Can arts-based interventions enhance labor market outcomes among youth? Evidence from a randomized trial in Rio de Janeiro *

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Abstract

Using a randomized trial, we look at employment and earnings of a youth training program in Brazil that uses arts and theater-based pedagogic tools. The evidence we present shows youth benefit both in the short- and medium-term. The impacts are economically large, compared to those typically found in the literature. We find no evidence of significant program impacts on other outcomes, including personality-related traits, suggesting that these traits may not be malleable for young adults in the short-run. We argue that the estimated labor market impacts are due to a combination of both skills formation and signaling of higher quality workers to employers.

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1 Introduction

Brazil has seen remarkable progress in labor market outcomes over the last decade. Due to years of favorable growth, the country experienced a broad-based increase in wages, falling unemployment, increased formality and improved job quality, and a generally more efficient labor market. In addition, this job creation and wage growth has been particularly equitable, and therefore the main contributor to decreases in income inequality (Barros et al., 2007; Hoffman, 2009).

This progress notwithstanding, labor market outcomes of youth—particularly those from disadvantaged socio-economic contexts—continue to be markedly worse than almost any other demographic group. These youth face lower wages, higher levels of informality and more frequent unemployment spells. Their attachment to the labor market is also tenuous and punctuated, characterized by a higher frequency of dismissals than is found for adults.

Labor economists identify several possible culprits for the poor performance of disadvantage youth, including low quality schooling (Quintini et al., 2007) and poor family and neighborhood environments, which result in accumulated deficits in different types of human capital. These limited starting conditions also result in deficits in acquired skills, both cognitive and non-cognitive (also referred to as socio-emotional, socio-affective or life skills). As a result, these disadvantaged youth face significant headwinds entering and being successful in the formal labor market. This problem is typically addressed through a wide array of policies and programs, with focuses ranging from flexible youth contracts, wage subsidies, public employment schemes, remedial education programs, vocational and technical training, to programs focusing on the development of different types of soft skills.

This paper discusses one of the more innovative approaches at dealing with unemployment among disadvantaged, *favela* youth in Rio de Janeiro (Brazil), pioneered by a small NGO, *Galpão Aplauso*. The novel dimension of this program is the use of expressive arts and theatre as a pedagogical and skills building tool. This tool is used in tandem with other more orthodox vocational and academic components. Although expressive arts have long been used as a vehicle for teaching—including for at-risk youth—their use in a labor training program is uncommon.

This paper contributes to the labor literature in two important ways. First, it is the first (to our knowledge) rigorous evidence on the effectiveness of an arts and theatre-based pedagogical instrument aiming at impacting employment and earnings. Second, the paper also contributes to the literature on the role of both cognitive and socio-emotional skills in labor market outcomes. Our understanding of how these skills are jointly determined and how they impact labor market outcomes remains quite limited, despite recent advances in research in this area (Almlund et al., 2011; Heckman and Kautz, 2012)—the findings of our analysis provide additional evidence in this regard.

The remainder of the paper is organized as follows. Section 2 discusses the evidence on the effectiveness of different modalities of youth training. It also delineates how cognitive and socio-emotional skills are measured, and how they are related with personality traits, and labor market outcomes. Finally, we review the evidence on the connection between expressive arts and cognitive and socio-emotional development. Section 3 presents the *Galpão Aplauso* program in the context of the labor market for disadvantaged youth in Brazil and Rio de Janeiro, and the constraints that limit their employment and earnings outcomes. This section also describes the experimental design. Section 4 presents the data collection and estimation methodology. Empirical impact estimates on a series of outcomes—labor market results, risky behavior, and life skills—are presented in Section 5. Section 6 discusses our findings and concludes.

2 The evidence on youth training, cognitive and socio-emotional skills in the labor market, and expressive arts

2.1 Youth training programs

Youth (un-)employment is one of the most persistent problems in public policy. Although employment is almost universally one of the most important social and economic concerns of policy-makers, the different nature of youth employment often calls for policies that are different than those targeted at adults. Youth tend to have lower labor market attachment, and higher levels of job turnover. For example, administrative data on labor markets in Brazil show that the frequency of youth dismissals is much higher than those for adults (Corseuil et al., 2013a), a stylized fact also observed in many other Latin American countries (Cunningham and Salvagno, 2011). Youth employment is particularly cyclical (Choudhry et al., 2012), and since youth have had little time to accumulate assets, they are more vulnerable to the immediate consequences of unemployment spells. The impacts of negative labor market experiences (e.g. unemployment spells) are particularly persistent in the case of low-educated youth (Burgess et al., 2003). Research also suggests that both the duration and the frequency of these spells may be higher for youth with lower levels of schooling and other economic disadvantages (Quintini et al., 2007).

In addition, low-skilled workers are less capable of obtaining jobs through more formal mechanisms, and therefore rely to a greater degree on informal networks (Wahba and Zenou, 2005). As the quality, size and density of networks are important for obtaining jobs, youth may be at a disadvantage, given they have not had time to acquire high-quality peer networks, having to rely to a larger degree on parental ties (Kramarz and Skans, 2011). This pattern may be more pronounced in the case of youth who lack credentials entirely (high school drop-outs), or who have poor credentials (poor academic performance).

Youth from marginal communities also face disadvantages due to poorly developed cognitive and socio-emotional skills. Cognitive skills—such as academic knowledge, literacy, mathematical ability—as well as other traits related to intellect and intelligence are usually considered to be important in determining labor market outcomes. Recent empirical evidence brings to light the importance of socio-emotional skills by shaping education and labor market decisions, and by determining success, conditional on having made certain choices. Cognitive and socio-emotional skills are also intrinsically linked, as they are jointly determined—with socio-emotional skills determining cognitive skills and vice-versa (see section 2.2 below and Almlund et al., 2011, for an extensive literature review).

The available set of policies and programs that are used to address youth employment and earnings is extensive. They are typically in the form of Active Labor Market Policies (ALMPs), which seek to impact labor supply, demand, or both (e.g. wage subsidies). Some ALMPs include targeted wage subsidies (either directly or through tax incentives), direct public employment, flexible employment modalities that reduce transaction costs and avoid contingent labor liabilities (including internships), and sponsored intermediation services to various types of training and vocational programs. For the most part, these programs are implemented, managed or financed with public funds. However, non-public actors—NGOs or private firms—collaborate with publicly-sponsored programs, often in the form of service providers and implementers. The participation of non-public actors can provide an opportunity to experiment and implement novel solutions on a small scale.

Recent quantitative reviews of ALMPs in industrialized countries find that they are limited in their ability to actually enhance employment, even if they tend to have modest impacts on earnings. For instance, Card et al. [2010] look at 199 studies on ALMPs from 1995 to 2007. They find generally small point estimates of program effectiveness on employment and earnings, with public employment

faring the worst and classroom and on-the-job training doing the best. Youth programs yield smaller and less positive results, according to the authors. In a similar meta-analysis, Kluve [2010] synthesizes 137 different program evaluations from 19 industrialized countries and finds limited evidence for the effectiveness of most ALMPs. The study identifies that effectiveness is driven much more by type of program than by contextual factors, with some programs, such as direct employment, producing negative employment effects, while wage subsidies produce relatively large employment effects.

Although ALMPs generally have small or negative short-run impacts, these tend to increase over time (Card et al., 2010). In the case of a review of the US-based Workforce Investment Act (Heinrich et al., 2013), the authors find that beneficiaries actually see lower employment and earnings in the short-run, followed by modest gains, mostly in the form of higher earnings. Using administrative data from German programs, Caliendo et al. [2011] find the same pattern, in which initial results are negative, followed by an increase in employment and earnings, which eventually attenuate over time. In that particular study, training programs tend to have initial negative impacts for about 10 months, followed by an increasing impact over time. Wage subsidies, on the other hand, do not produce negative impacts, but their impact peaks at 12 months and fades away after that peak.

Evidence for the effectiveness of ALMPs for emerging economies—and Brazil in particular—is much less common. Urzúa and Puentes [2010] report on the findings from Latin America and the Caribbean (LAC) and find that the evidence is generally more positive than in the industrialized context, with consistent findings of positive (if modest) employment effects, particularly for women. However, many of the studies reviewed have a relatively poor evidentiary basis, as is pointed out by the authors.

Urzúa and Puentes' caveats regarding the evidence are well placed. There are surprisingly few rigorous evaluations of ALMPs in LAC, and even fewer in Brazil. In addition, the impacts documented in more rigorous program reviews tend to be small. Card et al. [2011] provide the first rigorous evidence of the effectiveness of a youth training program, for the Dominican Republic's *Juventud y Empleo(JE)*, a labor training program consisting of vocational and basic or life skills training with a subsequent program-sponsored internship. The authors find no impact on employment, although they do find impacts on both wages (10 per cent treatment effect) and formality. Subsequent studies find similar results. Ibarrarán et al. [2012] look at the second phase of the JE program and essentially find identical results: quality of employment and (to some degree) earnings increase, but there are no employment impacts. Attanasio et al. [2011] look at the case of Colombia's *Jovenes en Acción*, a program that—like JE—combines training with a sponsored internship. The authors find employment and earnings impacts, but only for women (19 per cent treatment effect on wages). Alzua et al. [2013] look at a small-scale, NGO-run training program in Argentina, and again find no employment effects, but some effects on labor earnings.

In the case of Brazil, there are two main studies that rigorously review the effectiveness of ALMPs: Oliveira and Rios-Neto [2007] and Corseuil et al. [2013b]. Oliveira and Rios-Neto evaluate the impact of a vocational training program conducted in Minas Gerais on employment, and on the duration of employment. They find both employment effects and a stronger attachment to the labor market. Corseuil et al. [2013b] use longitudinal administrative data on wages, hiring and unemployment spells to evaluate the effectiveness of the Brazilian *Jovem Aprendiz* program, a flexible employment modality which combines mandated youth training with fiscal incentives—both reduced labor liabilities for each youth hired under the program and penalties for firms that do not hire a minimum number of youth under the program. By looking at changes in the program's eligibility rules, they are able to estimate impacts on employment and wages. They find significant impacts on wages and small impacts on full-time employment, but not overall impact on employment.

