.20	344	2.75	.08	-.39*	.22	230	3.27	.11	344	2.96	.05	-.31*	.13
176 - 225	292	3.43	.09	1,321	3.22	.05	-.21*	.10	438	3.47	.08	1,321	3.32	.04	-.15*	.09
226-275	542	3.55	.06	2,924	3.47	.04	-.08	.07	435	3.67	.06	2,924	3.56	.03	-.12	.07
276 -325	325	3.6	.07	2,916	3.78	.03	.13*	.07	153	3.68	.12	2,916	3.84	.03	.16	.13
326 - 375	49	3.64	.20	968	4.02	.04	.38*	.20	25	3.419	.32	907	4.03	.05	.61*	.33

Note. For analysis, PIAAC prison 2014 & PIAAC household 2014/2014 Full Population Weight and Plausible values with full replication was used. The reference groups are: prisoner. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4A. Nested regression model for Political Efficacy [I_Q06A]

		Education (Model 1)						Education + Literacy (Model 2)						Education + Literacy + Numeracy (Model 3)					
		Prison			Household			Prison			Household			Prison			Household		
		B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β
Human Capital																			
Education	=HS	-.05	.11	-.02	.30	.04	.12***	.001	.11	-.001	.19	.05	.08***	-.04	.11	-.02	.19	.05	.08***
	>HS	.52	.22	.09**	.71	.05	.27***	.62***	.22	.11	.50	.06	.19***	.52	.23	.09**	.50	.06	.19***
Literacy								.001	.001	-.05	.004	.004	.17***	.001	.001	-.09*	.004	.003	.17***
Numeracy														.001	.001	.06	.002	.001	.06
Prison Variables																			
Repeat Offender		-.06	.08	-.02	--	--	--	-.07	.07	-.02	--	--	--	-.06	.08	-.02	--	--	--
Release Time		-.14	.07	-.05*	--	--	--	-.14*	.07	-.05	--	--	--	-.13	.07	-.05*	--	--	--
SES																			
Parent Education	HS	-.02	.11	-.01				-.02	.11	-.01	.01	.06	.01	-.02	.11	-.00	-.02	.06	-.01
	>HS	.14	.12	.04				.16	.12	.05	0.12	.06	.04*	.16	.12	.05	.12	.12	.05*
Demographic																			
Gender		.22	.12	.04	.12	.03	.05***	.17	.12	.03	.13	.03	.05***	.20	.13	.04	.13	.13	.04***
Age		.04	.09	.02	.13	.03	.05***	.03	.10	.01	0.15	.03	.06***	.03	.10	.01	.15	.06	.12***
Race	His	.09	.12	.03	.31	.06	.09***	.05	.11	.01	.43	.06	.12***	.07	.11	.01	.43	.06	.12
	Blk	.02	.10	.01	.25	.06	.06***	-.03	.09	-.01	.37	.07	.09***	-.09	.10	-.20	.37	.06	.09***
R-Sq		2%			5%			2%			7%			2%			7%		

Note. For analysis, PIAAC prison 2014 & PIAAC household 2014/2014 Full Population Weight and Plausible values with full replication was used. The dichotomous variables and categorical variables were dummy coded. The reference groups are: < high school, repeat offender, release time < 2 years, male; ages 25-44; White. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5A: Nested regression model for Trust [I_Q07A]

		Education (Model 1)						Education + Literacy (Model 2)						Education + Literacy + Numeracy (Model 3)					
		Prison			Household			Prison			Household			Prison			Household		
		B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β
Human -Capital																			
Education	=HS	.09	.06	.04*	.03	.04	.01	.16	.07	.17**	-.03	.04	-.01	.16	.07	.07**	-.03	.04	-.01
	>HS	.49	.16	.10***	.45	.05	.18***	.60	.17	.13***	.32	.05	.13***	.58	.18	.12***	.30	.05	.12***
Literacy							.16	.07	.17**	.003	.001	.11***	.002	.001	-.10*	.001	.001	.06	
Numeracy													.001	.001	-.01	.001	.001	.06	
Prison Variable																			
Repeat		.11	.06	.04*	--	--	--	.11	.07	.01*	--	--	--	.10	.06	.04	--	--	--
Release Time		-.03	.07	-.01	--	--	--	-.01	.07	-.01	--	--	--	-.01	.07	-.01	--	--	--
SES																			
Parent Education	HS	.06	.08	-.01	.13	.05	.05*	.07	.08	.03	.07	.05	.03	.07	.07	.03	.07	.05	.03
	>HS	.08	.08	.04	.25	.06	.10***	.10	.12	.04	.16	.06	.07**	.11	.08	.04	.16	.06	.06***
Demographics																			
Gender		.001	.06	.001	.07	.04	.03*	-.03	.06	-.01	.07	.04	.03**	.20	.13	.04*	.09	.04	.04**
Age		.04	.09	.02	.12	.04	.05***	.03	.10	0.01	.13	.04	.05***	.13	.08	.06	.13	.04	.05
RACET	His	.12	.10	.04	-.14	.06	-.04**	.06	.11	.02	-.07	.06	-.02*	.13	.08	.06	-.07	.06	-.02
	Blk	-.02	.10	-.02	-.18	.06	-.05***	-.08	.09	-.04	-.11	.06	-.03*	.09	.11	.03	-.09	.07	-.02***
Other Race					-.33	.05	-.07***				-.28	.05	-.06***						
R-Sq		2%			6%			3%			7%			4%			7%		

Note. For analysis, PIAAC prison 2014 & PIAAC household 2014/2014 Full Population Weight and Plausible values with full replication was used. The dichotomous variables and categorical variables were dummy coded. The reference groups are: < high school, repeat offender, release time < 2 years, male; ages 25-44; White. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6A. Nested regression model Social Outcome Health Perception [I_Q08]

		Education (Model 1)						Education + Literacy (Model 2)						Education + Literacy + Numeracy (Model 3)					
		Prison			Household			Prison			Household			Prison			Household		
		B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β
Hum-Capital																			
Education	=HS	.23	.09	.10***	.03	.05	.01	.18	.09	.07**	-.08	.05	-.04	.14	.09	.06	-.08	.05	-.04*
	>HS	.18	.15	.04	.39	.05	.17***	.09	.14	.02	.16	.05	.07***	.02	.15	.00	.15	.05	.07***
Literacy								.002	.00	.09***	.004	.00	.22***	.00	.00	.00	.004	.00	.18***
Numeracy														.00	.00	.13**	.001	.00	.04
Prison Var																			
Repeat		.09	.08	.04	--	--	--	.10	.08	.04	--	--	--	.12	.08	.04			
Release Time		-.17	.07	-.07**	--	--	--	-.18	.07	-.08**	--	--	--	-.18	.07	-.08**			
SES																			
Parent Education	HS	.19	.08	.08**	.32	.04	.15***	.18	.08	.08**	.23	.04	.10***	.17	.08	.07**	.22	.04	.10***
	>HS	.40	.09	.14***	.54	.04	.24***	.37	.09	.14***	.38	.05	.17***	.37	.09	.13***	.38	.05	.17***
Demog																			
Gender		-.16	.10	-.04*	-.06	.03	-.03**	-.16	.10	-.03	-.06	.03	-.03*	-.14	.10	-.03	-.05	.03	-.02
Age		-.43	.06	-.18***	-.08	.03	-.04***	-.40	.06	-.17***	-.06	.03	-.03*	-.39	.06	-.17***	-.06	.03	-.02*
Race	His	.18	.09	.06*	.10	.05	.03	.22	.09	.08**	.23	.05	.07***	.24	.10	.09**	.23	.05	.07***
	Blk	.30	.07	.12***	-.09	.05	-.03	.34	.07	.14***	.03	.05	.01	.38	.07	.16***	.05	.04	.01
R-Sq		9%			8%			9%			11%			10%			11%		

Note. For analysis, PIAAC prison 2014 & PIAAC household 2014/2014 Full Population Weight and Plausible values with full replication was used. The dichotomous variables and categorical variables were dummy coded. The reference groups are: < high school, repeat offender, release time < 2 years, male; ages 25-44; White. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7A. Nested regression model for Three Social Outcome with three Human Capital Predictors

		Political Efficacy						Trust						Health					
		Prison			Household			Prison			Household			Prison			Household		
		<i>B</i>	<i>SEB</i>	β	<i>B</i>	<i>SEB</i>	β	<i>B</i>	<i>SEB</i>	β	<i>B</i>	<i>SEB</i>	β	<i>B</i>	<i>SEB</i>	β	<i>B</i>	<i>SEB</i>	β
Human Capital																			
Education	=HS	-.08	.15	.03	.20	.05	.08***	.16	.07	.07	-.06	.04	-.03	.13	.09	.05	-.01	.05	.00
	>HS	.48	.23	.08**	.51	.06	.19***	.55	.18	.12***	.26	.05	.11***	.01	.16	.00	.25	.05	.11***
Literacy		-.003	.003	-.10*	.004	.00	.15***	.004	.001	-.10*	.00	.00	.06	.00	.00	.00	.00	.00	.16***
Numeracy		.002	.001	.06	.00	.00	.03***	.00	.00	-.01	.00	.00	.06	.00	.00	.12**	.00	.00	.04
Prison Skill		.2	.08	.06**	--	--	--	.20	.08	.08**	--	--	--	.14	.07	.05**	--	--	--
Prison Ed		.16	.08	.06**	--	--	--	.12	.15	.05	--	--	--	-.03	.06	-.01**	--	--	--
HH-ALL		--	--	--	.05	.06	.02	--	--	--	.11	.04	.03***	--	--	--	.31	.03	.11***
Prison Variables																			
Repeat		-.06	.08	-.02	--	--	--	.10	.06	.04*	--	--	--	.12	.08	.05	--	--	--
Release		-.13	.07	-.05**	--	--	--	.003	.07	.001	--	--	--	-.16	.07	-.07**	--	--	--
SES																			
Parent Ed	HS	-.02	.11	-.01	.00	.06	.00	.07	.07	.03	.08	.05	.03	.16	.08	.07**	.19	.04	.09***
	>HS	.16	.12	.05*	.11	.06	.04*	.10	.08	.04	.18	.06	.07***	.35	.09	.13***	.32	.05	.14***
Demographic																			
Gender		.20*	.13	.04	.13	.03	.05***	.21	.10	.04	.10	.04	.04***	-.15	.10	-.03	-.05	.03	-.02
Age		.04	.10	.02	.15	.03	.06***	.14	.08	.06	.14	.04	.06***	-.38	.06	-.16***	-.07	.03	-.03**
RACE	His	.06	.11	.02	.42	.06	.12***	.09	.11	.03	-.05	.06	-.02	.24	.10	.09**	.19	.04	.06***
	Blk	-.02	.01	-.01	.38	.07	.09***	-.08	.09	-.04	-.08	.07	-.02	.36	.07	.15***	.01	.05	.004
R-Sq		4%			7%			4%			6%			10%			12%		

Note. For analysis, PIAAC prison 2014 & PIAAC household 2014/2014 Full Population Weight and Plausible values with full replication was used. The dichotomous variables and categorical variables were dummy coded. The reference groups are: < high school, no participation in ALL; repeat offender, release time < 2 years, male; ages 25-44; White. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.