2.2 The role of cognitive and socio-emotional skills in the labor market

Economics has long been interested in the role of cognitive skills on labor market performance, but until recently the profession has dismissed socio-emotional skills as unimportant for job performance. In the United States, the discussion of the role of cognitive skills was important in the context of estimating returns to schooling. Blackburn and Neumark [1993] and Cameron and Heckman [1993] both find evidence that test scores (as proxies of cognitive ability) play a role in determining earnings, and that without them, estimates of the returns to education might be overstated. These findings were corroborated by several other early studies, although the relevance of cognitive skills was by no means unanimous. For example, Murnane et al. [1995] find that they are not important conditional on schooling levels, particularly for women.

Evidence outside the United States has also shown a positive relationship between cognitive skills and earnings. For Canada, Green and Riddell [2003] find a significant effect of literacy test scores on earnings, even when experience, education and family characteristics are accounted for. Anger and Heineck [2010] find that wages in Germany are positively related to speed of cognition. In one of the very few studies that look at the role of cognitive skills in LAC, Diaz et al. [2012] find that verbal fluency, math problem solving and memory are all strongly related to earnings in Peru. Measures of intelligence are usually less important in determining career success or earnings for most occupations. The Peru study shows that although all cognitive measures are strongly related to earnings, once schooling levels are accounted for in the regression, only math problem solving is significant at conventional levels (ibid.). A previous study by Bassi and Galiani [2009] essentially finds the same result: cognitive ability—in this case measured by the Ravens' test—impacts earnings only through education.

Social sciences have been studying the role of socio-emotional skills in shaping social outcomes for many years. Psychologists and Sociologists have long since studied the role of socio-emotional traits on subjective well-being (SWB), measures of health, quality of life and longevity; the success and enjoyment of family, peer and intimate relationships, occupational choice and labor outcomes, among many other outcomes. Ozer and Benet-Martínez [2006] conduct a literature review in the Psychology and Sociology field, and find strong correlations between psychological traits and consequential outcomes. In most cases, the studies utilize measures of personality traits—usually measured by self-reported psychological tests.

The most common framework of personality traits used in the literature is the Five Factor Model or Big Five Factors (Costa and McCrae, 1988), in which all relevant personality traits are subsumed into five main traits—each with a series of sub-traits. The "Big Five" traits are (i) Conscientiousness, (ii) Openness to Experience, (iii) Extraversion, (iv) Agreeableness, and (v) Neuroticism/Emotional stability.[1] This framework has become the conceptual workhorse of research on personality in psychology. Over the years, variants of the framework and, equally significant, innumerous instruments with which to measure each of the core and subordinate personality traits have emerged. However, most of this research considers personality traits as largely exogenous and fixed over the life-cycle. Although this view has been challenged by recent research, in practice there are few studies that attempt to model how these traits can be affected by public policies.[2]

Modern approaches look at skill formation from a unified perspective, in which cognitive endowments impact decision-making throughout the life-cycle, which in turn also impact both measures of

[1] These dimensions and their subordinate sub-traits can be measured by self-reported psychological tests, direct inquiry by a professional psychologist, or by reporting by a lay third party, also through a structured questionnaire. In practice, they are typically estimated based on self-administered personality tests.

[2] Costa and McCrae [1988] argue that most personality traits are immutable after adolescence; a view that has since been systematically falsified by numerous studies. As such, psychologists did not advance a framework by which the formation of socio-emotional skills over time would be modeled based on an accumulation of life experiences.

cognitive and socio-emotional development. Heckman et al. [2006] provide one of the first attempts to model socio-emotional skills as an endowment. They show how the different distribution of trait endowments (both intelligence and socio-emotional endowments) can lead to different decisions, including differences in sorting into jobs, and different schooling decisions. Cunha and Heckman [2008] and Cunha et al. [2010] expand this model to take into account dynamic investment over the life-cycle. In effect, socio-emotional skills are not treated as stationary over time, but rather shaped by different decisions by households and individuals.

Both cognitive and socio-emotional skills are important in shaping labor market outcomes. Bowles et al. [2001] provide a review on early empirical evidence and conclude that both socio-emotional skills and cognitive skills explain a significant portion of variation in earnings. Osborne Groves [2005] applies a Rotter scale of locus of control and finds that both locus of control and aggression (both aspects related to Neuroticism/Emotional Stability in the Big Five) are associated with higher wages for both men and women. They also find that these measures explain a larger share of variance in (log) wages than do measures of crystalized intelligence (such as IQ) or fluid intelligence. This is a similar finding to that of Heckman et al. [2006] and Mueller and Plug [2006]. Using data from the Wisconsin Longitudinal Study (WLS), Mueller and Plug [2006] find that some aspects of the Big Five are related to earnings, but that the effects are different between men and women.[3]

More recently, Heineck and Anger [2010], using the German Socio-Economic Panel Study (GSOEP), corroborate some of the findings above. They find that locus of control is important for earnings of both men and women, and the effect is twice as large as the measures of cognitive ability in the GSOEP. On the other hand, Heckman et al. [2011] find that personality traits play a role in determining labor market outcomes mostly by shaping education decisions. Finally, a recent review of the evidence by Almlund et al. [2011] suggests that *conscientiousness* and *internal locus of control* (related to Neuroticism/Emotional Stability) seem to be particularly predictive of worker turnover (Gallo et al., 2003), sorting into professions (Barrick and Mount, 1991; Ham et al., 2009; Heckman et al., 2006), and earnings (Cattan, 2011). For LAC there are two main studies that look at the importance of cognitive and socio-emotional skills: Diaz et al. [2012] and Bassi and Galiani [2009]. Both studies find that socio-emotional skills are less important than cognitive skills, but cognitive skills act mainly through education—a finding similar to Heckman et al. [2011].[4] Ibarrarán et al. [2012] collect experimental data from latter rounds of the Dominican Republic youth training program (*JE*, see section 2.1), and measure both cognitive and socio-emotional skills. Although they find evidence that the program impacts the formation of socio-emotional skills[5], curiously they find that these skills were uncorrelated with labor market outcomes in a cross-section.

2.3 Expressive arts and cognitive development

The importance of arts and music in the development of the brain and its consequences for intellectual and socio-emotional development is increasingly well documented in the medical and social sciences literature. Music training in particular has been found to be important for cognitive development. For example, looking at school-age children, Schellenberg [2011] finds that music appears to impact several dimensions of cognitive function. There is less evidence regarding the role of expressive arts in cognitive and emotional development.

[3]High levels of conscientiousness seem to be related to higher wages for women, whereas openness (which is also related to IQ) seems to be related to higher wages for men.

[4]However, both of these studies relied on large national surveys, and were not necessarily targeted to the youth population that is usually the subject of ALMPs.

[5]The authors use three different scales to measure socio-emotional skills: The Social and Personal Competencies Scale (CPS), The Rosenberg self-esteem scale, and the Grit Scale.

Developmental psychologists argue that arts-based therapies can help school-age youth exercise emotional regulation (Moneta and Rousseau, 2008). In a compendium of studies looking at arts and cognition (Asbury and Rich, 2008), Posner et al. [2008] suggest specific pathways through which arts can impact the brain. They argue that networks in the brain related to both "executive attention" and "effortful control" can be impacted by arts. Since these networks are associated with different types of cognitive functioning—including emotional—this strengthening can potentially impact a wide range of cognitive processes.

The evidence linking specific types of expressive arts-based activities with improved cognitive processes among youth is scarce. Most studies that look at this connection are concentrated in the medical literature, and generally focus on programs associated with the elderly, as e.g. in complementary treatments for cancer, or in post-operative settings (Stuckey and Nobel, 2010). In one of the few randomized trials to test the cognitive and socio-emotional impacts of expressive arts on youth, Schellenberg [2004] finds that expressive arts have a large impact on socio-emotional outcomes (as measured by psychological tests), but no impacts on measures of crystalized intelligence (as measured by an IQ test). Music lessons, on the other hand, have a small impact on crystalized intelligence and no impact on socio-emotional metrics. This result is similar to that found in less rigorous studies (reflexive evaluations). For instance, in a pre-post comparison, Wright [2006] finds improved role-taking ability, as well as verbal ability following participation in a theatre program. In a randomized trial analyzing an expressive arts program in Finland, Joronen et al. [2011] find that participation in drama reduced the instances of bullying in school.

3 The *Galpão Aplauso* Program in Rio de Janeiro

3.1 Labor market conditions for youth in Rio de Janeiro

The *Galpão* program was implemented against the background of a generally positive labor market context. The city of Rio de Janeiro has experienced overall positive employment and earnings growth over the past decade. Data from the *Pesquisa Mensal do Emprego*[6] allow us to analyze the labor market trends during the time period of the analysis of the *Galpão Aplauso* Program.

According to the PME, Rio de Janeiro has seen a remarkable improvement in terms of employment, earnings, and formality. Table 1 reports the evolution of labor market indicators regarding employment opportunities according to different segments. Unemployment rates have been decreasing both in Rio and in other metropolitan regions. The trend is the same once we restrict the sample for youth. Irrespective of the geographical areas, the decline is more intense in the most recent period. As most individuals trained at *Galpão* are placed in activities related to manufacturing and construction, we also illustrate the share of these sectors in employment for the same segments. The table shows a decline of around half a percentage point (p.p.) for the employment share for these sectors both in Rio de Janeiro and in other metropolitan regions from 2010 to 2013. The picture changes when we restrict the analysis to youths: their employment share in manufacturing and construction rises in Rio de Janeiro and declines by 0.5 p.p. in other regions.

We can also see in Table 2 that, up to 2012, informality rates have decreased at a lower rate in Rio de Janeiro than in other metropolitan regions. In contrast, from 2012 to 2013 informality decreased more sharply in Rio than in other regions. The pattern registered for the sample restricted to youth is

[6]The PME is the main instrument for recording high-frequency data on labor markets – including informality – over time in Brazil. It is a monthly household survey conducted by the *Instituto Brasileiro de Geografia e Estatística* (IBGE) in the six larger metropolitan regions of Brazil.

similar to the one for all individuals. Labor earnings for youth increase more in Rio de Janeiro than in other regions from 2012 to 2013, despite the reverse trend from 2010 to 2012.

Overall we can see that in recent years the labor market has been improving in all dimensions analyzed with respect to employment opportunities and job quality. It is important to note that the best situation for young individuals in Rio de Janeiro is always identified for the time between the first half of 2012 and the first half of 2013; this coincides with the training period for the *favela* youths trained at *Galpão*. As we shall see later on, the overall employment trends on youth from the PME in Rio de Janeiro are very similar to the profiles we observe in the program beneficiary data.

3.2 The *Galpão* Program

In 2009, the Inter-American Development Bank's Multilateral Investment Fund (MIF) partnered with the *Instituto Stimulu Brasil* to finance the "Sociocultural and Productive Integration of At-risk Youth" project in Rio de Janeiro (henceforth referred to as *Galpão Aplauso*, or just *Galpão*). The project aims at improving the socio-economic situation and employability of youth by teaching basic skills, life skills and vocational skills, and providing placement services. The program thus consists of a combination of vocational, academic and life skills training, delivered through a pedagogic method that utilizes arts and theatre.

The program's physical location was an important part of its intervention strategy. Existing cultural spaces built within the *favelas* had increasingly become non-viable due to the violence context which limited the participation of youth across different communities. Young people could not move from one community to another because of the partitioning of the *favelas* by rival gangs which dominate the drug trade and other illicit activities in the city. The program's response was to create a neutral downtown space, specifically in the port area, away from the *favelas*. The concept of a neutral and inclusive space was also woven into the program's pedagogic methodology. The program had been in operation since 2005.[7]

The program is particularly intensive, if compared with other youth training programs in the region (e.g. *Juventud y Empleo, Jovenes en Acción*). Program duration is approximately 6 months, 5 hours a day, 5 days a week, delivered in three shifts—morning, afternoon, and evening. The treatment includes 300 hours of vocational training (mainly construction-related and soldering), 180 hours of training on academic and basic skills, including remedial courses in both Mathematics and Portuguese, and 120 hours in life skills. Within the life skills component, youths attend sessions on basic principles of "social harmony", which emphasize civics and certain shared values, along with socio-emotional development. For instance, concepts, principles and values such as ethics, civic responsibility, respect, environmental education, solidarity, health and honesty are taught. The pedagogic model employed makes extensive use of arts and theatre as training mechanisms.

Unlike other programs evaluated in LAC, *Galpão's* job placement strategy was loosely structured around formal and informal agreements with local private sector firms. It also did not have a formal internship program. In some cases, in situ vocational training is sponsored by partner firms. That is, firms pay for *Galpão* to train prospective youth in skills that the employer will demand. In other instances, firms make contributions (regular or ad hoc) to the program but do not specifically

[7]The program was originally co-financed by the public sector. Its first partnership was with the Municipality of Rio de Janeiro, from which it received public funding to train *favela* youth. During its early years, the program was very large, reaching a peak of roughly 10,000 youth trained. However, no impact evaluation was implemented during this period and the partnership was discontinued due to a government change, leaving the program administrators with the task of finding a new model of operation that would not rely on public funding. In 2009, the program was rather small, with 4–5 cohorts of youth per year and cohort sizes of roughly 100 students.

sponsor any type of training. According to interviews with the program administrators, demand for the program is produced by word-of-mouth, relying mainly on former participants, teachers, and private sector partners to announce the opening of each of the cohorts. Given that the cohorts are over-subscribed, the program does not need to carry out information or dissemination campaigns. Based on administrative data, the average cost per youth is R$810 (USD 385) a month, or R$4,680 (USD 2,225) for the entire curriculum.

3.3 Design and implementation of the Randomized Controlled Trial (RCT)

The youth from Rio's *favelas* to be treated by *Galpão* are selected in a two-stage process. In the first stage, all youths responding to the announcement of a new cohort are given a "pre-inscription" questionnaire that includes information related to personal and household situation, current employment, educational status, etc. This stage is essentially a "screening" stage ensuring that youth meet the eligibility criteria: Only those from households with monthly income below two minimum wages are eligible; also, youth who have aged out of the program (over 29 years old) are not allowed to apply. In a second stage, eligible youth are contacted and are required to undertake an interview process and to take a Mathematics and Portuguese test. According to the number of slots available, the best-performing youths of the math and language tests are invited to enroll in the program. The interview attempts to identify youth who are currently involved in drugs or gang activity; those are not offered a slot, regardless of their academic performance.

Given that the program was oversubscribed, it was possible to employ an experimental design to evaluate the program, by which eligible beneficiaries would be randomly assigned to either a treatment or a control group. The randomized selection was double blinded.[8] Program administrators called applicants and informed them of their status, and applicants that were randomly selected-in were allowed to enroll. The experiment was also structured with an exception mechanism that allowed *Galpão* administrators to exclude certain individuals from the process of random assignment.[9] The *pre-selected* individuals were identified before the randomization took place and excluded from the experiment.[10] We do not include the pre-selected in the analysis, given that their selection into the program was non-random. Furthermore, it was agreed that the program administrators would keep the treated and control units ignorant of the possibility of future participation to eliminate biases in impact estimates based on expectations of future treatment.[11]

The experiment was aligned with the program's cohort structure, in order to not interfere with

[8]The program administrator sent the names and identification numbers of the applicants, and the researchers conducted the randomization based on a standard random number generator corresponding to the total size of the proposed study sample, with equal probability of inclusion and exclusion. The researcher assigning the random numbers to ID numbers was not aware of beneficiaries' names. The random numbers generated were then re-matched to the beneficiary names by a second researcher, and the names randomly selected-out and selected-in were communicated to the program administrators.

[9]Administrators identified individuals who would have to be offered the program based on need, as well as those who were particularly high achievers (high-scoring individuals on the Math and Portuguese tests) from very disadvantaged backgrounds. Also, in specific instances when siblings applied to the program, excluding one might have resulted in resentment. All these cases were deemed "pre-selected" applicants. It was agreed between researchers and program administrators that the maximum number of pre-selected individuals should not exceed 10 per cent of the total study sample. The eventual number of pre-selected cases was rather low, amounting to less than 6 per cent of the study sample size.

[10]This procedure is routinely used in experimental designs to avoid problems with potential control units being treated by the program after the randomization. This type of contamination occurred, for instance, in both the cases of *Juventud y Empleo* in the Dominican Republic and *Jovenes en Acción* in Colombia.

[11]However, this strategy turned out to produce significant frustration on the part of the control group, and was eventually dropped. Indeed, most of the problems with data collection were derived from the ill-will generated when controls found out that they would not be eligible to apply in the future. This could produce negative John Henry effects, and therefore was discontinued for data collected after the first cohort.

program operation. The treatment analyzed was rolled out in 2012 in three cohorts over time, the first cohort starting in April, the second in June and the third in July. For each cohort, youths were randomly assigned to treatment and control groups, and baseline and first and second follow-up data were collected. In the case of the first cohort, a list of youth who had applied earlier in the year was used to construct the treated and control groups. Youth in this list were called, and if they still had interest in the program, they were then eligible to participate in the lottery. For cohorts 2 and 3, a new call was conducted, and youth were selected form that list and allowed to participate in the lottery. Since cohort 1 was generated from an existing list, a significant share of youth called was no longer interested in participating. This differential process by which youth were recruited could generate youth with different observed and unobserved characteristics in cohort 1. Results are thus presented separately by cohorts.[12] In total, 451 applicants who met the eligibility criteria were identified during the registration process. Table 3 presents the applicants' distribution broken down by treatment status for the entire sample. There were no instances of "always-takers/non-compliers" as no controls were able to enroll post-randomization. Just above 10 per cent of those originally assigned to the treatment group were "never-takers/non-compliers", as they failed to show up for the training.

4 Data collection, baseline balance and estimation methods

4.1 Data Collection

The baseline data were collected between June and October 2012 and include 381 individuals, 163 in the treatment group, 195 in the control group, and 23 non-randomly assigned treated youths (*pre-selected*). The Brazilian firm *Overview Pesquisa* carried out the surveys implementing comprehensive interview protocols for *favela* youths, a process that in practice required multiple visits to the same neighborhoods. According to *Overview Pesquisa*, in these neighborhoods with high rates of violent crime, the hazard rate of potentially dangerous confrontations with drug gangs increases rapidly with the time that the survey team remains in the field, as gangs rapidly become aware of their presence. This necessitates frequent short visits to the neighborhoods.

The vast majority of interviews took place face-to-face in the households where the youths live. In a small percentage of cases (8 per cent), surveys were administered in different locations, because youths had told the enumerators to avoid visiting their communities altogether for security reasons. Furthermore, in order to minimize the non-response rate, the survey firm made sustained attempts to track and interview youths. After three unsuccessful attempts had been made, a monetary incentive was offered to encourage the participants to complete the questionnaire (eventually six youths took up the monetary incentive).[13] As a result of these combined efforts, only 16 per cent of the original group could not be interviewed.

After the completion of the program, two follow-up surveys were conducted. Figure 1 shows the timeline of data collection and intervention. To ensure comparability, the surveys include the same set of questions and the data collection proceeded in identical fashion. In the first follow-up, *Overview Pesquisa* managed to interview a total of 348 youths comprising 150 youths in the treatment group, 178 in the control group, and 20 pre-selected youths. The sample (excluding the pre-selected) represents 92 percent of the group interviewed at baseline. This attrition rate compares favorably to those found in other impact evaluations—with randomized design—of youth training programs in LAC.[14]. In the

[12] We also present aggregate results for cohorts 2 and 3.

[13] This strategy was required mostly for the control group, and mostly from the first cohort.

[14] *Entra 21* in Argentina (81.5 per cent), *Juventud y Empleo* in Dominican Republic (about 80 per cent in the second evaluation), and *Jovenes en Acción* in Colombia (81.5 per cent). See Alzua et al. [2013], Ibarrarán et al. [2012], and

second follow-up[15], relative to the baseline sample, the attrition rate was 21 percent.

4.2 Descriptive analysis of the baseline data

Tables 4 through 6 present balancing results for observable characteristics at baseline—i.e. at random assignment for socio-demographic covariates (Table 4), for social activities and risky behavior (Table 5), and for life skills (Table 6). In all three tables we first present means for the treatment and control groups—columns (1) and (2)—and corresponding differences-in-means—columns (3)—to assess balancing. The treatment and control groups reported are youths for which data at both the baseline and at the first follow-up are available, and these constitute the main balancing results. Additional balancing results are presented in the columns to the right in each of the Tables 4 through 6: Columns (4) and (6) display baseline averages for the group of youths that could not be reached in the first follow-up and second follow-up, respectively, and columns (5) and (7) investigate whether there is any indication that this attrition from the sample is systematic.

The general picture of the summary statistics indicates that the youths in our sample are on average around 23 years old and predominantly male (Table 4). Only about 13 per cent are women, which is in line with the type of vocational and technical training offered in the program. The households in which these youths live have an average of about 4 household members. Almost all (97 per cent) report that they can read and write. They are typically not recipients of social benefits like the *Bolsa Familia* or *Familia Carioca*, although the low frequency likely underestimate the true incidence, since youth who still live at home may be unaware of the recipient status of their mothers or sisters.

Compared to averages in the city of Rio, program youths have low levels of employment, earn low wages, and live in poor basic housing and sanitation conditions. The employment rate for *Galpão* is much lower than average for the city, with only 66% reporting currently being employed at baseline. This is in part due to selection, of course, as those employed would be less likely to seek out a program such as *Galpão*. The data also show that the proportion of youth who work with formal contracts (*com carteira assinada*) is somewhat lower than the average for youth in the city: 70% for *Galpão* youth versus 80% for overall youth in Rio. *Galpão* youth employed also earn less than the city's average. The average monthly reported earnings is roughly R$755, which is lower than the average earnings for the city—and only slightly above the minimum wage. Living conditions are also precarious, compared to averages in Rio. Access to formal water is only 70% and garbage collection is only 78%; averages for the city are 96% and 88%, respectively (IPP, 2010).

The baseline also identifies specific instances which are typically related to risk factors among youth (Table 5). The first is the relatively high frequency with which these youth observe violence, or are victims of violence. For instance, more than half of the youth reported witnessing an incidence of violent crime in the past year, and around 37 percent of them reported witnessing the use of a firearm. Both of these figures are particularly high. Another 18 per cent reported being the victim of discrimination, and 28 percent report having witnessed some form of violent physical attack. Other risk factors recorded through the instrument include the use of alcohol, tobacco, and drugs. A third of those interviewed reported the consumption of alcohol in the past week, but only a fifth reported having smoked. There was virtually no reported use of drugs, although it is unclear if youth would have been comfortable reporting this metric given the lack of privacy in the interview context (Aquilino, 1997). In many aspects, however, these youth are very much like others: they attend church (50 per cent), the play sports regularly (65 per cent), and they go out at night (73 per cent).

Attanasio et al. [2011]

[15]The firm was able to re-contact 299 individuals, including 135 individuals in the treatment group, 147 in the control group, and 17 pre-selected youths.

In this study we use two instruments to measure socio-emotional development: the Grit scale and the Social and Personal Competencies Scale (CPS). The Grit scale measures persistency of effort, enthusiasm about long term goals, consistency of interests, and ambition. The Grit scale is related to the personality trait of *Conscientiousness* (Duckworth et al., 2007). The CPS was developed by the IADB to measure socio-emotional development in the context of the *Juventud y Empleo* program (Brea, 2010; Ibarrarán et al., 2012). It measures six basic competencies: i) leadership; ii) behavior in situations of conflict; iii) self-esteem; iv) abilities to relate with others; v) order; and, vi) empathy and communication skills.

The baseline data in Table 6 show that the youth for the most part do not exhibit particularly extreme values in the tests applied. The median total score on the Grit test is of 55. When normalized according to the standard Grit scale (Duckworth et al., 2007), the average is of 4.2, which is actually relatively high on the scale. The results on the CPS scale are similar.[16] In general, we find that treatment and control groups are relatively well balanced at random assignment (compare column (3) in each of the Tables 4, 5 and 6). The majority of covariates do not display significant differences in mean values. Some covariates, however, do show significant differences: the share of single youth, for instance, is 8.2 percentage points smaller in the control group (marginally significant) and the household size in the treatment group is significantly larger (Table 4). More immediately related to the labor market is the significant difference in the age at first job (16.3 vs. 15.6 years of age in the treatment vs. control). While not significant at conventional levels, the difference in the fraction of youths who are employed in some job is quite large: 69.7 per cent in the control group and 61.1 per cent in the treatment group. Similarly, whereas the majority of covariates capturing social activities, risky behavior and life skills are well balanced, some differences are worth noting. In particular, the control group attains significantly higher scores on two subscales of the CPS scale, "Behavior in situations of conflict" and "Order and self-organization", resulting in a marginally significant overall difference in the CPS total scale (Table 6). Taken together, these balancing results might indicate that the control group is marginally better in key pre-treatment outcomes (labor market and life skills) at random assignment.

The summary statistics from Tables 4 through 6 (columns 4–7) also show that there are very few differences between those who were re-interviewed and those who attrited. The results indicate that the youth in our sample do not systematically differ in observed covariates from those youths that were not available for follow-up data (see columns 4–5). In the first follow-up seven of the 45 indicators differ at the 10% or lower level, and 9 indicators in the second follow-up—which is only slightly more than what would be expected simply due to sampling error. The only differences that are notable are the reported incidence of smoking and marijuana use at the first follow-up, which are different and significant at the 1% level. Moreover, we find no evidence that participants assigned to the treatment group attrite differently from those assigned to the control group in either of the two follow-up surveys, suggesting that selection into the sample is not a source of concern (see Appendix Table A1).

Furthermore, in order to check that cohorts are not different in terms of baseline characteristics, we present summary statistics and balancing tests within cohorts (Appendix Tables A2 through A4). As shown in the tables, in general treatment and control groups are relatively well balanced by cohort.

4.3 Estimation Methods

Given random assignment, the counterfactual is directly identified and the simple comparison of average outcomes between treatment and control groups suffices to estimate unbiased mean impacts of the

[16]This may be due to a positive self-selection on personality traits: youth may be higher scoring on the personality characteristics of conscientiousness because this personality trait may in fact be responsible for them seeking out the program to begin with.

program. Thus, we first estimate single differences (SD) in means by ordinary least squares. However, given that there are some pre-treatment differences between treated and control observations, we implement this first specification both without and with controlling for baseline values of the outcome. In a second specification—in order to take into account the residual differences in balance—we use a difference-in-differences (DD) model,

$$Y_{(w=f)it} - Y_{(w=b)it} = \beta T_t + \gamma C_{it} + \varepsilon_{it} \tag{1}$$

where $Y_{(w=f)it} - Y_{(w=b)it}$ is the difference in the outcome of interest for individual i from baseline and follow-up, who is exposed to treatment t or not. T_t is a dummy variable indicating whether the intervention has affected group t, and C_{it} are individual-level covariates.[17] The covariates chosen were those for which we had almost 100% response rates at baseline, given that losses in observations would severely impact the power of estimates with small sample sizes. Thus, the covariates used were gender, household income, and age.

We estimate the impact of the program for a series of outcomes classified into three categories: (i) labor market results, (ii) risky behavior (which is divided into use of alcohol, tobacco, and drugs; and acts of violence and victimization), and (iii) socio-emotional skills. To address a potential concern with multiple hypotheses testing, for each of the "family" of outcomes associated with these categories, we estimate a summary index of all the outcome variables of a family (following Kling et al., 2007). To calculate the index, the variables are standardized by subtracting the mean in the control group and dividing by the standard deviation in the control group (at baseline when the DD specification is used). Also, the sign for adverse outcomes (risky behavior) was reversed, to associate "beneficial" outcomes with a positive sign of the indicator. The index is the simple average across the standardized variables. Lastly, following the method of Hochberg [1988], we present the p-value adjusted for each of the family of outcomes.

Finally, for the case of labor market outcomes (labor and earnings), we also estimate the above model by level of socio-emotional ability, as measured by the Grit and CPS psychometric baseline scores. Here we want to specifically test if youth with higher or lower ability are differently impacted by the program. So a model with interactions for socio-emotional score is also estimated, where a dummy variable, Ig_{wt}, is defined that takes on a value of 1 for youth with more than the median scale score, and 0 otherwise. Equation (2) specifies this model.

$$Y_{(w=f)it} - Y_{(w=b)it} = \beta T_t + \delta Ig_{wt} + \zeta T_{wt} Ig_{wt} + \gamma C_{it} + \varepsilon_{it} \tag{2}$$

In addition, we also estimate the treatment effect for labor and earnings along different values for the scale score (Grit and CPS). However, as we cannot flexibly estimate treatment effects for different percentiles of Grit and CPS, we have to restrict the relationship between the scale and treatment to be linear, and then evaluate $\widehat{\beta}$ along the different percentiles of Grit and CPS. This model is estimated as in equation (3); it is simply equation (1) augmented by interacting the raw scale score, G_{wt}, with the treatment variable, and then calculating conditional expectations for different values of socio-emotional skills.

$$Y_{(w=f)it} - Y_{(w=b)it} = \beta T_t + \delta G_{wt} + \zeta T_{wt} G_{wt} + \gamma C_{it} + \varepsilon_{it} \tag{3}$$

[17]The inclusion of individual covariates may improve the estimator, to the degree that they may still be correlated with the error term. They may also serve to improve the standard error of treatment effect estimates (Angrist and Pischke, 2009; Glennerster and Takavarasha, 2013).

5 Empirical results

Tables 7 through 9 present estimates of the impact of *Galpão* on labor market results, risky behavior, and socio-emotional outcomes, respectively. Panel A shows the estimates for the first follow-up, and Panel B for the second follow-up. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. As mentioned before, the preferred estimator is the double-difference estimator with covariates (column d). Each of the table reports impact estimates for the full sample as well as separately by cohort. In Table 10 we report the summary index and p-value adjusted for each family of outcome variables.

Tables 11 and 12 present the impacts according to equations (2) and (3), respectively. These tables are constructed in an identical fashion to the previous tables.

5.1 Impacts on labor market outcomes

Galpão produced significant employment and earnings impacts for youth, which are concentrated in the two latter program cohorts. The treatment effect estimate for the entire sample shows that at the time of the first follow-up survey, which was collected between 2 and 5 months after the end of the program, the impact on employment probability is 7.4 percentage points and on monthly earnings R$52.86, but these are not statistically significant (Table 7 Panel A, columns 1d and 2d). The estimated impacts increase to 14.6 percentage points and R$100.46, respectively, in the second follow-up (Panel B), which corresponds to the time between 11 and 13 months after program termination, and here the former is statistically significant.

The table also presents results by cohort, showing that the results are mainly driven by cohort 2. The employment impact in the first follow-up is 25.2 percentage points for cohort 2. There no statistically significant results for cohorts 1 or 3. Monthly earnings effects are larger and statistically significant for the cohorts that had a longer time since program termination: R$302.9 for cohort 2 (at the 1% level) and R$269.6 for cohort 3 (at the 10% level). These results suggest that time since program termination may be important in the given context (a finding documented for other contexts as well, see for example Caliendo et al., 2011). In the second follow-up employment impacts are significant only for the full sample, but again the coefficients for cohort 2 are larger than the others. With fewer observations, however, there is not enough power to identify significant effects separately.

The analysis also shows consistent results across specifications. Estimates are not affected by the inclusion of baseline covariates—nor is there actually much improvement in standard errors with the inclusion of covariates. The simple DD results are similar to those augmented with covariates. The SD estimates are somewhat different from the DD estimates, although in both cases cohort 2 sees employment impacts both in the first and second follow-ups. The coefficients are smaller for the SD than for the DD estimator. Given that not all covariates were adequately balanced due to randomization, our preferred model is the DD with covariates. Looking at all labor markets outcomes taken together (Table 10), our preferred model provides a positive and statistically significant impact for cohort 2—using the adjusted p-value that accounts for multiple hypothesis testing across different families of outcomes.

There are several explanations for the differential impacts by cohorts. One possibility is related to the selection mechanism described above. Whereas the first cohort was drawn from youth who had applied earlier and still manifested a desire to participate in the program months later, the two latter cohorts were constructed from current program demand. This creates an incidental selection in the

case of cohort 1, in which youth willing to join the program were usually those who were not able to obtain a better job. Another difference regarding cohort 1 is that it allowed youth to attend morning, afternoon or evening sessions, whereas cohorts 2 and 3 only attended morning sessions. However, while this would clearly appeal to different youth, it is not clear why the program would be less effective in the case of evening classes.

Despite the small sample sizes in the experiment, particularly in the second follow-up, the impact estimates are quite large, compared to those found in other labor training RCTs in the region, such as *Juventud y Empleo* in the DR or *Jovenes en Acción* in Colombia. The earnings impacts are roughly twice those found in the DR (Card et al., 2011 and on the same order as Colombia (Attanasio et al., 2011). And neither DR nor Colombia found employment impacts for the entire sample.

The impact estimates on labor market outcomes also stand out from the existing literature in that it does not seem that the program is producing a significant impact on the formality of jobs. Formal employment is perhaps the only dimension in which most other rigorously evaluated training programs in LAC have been able to impact, and it is somewhat surprising that *Galpão* apparently does not impact formality—point estimators are close to zero and always statistically insignificant (Table 7, columns 3a–3d). A couple of remarks, however, should be made on this. First, as was documented above, the percentage of formal jobs rose particularly fast in Rio from the first half of 2012 to the first half of 2013. And formality was already relatively high in Rio de Janeiro compared to other areas in developing countries; in particular in other places where evaluations of similar programs targeting youth labor market integration had been conducted. Second, unlike other programs evaluated, *Galpão* does not rely on a subsidized internship with a formal job. To the extent that this temporary internship may become permanent, the proportion of formal jobs may be impacted.

5.2 Impacts on risky behavior

Table 8 adds to the labor market results by presenting Average Treatment Effect on the Treated (ATET) estimates for a set of outcomes measuring risky behavior, which includes tobacco, drug and alcohol use and acts of violence and victimization. We do not look at risky behavior results in the first follow-up since the retrospective timeframe used in this module was of one year—much longer than the one used in labor market outcomes, which identified a specific reference week. So if respondents answered accurately, they would recount experiences that took place before the program. These estimates are reported in the Appendix (Table A5).

The results from the second follow-up show no impacts on any of the risk variables. The only significant difference is a higher share of youths in the treatment group who report smoking (Table 8, column 1d). Furthermore, the program seems to be reducing the risk of being involved in a fight and on witnessing a physical attack or a firearm being used. These parameter estimates are negative but insignificant. The results suggest some evidence that in the medium term the program may reduce some risk factors.

5.3 Impacts on socio-emotional skills

The final set of outcomes we consider covers measures of socio-emotional skills. These are presented in Table 9. We report impact estimates as z-scores, which are calculated as the difference of the individual test score and the mean test score of both groups, divided by the standard deviation of the test score in both groups.[18] We find few significant program impacts on levels of socio-emotional

[18]That is, for instance, the coefficient on the "CPS total" score for the full sample in column 1d (Panel A) implies that the CPS total score for individuals assigned to the treatment group is 0.113 standard deviations higher than the CPS total score

development. At the time of the first-follow up, there seems to be a slight indication of lower results for the treatment group in one of the dimensions of the Grit scale ("Consistency of interest"), and higher results in the subscale "Order and self-organization" of the CPS test (columns 10d and 6d, Panel A). In the second follow-up only the CPS subscale remains significant at the 10% level (Panel B). Column 3d reports also a 0.475 standard deviation increase in the score of the dimension "Behavior in situations of conflict" for the treatment group.

The outcomes presented in Table 9, however, may be the one case for which perhaps the DD estimator is inappropriate, given that the baseline for the study was typically done at the beginning of the program. In the case of labor market outcomes, the questionnaire clearly identified the reference week at baseline as the week before the program. But since the data collected in both Grit and CPS do not depend on recall and rather imply contemporaneous reporting regarding perceptions and values, they will necessarily reflect the state of mind at the time the data were collected (Duckworth et al., 2007). This state of mind, in turn, may have been impacted by early participation in the program, in a direction which is not immediately evident.

To address this issue, the SD estimator is likely a better way to assess program impacts on life skills: if program baseline values were indeed already altered by participation, this would not bias the estimator. We report the corresponding results in columns (a) and (b). Indeed, the previously significant results seem to have been affected by the process just described, and the coefficients are either smaller or insignificant now. Nonetheless, there is no overall pattern in the impacts on socio-emotional traits, as measured by psychological tests, and results are rather inconclusive. In fact, the absence of consistent results suggests that socio-emotional skills, although evolving over the life-cycle, may be difficult to shape through employment training programs, at least in the short to medium run.

Despite this finding that socio-emotional traits may be difficult to change in the short to medium run, the evidence suggests that they may be important factors for the program's success. Part of the program's design was to select vulnerable youth who actually score relatively well in socio-emotional traits, but who lack the skills to be able to use these traits to their advantage in the labor market. Table 11 presents the employment and earnings results by high/low socio-emotional score (equation 2), and Table 12 the estimates of the treatment effect estimator for different levels of the socio-emotional score (equation 3). The SD model shows that treatment effects on employment are larger for youth with higher levels of baseline Grit scores, at least in the short run (see Table 11 Panel A). This finding is corroborated by estimating the employment model using an interaction with the raw Grit score. In this case, the interaction parameter estimate is also statistically significant. In the DD specification, however, these estimates are no longer significant. And when the treatment effect is evaluated along the different percentiles of the raw score, we see larger impacts with higher percentiles of Grit score. For the DD specification, however, this is not seen (Table 12).

6 Conclusions

This paper presents an empirical analysis of an innovative youth training program in Rio de Janeiro, which combines technical with life skills training by using arts-based training protocols. The program targets disadvantaged, *favela* youth and is designed to teach technical, academic, and life skills using expressive arts. We implement a randomized controlled trial to assess the effectiveness of the program. Our analysis contributes to the literature on youth training and on the role of socio-emotional skills in the labor market in a number of different and relevant ways.

for the control group. This explanation is just for illustration, however, since the point estimate is not significant.

The program provides the first instance of a rigorous evaluation, based on a randomized trial, of an arts-based employment-generation program for at-risk youth. There are no other such evaluations, to the authors' knowledge. As such, the paper provides additional evidence on the toolkit that policy-makers have to address youth employment—or the precarious nature of youth employment. The findings are suggestive that the "*Galpão* model" can be an effective alternative to traditional pedagogic approaches to youth training. The evidence we present shows youth benefit both in the short and medium-term. The overall impact estimates for program youth in the medium-term indicate a 14.6 percentage point increase in employment rates and a R$100.46 increase in monthly earnings. However, for some cohorts these impacts are much larger—particularly cohort 2. Although we cannot conclusively test among competing hypothesis of why this may be the case, the most plausible explanation is that self-selection may have impacted cohort 1. For cohort 2, employment impacts are on the order of 38% and earnings impacts on the order of 40%.

The results also show, somewhat surprisingly, that the program has no impact on the formality of jobs. This is contrary to the evidence on almost all other youth training programs in LAC, which show, if anything, limited impacts on earnings and employment, but positive impacts on formality. This may be due to a number of reasons, among which two in particular stand out. The first is that the program's context is quite particular. Rio de Janeiro already enjoys relatively high levels of formality, even among youth, and this level rose fast during the evaluation period. And these levels have been increasingly steady over time. This is quite different to the contexts in the Dominican Republic or Colombia, for instance, where the incidence of informality during the years in which their respective programs were evaluated were particularly high.

Another possible explanation is in the program structure itself: *Galpão* does not have a structured internship. Perhaps it should. Whereas other programs evaluated relied on a network of firms who received subsidized interns, *Galpão's* labor intermediation strategy was based on ad hoc alliances with particular private sector actors, but youth were mostly left on their own to find jobs. This means that other programs automatically placed youth in formal jobs—and at the end of the internship, some would remain, and some would exit. This demand-driven component of youth training has been interpreted as one of the success factors of such programs in LAC (Urzúa and Puentes, 2010). By targeting formal firms with formal jobs to begin with, the labor intermediation strategy may be more effective at generating formality than *Galpão*.

Second, the paper contributes to the evidence of the role of socio-emotional skills in the context of labor markets. The estimates show no clear program impacts on socio-emotional skills, suggesting that these may be difficult to mold in the short to medium-run, and that they may, just as in the case of measures of IQ, be largely exogenous within the context of programs of this nature. The program by and large does not seem to be impacting beneficiaries' performance on standardized psychological measures of socio-emotional skills. In particular, skills related to conscientiousness and perseverance seem unaltered by the program.

However, the data also show that socio-emotional traits, although not impacted by the program, seem to be important for its success. Youth with higher levels of socio-emotional skills did better, at least in terms of labor market outcomes. This is consistent with the program's model, which is to use high socio-emotional skills as an asset for these youth, and complement this asset with academic and life-skills. We find that at baseline program participants actually score high on the Grit scale, suggesting that the program does indeed attract this type of youth. In this context, the role of socio-emotional skills may actually be to help develop more conventional cognitive skills, such as literacy, numeracy, and other functions which are also taught. This would be consistent with the literature that suggests that early development of skills, such as socio-emotional skills, may facilitate development of cognitive skills later in life; a process termed *dynamic complementarities* in skill formation by some

authors (Carneiro and Heckman, 2003; Heckman and Masterov, 2007). Such a pattern would also not necessarily be inconsistent with the evidence that identifies contemporaneous correlations between socio-emotional skills and labor outcomes, since these studies were largely done based on a random sample of all young adults using household surveys (Diaz et al., 2012) and not necessarily based on self-selected youth.

We would be remiss if we did not finalize this paper with one caveat: our analysis is not an evaluation of a public policy. *Galpão* was, in its early phase, an instrument for public policy, as it was used by municipal authorities as a vehicle for wide-scale youth training for the city. But the fickle nature of that relationship—the partnership was terminated when the City's government changed—is precisely what forced *Galpão* to adopt a private-sector oriented strategy. Now it is a private initiative that is much more selective in its approach, in its identification of private-sector partners, and even in its targeting of beneficiaries. This selective nature of the program introduces a complexity in the interpretation of the results. Are employment gains being driven by human capital formation—either in cognitive or socio-emotional skills—or are they driven from the program's ability to signal "higher quality" youths that the program was able to positively select? The data available do not allow us to conclusively test between these two hypotheses. Interviews with employers clearly show that they value the program's quality seal. They mention that *Galpão* youth are more responsible, more driven, more reliable, and possess better technical skills. But this may be as much selection as it is human capital formation. The most likely scenario is that both are at play, but exactly how much is selection and how much is skills enhancement, remains unclear.

In this sense, the precise replicability of *Galpão* to a wider population—such as would be the case in a large-scale public program—will face challenges. A broad public training program open to all youth would certainly not be as selective, and as such would not be able to signal ex ante quality to potential employers. And to the extent that skills acquired during *Galpão* complement the relatively high levels of cognitive ability recruited, a broader policy may also be unable to deliver comparable results. At the same time, the broader relevance of the results comes from the fact that they corroborate the hypothesis that multi-component programs are more effective for youths. In fact, whereas the life skills training does not seem to translate into increased test scores on non-cognitive skills per se, it may constitute precisely the complementing and necessary channel through which outcomes in vocational skills are particularly successful, thus bringing about positive and large labor market outcomes.

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Table 1. Trends in labor market indicators in Rio de Janeiro and other Metropolitan Regions (MR), 2010-2013

	Unemployment rate (%)				**Employment share of manufacturing (%)**			
	All		Youth		All		Youth	
	Rio	Other MRs	Rio	Other MRs	Rio	Other MRs	Rio	Other MRs
2010	5.9	7.8	11.5	14.2	20.1	25.5	18.1	24.6
2012	5.5	6	11.2	11.3	19.8	25.4	18.8	24.8
2013	4.8	6	10.1	11.4	19.5	24.9	18.7	23.9

Note: Unemployment rates are shown in the first four columns, while the employment shares in manufacturing and construction are shown in the next four columns. In each row we show averages for the first six months of the respective year. The numbers in the first row illustrate the labor market situation prior to the training sessions. The last two rows show the labor market evolution at the time of random assignment and collection of the baseline data (first half of 2012), and some months after the training when the follow-up was conducted (first half of 2013).
Source: *Pesquisa Mensal do Emprego* (PEM).

Table 2. Trends in job quality indicators in Rio de Janeiro and other Metropolitan Regions, 2008-2012

	Percent informal (private sector)				**Average labor earnings**			
	All		Youth		All		Youth	
	Rio	Other MRs	Rio	Other MRs	Rio	Other MRs	Rio	Other MRs
2010	20.7	21	25.8	24.4	1	0.968	0.652	0.647
2012	18.8	17.4	23.3	20.9	1.236	1.172	0.799	0.811
2013	17	16.4	21.5	19.9	1.349	1.263	0.91	0.865

Note: Informality rates are shown in the first four columns, while average labor earnings are shown in the next four columns. Trends in earnings are reported using a normalized index (Rio in 2010 = 1).
Source: *Pesquisa Mensal do Emprego* (PEM).

Table 3. Treatment status of youths

	Randomly assigned to Treatment group	**Randomly assigned to Control group**	**Pre-Selected**	**Total**
Participated in the program	173	0	24	197
Did not participate in the program	21	230	3	254
Total	194	230	27	451

Source: *Galpão Aplauso* administrative data.

Table 4. Covariate balancing socio-demographic characteristics

Variable	**Treated (T)**	**Control (C)**	Difference T-C	**Not in First Follow-up**	Difference Followed-up vs. Not in First Follow-up	**Not in Second Follow-up**	Difference Followed-up vs. Not in Second Follow-up
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	22.953	23.326	-0.373	23.533	-0.378	23.368	-0.230
	(3.694)	(3.601)	[0.404]	(3.148)	[0.688]	(3.220)	[0.466]
Female	0.133	0.140	-0.007	0.033	0.104	0.145	-0.021
	(0.341)	(0.348)	[0.038]	(0.183)	[0.064]	(0.354)	[0.043]
Single	0.773	0.691	0.082*	0.700	0.029	0.658	0.087
	(0.420)	(0.463)	[0.049]	(0.466)	[0.085]	(0.478)	[0.058]
Familia Carioca benefit	0.013	0.011	0.002	0.00	0.012	0.01	-0.003
	(0.115)	(0.106)	[0.012]	(0.000)	[0.020]	-0.115	[0.014]
Bolsa Familia benefit	0.127	0.118	0.009	0.100	0.022	0.158	-0.048
	(0.334)	(0.323)	[0.036]	(0.305)	[0.062]	(0.367)	[0.042]
Household size	3.947	3.567	0.379**	3.200	0.541*	3.658	0.048
	(1.725)	(1.590)	[0.183]	(1.243)	[0.311]	(1.554)	[0.212]
Household income	1706.453	1560.326	146.127	1709.18	-82.028	1676.453	-53.862
	(1207.340)	(1220.519)	[134.612]	(1040.034)	[229.186]	(1251.278)	[155.296]
Literate persons in HH	0.975	0.967	0.008	0.985	-0.015	0.97	0.002
	(0.087)	(0.101)	[0.011]	(0.057)	[0.018]	(0.100)	[0.012]
Official int. water access	0.740	0.674	0.066	0.833	-0.129	0.697	0.022
	(0.440)	(0.470)	[0.051]	(0.379)	[0.086]	(0.462)	[0.058]
Pay Water	0.48	0.404	0.076	0.533	-0.094	0.421	0.033
	(0.501)	(0.492)	[0.055]	(0.507)	[0.095]	(0.497)	[0.064]
Garbage collection	0.780	0.787	-0.007	0.767	0.017	0.763	0.024
	(0.416)	(0.411)	[0.046]	(0.430)	[0.079]	(0.428)	[0.053]
Ever worked	0.933	0.949	-0.016	1.00	-0.058	0.96	-0.017
	(0.250)	(0.220)	[0.026]	(0.000)	[0.043]	-0.196	[0.029]
Age at first job	16.329	15.592	0.737**	15.867	0.059	15.877	0.056
	(2.765)	(3.119)	[0.339]	(2.933)	[0.569]	(3.068)	[0.393]
Employed	0.611	0.697	-0.086	0.700	-0.043	0.750	-0.113*
	(0.489)	(0.461)	[0.053]	(0.466)	[0.091]	(0.436)	[0.061]
Unemployed	0.174	0.163	0.012	0.200	-0.032	0.132	0.05
	(0.381)	(0.370)	[0.042]	(0.407)	[0.072]	(0.340)	[0.049]
Monthly labor income	749.368	760.459	-11.091	884.941	-128.989	767.045	-0.439
	(305.048)	(340.392)	[48.615]	(332.790)	[82.648]	(297.206)	[55.872]
Weekly hours worked	42.077	42.748	-0.671	41.824	0.647	43.409	-1.261
	(13.340)	(13.636)	[1.997]	(14.152)	[3.428]	(15.747)	[2.300]
Formal Contract	0.700	0.714	-0.014	0.571	0.137	0.813	-0.146
	(0.462)	(0.454)	[0.077]	(0.514)	[0.129]	(0.397)	[0.091]
Secondary Education	0.850	0.871	-0.021	0.885	-0.022	0.831	0.044
	(0.358)	(0.336)	[0.044]	(0.326)	[0.071]	(0.378)	[0.049]
N	150	178		30		76	

Note: The treatment and control groups reported are youths for which data at both the baseline and at the first follow-up are available. Standard deviations are in parenthesis. Standard errors are in brackets.. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 5. Covariate balancing risky behavior and social activities

Variable	**Treated (T)**	**Control (C)**	Difference T-C	**Not in First Follow-up**	Difference Followed-up vs. Not in First Follow-up	**Not in Second Follow-up**	Difference Followed-up vs. Not in Second Follow-up
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Party	0.753	0.713	0.040	0.833	-0.102	0.684	0.071
	(0.433)	(0.453)	[0.049]	(0.379)	[0.084]	(0.468)	[0.057]
Sports	0.687	0.624	0.063	0.633	0.019	0.658	-0.009
	(0.465)	(0.486)	[0.053]	(0.490)	[0.091]	(0.478)	[0.062]
Church	0.48	0.517	-0.037	0.500	0.000	0.500	0.000
	(0.501)	(0.501)	[0.056]	(0.509)	[0.096]	(0.503)	[0.065]
Ever smoked	0.187	0.247	-0.061	0.433	-0.214***	0.224	0.017
	(0.391)	(0.433)	[0.046]	(0.504)	[0.081]	(0.419)	[0.055]
Last week alcohol	0.38	0.303	0.077	0.367	-0.028	0.25	0.115*
	(0.487)	(0.461)	[0.052]	(0.490)	[0.091]	(0.436)	[0.061]
Having five or more drinks on one ocassion	0.526	0.593	-0.066	0.455	0.104	0.579	-0.035
	(0.504)	(0.496)	[0.095]	(0.522)	[0.158]	(0.507)	[0.125]
Last week smoked marijuana	0.013	0.045	-0.032*	0.167	-0.136***	0.066	-0.030
	(0.115)	(0.208)	[0.019]	(0.379)	[0.038]	(0.250)	[0.026]
Ever used drugs (cocaine, heroin, esctasy, others)	0.013	0.034	-0.020	0.033	-0.009	0.053	-0.035*
	(0.115)	(0.181)	[0.017]	(0.183)	[0.030]	(0.225)	[0.020]
Witnessed any incidence of violence last year	0.533	0.528	0.005	0.567	-0.036	0.461	0.093
	(0.501)	(0.501)	[0.055]	(0.504)	[0.095]	(0.502)	[0.064]
Witnessed firearms last year	0.373	0.365	0.008	0.467	-0.098	0.289	0.111*
	(0.485)	(0.483)	[0.054]	(0.507)	[0.093]	(0.457)	[0.063]
Witnessed physical attack last year	0.302	0.258	0.044	0.333	-0.055	0.237	0.059
	(0.461)	(0.439)	[0.050]	(0.479)	[0.086]	(0.428)	[0.058]
Victim discrimination	0.167	0.191	-0.024	0.333	-0.153**	0.25	-0.073
	(0.374)	(0.394)	[0.043]	(0.479)	[0.075]	(0.436)	[0.051]
Victim beaten	0.04	0.067	-0.027	0.067	-0.012	0.079	-0.029
	(0.197)	(0.251)	[0.025]	(0.254)	[0.044]	(0.271)	[0.030]
Victim threatened with arms	0.007	0.039	-0.033*	0.067	-0.042	0.053	-0.031
	(0.082)	(0.195)	[0.017]	(0.254)	[0.031]	(0.225)	[0.021]
N	150	178		30		76	

Note: The treatment and control groups reported are youths for which data at both the baseline and at the first follow-up are available. Standard deviations are in parenthesis. Standard errors are in brackets Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 6. Covariate balancing socio-emotional skills (z-scores)

Variable	**Treated (T)**	**Control (C)**	Difference T-C	**Not in First Follow-up**	Difference Followed-up vs. Not in First Follow-up	**Not in Second Follow-up**	Difference Followed-up vs. Not in Second Follow-up
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total CPS Score	-0.100	0.091	-0.191*	-0.111	0.115	0.168	-0.221*
	(1.015)	(0.937)	[0.108]	(1.272)	[0.191]	(1.101)	[0.129]
CPS: Leadership	-0.05	0.04	-0.090	-0.186	0.185	0.143	-0.202
	(1.022)	(0.979)	[0.111]	(1.128)	[0.193]	(1.141)	[0.130]
CPS: Behavior in situations of conflict	-0.198	0.105	-0.304***	0.191	-0.225	0.237	-0.319**
	(0.934)	(0.973)	[0.106]	(1.336)	[0.191]	(1.161)	[0.129]
CPS: Self-esteem	0.055	0.02	0.035	-0.254	0.289	-0.018	0.038
	(1.004)	(1.017)	[0.112]	(0.878)	[0.191]	(1.059)	[0.130]
CPS: Abilities to relate with others	-0.013	0.059	-0.071	-0.288	0.314*	-0.018	0.023
	(0.984)	(0.958)	[0.108]	(1.168)	[0.188]	(1.017)	[0.128]
CPS: Order and self-organization	-0.176	0.128	-0.304***	-0.038	0.027	0.202	-0.274**
	(1.029)	(0.935)	[0.109]	(1.096)	[0.190]	(1.046)	[0.128]
CPS: Empathy and communication skills	0.026	0.018	0.008	-0.094	0.116	0.056	-0.055
	(0.977)	(1.011)	[0.110]	(1.107)	[0.191]	(0.957)	[0.130]
Total Grit Scale	-0.038	0.036	-0.074	-0.072	0.074	-0.095	0.116
	(0.966)	(1.031)	[0.111]	(0.885)	[0.189]	(1.049)	[0.128]
Brief Grit Scale	-0.044	0.005	-0.050	0.061	-0.078	-0.143	0.168
	(0.982)	(1.026)	[0.111]	(0.862)	[0.190]	(1.055)	[0.128]
Grit: Consistency of interest	0.000	-0.006	0.007	-0.009	0.006	-0.02	0.021
	(0.931)	(1.039)	[0.110]	(1.087)	[0.190]	(1.110)	[0.129]
Grit: Perseverance of effort	-0.045	0.001	-0.047	0.105	-0.126	-0.215	0.260**
	(1.013)	(1.008)	[0.112]	(0.923)	[0.191]	(1.117)	[0.129]
Grit: Ambition	-0.043	0.02	-0.064	0.129	-0.138	-0.169	0.218*
	(0.965)	(1.036)	[0.111]	(0.834)	[0.189]	(1.080)	[0.128]
N	150	178		33		76	

Note: The treatment and control groups reported are youths for which data at both the baseline and at the first follow-up are available. Standard deviations are in parenthesis. Standard errors are in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 7. Impact on labor market outcomes

	Last week salaried job				Monthly labor income (in R$)			
	SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)
Panel A: First Follow-up								
Full Sample	-0.074	-0.014	0.078	0.074	35.477	41.14	48.021	52.865
	[0.050]	[0.049]	[0.065]	[0.065]	[50.071]	[52.495]	[55.456]	[56.326]
Cohort 1	-0.108	-0.076	-0.025	-0.02	-22.183	-103.437	-112.372	-110.31
	[0.068]	[0.066]	[0.091]	[0.091]	[60.715]	[64.259]	[68.494]	[70.010]
Cohort 2	0.108	0.171*	0.237*	0.252**	213.900*	279.817***	298.604***	302.984***
	[0.104]	[0.100]	[0.119]	[0.126]	[108.035]	[103.703]	[105.708]	[112.510]
Cohort 3	-0.181	-0.087	0.022	0.084	159.923	200.031*	172.622	269.601*
	[0.117]	[0.116]	[0.147]	[0.146]	[99.992]	[109.959]	[135.687]	[138.504]
Cohort 2–3	-0.027	0.056	0.151	0.193**	170.401**	235.155***	250.501***	276.556***
	[0.077]	[0.075]	[0.092]	[0.093]	[79.796]	[77.327]	[82.453]	[86.269]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes
Observations	328	309	309	309	235	157	157	157
Control means: Full sample	0.747				887.900			
Control means: Cohort 1	0.765				835.009			
Control means: Cohort 2	0.700				1,030.909			
Control means: Cohort 3	0.788				776.077			
Control means: Cohort 2–3	0.731				936.257			
Panel B: Second Follow-up								
Full Sample	0.015	0.038	0.136*	0.146**	67.484	99.654	95.269	100.462
	[0.043]	[0.044]	[0.069]	[0.070]	[59.466]	[80.339]	[89.300]	[89.247]
Cohort 1	0.029	0.052	0.116	0.126	81.337	91.568	21.007	40.486
	[0.063]	[0.064]	[0.099]	[0.099]	[91.330]	[146.174]	[149.045]	[152.891]
Cohort 2	0.152**	0.147*	0.193	0.197	17.602	110.652	173.3	182.644
	[0.076]	[0.076]	[0.126]	[0.131]	[98.794]	[122.889]	[146.242]	[155.678]
Cohort 3	-0.114	-0.078	0.058	0.100	152.434	70.3	74.361	84.619
	[0.090]	[0.091]	[0.156]	[0.159]	[110.505]	[121.299]	[157.434]	[125.837]
Cohort 2–3	0.022	0.039	0.14	0.164	62.661	90.687	135.713	162.734
	[0.058]	[0.058]	[0.097]	[0.100]	[75.425]	[87.327]	[106.429]	[104.544]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes
Observations	282	266	266	266	236	140	140	140
Control means: Full sample	0.837				1,028.042			
Control means: Cohort 1	0.795				1,003.804			
Control means: Cohort 2	0.848				1,151.789			
Control means: Cohort 3	0.929				899.385			
Control means: Cohort 2–3	0.878				1,049.250			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. And for the second follow-up: N=282, Cohort 1= 158, Cohort 2=69, Cohort 3=55. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 7. Impact on labor market outcomes (*Continued*)

	Formal Contract				Weekly hours			
	SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(3a)	(3b)	(3c)	(3d)	(4a)	(4b)	(4c)	(4d)
Panel A: First Follow-up								
Full Sample	-0.015	-0.006	-0.022	0.001	-0.166	0.205	0.237	0.113
	[0.057]	[0.063]	[0.086]	[0.087]	[1.352]	[1.424]	[2.151]	[2.182]
Cohort 1	-0.021	-0.103	-0.162	-0.172	1.133	1.938	3.277	2.979
	[0.081]	[0.098]	[0.115]	[0.116]	[1.850]	[2.038]	[3.192]	[3.229]
Cohort 2	-0.046	0.012	0.14	0.085	0.911	2.05	1.882	2.614
	[0.105]	[0.090]	[0.151]	[0.160]	[2.436]	[2.475]	[3.483]	[3.776]
Cohort 3	0.086	0.181	0.08	0.214	-4.389	-5.669	-10.249*	-11.324*
	[0.143]	[0.159]	[0.238]	[0.240]	[3.523]	[3.641]	[5.150]	[5.573]
Cohort 2–3	0.006	0.073	0.121	0.189	-1.455	-0.981	-2.651	-2.506
	[0.084]	[0.079]	[0.127]	[0.136]	[2.031]	[2.053]	[2.953]	[3.089]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes
Observations	205	113	113	113	242	161	161	161
Control means: Full sample	0.802				42.964			
Control means: Cohort 1	0.788				41.746			
Control means: Cohort 2	0.846				44.089			
Control means: Cohort 3	0.760				44.154			
Control means: Cohort 2–3	0.813				44.113			
Panel B: Second Follow-up								
Full Sample	0.015	0.017	-0.021	0.022	0.148	0.719	-2.001	-1.896
	[0.052]	[0.071]	[0.103]	[0.102]	[1.518]	[1.853]	[2.383]	[2.403]
Cohort 1	0.042	0.062	-0.055	-0.089	-1.838	-0.164	-2.581	-3.64
	[0.078]	[0.113]	[0.159]	[0.161]	[2.028]	[2.229]	[3.317]	[3.359]
Cohort 2	0.040	-0.043	0.000	0.036	0.770	1.808	-0.328	0.063
	[0.090]	[0.128]	[0.199]	[0.211]	[1.637]	[2.249]	[4.046]	[4.443]
Cohort 3	-0.014	-0.028	-0.089	-0.042	5.024	-0.142	-3.367	-2.797
	[0.095]	[0.134]	[0.178]	[0.211]	[4.618]	[6.443]	[6.501]	[6.887]
Cohort 2–3	0.019	-0.021	-0.032	0.05	2.721	1.42	-1.52	-1.294
	[0.065]	[0.095]	[0.139]	[0.147]	[2.323]	[3.037]	[3.546]	[3.671]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes
Observations	216	103	103	103	216	128	128	128
Control means: Full sample	0.821				43.404			
Control means: Cohort 1	0.755				44.192			
Control means: Cohort 2	0.865				45.839			
Control means: Cohort 3	0.909				38.923			
Control means: Cohort 2–3	0.881				42.684			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. And for the second follow-up: N=282, Cohort 1= 158, Cohort 2=69, Cohort 3=55. . Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 8. Impact on risky behavior

	Ever smoked				Number of cigarettes (last week)				Alcohol consumption (last week)				More than five drinks			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)	(3a)	(3b)	(3c)	(3d)	(4a)	(4b)	(4c)	(4d)
Panel B: Second Follow-up																
Full Sample	-0.015	0.044	0.106**	0.104**	-0.254	-0.122	-0.118	-0.122	0.076	0.041	-0.005	0.000	-0.042	-0.153	-0.034	-0.013
	[0.051]	[0.045]	[0.051]	[0.052]	[0.312]	[0.253]	[0.258]	[0.272]	[0.058]	[0.053]	[0.062]	[0.062]	[0.096]	[0.119]	[0.155]	[0.159]
Cohort 1	-0.023	0.039	0.094	0.094	-0.722	-0.176	0.000	-0.068	0.052	0.018	-0.057	-0.055	0.049	-0.044	0.04	0.056
	[0.068]	[0.058]	[0.066]	[0.065]	[0.429]	[0.376]	[0.374]	[0.395]	[0.079]	[0.076]	[0.092]	[0.093]	[0.127]	[0.184]	[0.270]	[0.272]
Cohort 2	0.087	0.141	0.239*	0.245*	0.829	0.500	0.000	0.198	0.109	0.084	0.065	0.098	-0.067	-0.171	-0.052	-0.056
	[0.111]	[0.107]	[0.125]	[0.131]	[0.542]	[0.764]	[0.471]	[0.530]	[0.124]	[0.103]	[0.116]	[0.120]	[0.204]	[0.224]	[0.235]	[0.261]
Cohort 3	-0.101	-0.023	0.038	0.009	-0.675	-0.671	-0.7	0.002	0.086	0.054	0.037	0.046	-0.232	-0.327	-0.286	-0.224
	[0.116]	[0.103]	[0.110]	[0.112]	[0.636]	[0.481]	[0.427]	[0.594]	[0.132]	[0.102]	[0.111]	[0.114]	[0.219]	[0.222]	[0.266]	[0.293]
Cohort 2–3	-0.003	0.063	0.147*	0.141	0.194	-0.376	-0.341	-0.148	0.096	0.071	0.054	0.077	-0.137	-0.23	-0.122	-0.119
	[0.079]	[0.074]	[0.083]	[0.086]	[0.426]	[0.337]	[0.310]	[0.331]	[0.088]	[0.071]	[0.079]	[0.081]	[0.145]	[0.152]	[0.176]	[0.180]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	282	282	282	282	67	41	41	41	282	282	282	282	110	69	69	69
Control means: Full sample	0.245				2.222				0.354				0.577			
Control means: Cohort 1	0.247				2.722				0.384				0.464			
Control means: Cohort 2	0.217				1.600				0.326				0.667			
Control means: Cohort 3	0.286				1.875				0.321				0.778			
Control means: Cohort 2–3	0.243				1.722				0.324				0.708			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the second follow-up: N=282, cohort 1=158, cohort 2=69, cohort 3=55. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 8. Impact on risky behavior (*Continued*)

	Ever used drugs (cocaine, heroin, esctasy, others)				Last month fight				Witness firearms last year				Witness physical attack last year			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(5a)	(5b)	(5c)	(5d)	(6a)	(6b)	(6c)	(6d)	(7a)	(7b)	(7c)	(7d)	(8a)	(8b)	(8c)	(8d)
Panel B: Second Follow-up																
Full Sample	-0.006	-0.003	0.000	-0.001	-0.033	-0.033	-0.042	-0.046	-0.017	-0.019	-0.025	-0.026	-0.086*	-0.088*	-0.103	-0.103
	[0.016]	[0.015]	[0.017]	[0.017]	[0.021]	[0.021]	[0.028]	[0.028]	[0.053]	[0.050]	[0.067]	[0.067]	[0.046]	[0.045]	[0.064]	[0.065]
Cohort 1	-0.016	-0.016	-0.002	-0.003	-0.045	-0.045	-0.051	-0.049	-0.088	-0.087	-0.083	-0.084	-0.109*	-0.110*	-0.131	-0.134
	[0.022]	[0.022]	[0.025]	[0.025]	[0.033]	[0.033]	[0.048]	[0.047]	[0.073]	[0.072]	[0.096]	[0.096]	[0.063]	[0.062]	[0.091]	[0.092]
Cohort 2	-0.022	-0.022	-0.022	-0.018	-0.022	-0.022	-0.022	-0.030	0.000	-0.028	-0.065	-0.086	-0.130	-0.128	-0.109	-0.157
	[0.031]	[0.026]	[0.043]	[0.045]	[0.031]	[0.031]	[0.031]	[0.032]	[0.107]	[0.093]	[0.116]	[0.118]	[0.086]	[0.086]	[0.123]	[0.126]
Cohort 3	0.037	0.000	0.000	0.000	-0.037	-0.037	-0.037	-0.030	0.111	0.119	0.148	0.144	-0.029	-0.014	0.033	0.051
	[0.036]	[0.000]	[0.000]	[0.000]	[0.037]	[0.037]	[0.037]	[0.036]	[0.111]	[0.108]	[0.150]	[0.153]	[0.110]	[0.107]	[0.141]	[0.145]
Cohort 2–3	0.006	0.000	-0.006	-0.005	-0.027	-0.027	-0.027	-0.029	0.048	0.043	0.032	0.007	-0.069	-0.065	-0.046	-0.059
	[0.023]	[0.017]	[0.023]	[0.024]	[0.023]	[0.023]	[0.023]	[0.024]	[0.075]	[0.069]	[0.091]	[0.094]	[0.068]	[0.066]	[0.091]	[0.094]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	282	282	282	282	281	281	281	281	280	280	280	280	281	280	280	280
Control means: Full sample	0.020				0.048				0.269				0.219			
Control means: Cohort 1	0.027				0.068				0.347				0.250			
Control means: Cohort 2	0.022				0.022				0.217				0.174			
Control means: Cohort 3	0.000				0.037				0.148				0.214			
Control means: Cohort 2–3	0.014				0.027				0.192				0.189			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the second follow-up: N=282, Cohort 1= 158, Cohort 2=69, Cohort 3=55. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 8. Impact on risky behavior (*Continued*)

	Victim discrimination				Victim beaten				Victim threatened with arms			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(9a)	(9b)	(9c)	(9d)	(10a)	(10b)	(10c)	(10d)	(11a)	(11b)	(11c)	(11d)
Panel B: Second Follow-up												
Full Sample	-0.001	0.000	0.012	0.006	0.016	0.017	0.040	0.039	-0.006	0.003	0.021	0.021
	[0.030]	[0.030]	[0.050]	[0.050]	[0.017]	[0.017]	[0.030]	[0.030]	[0.016]	[0.015]	[0.019]	[0.019]
Cohort 1	0.028	0.022	-0.010	-0.010	0.022	0.024	0.059	0.062	-0.016	0.001	0.027	0.028
	[0.041]	[0.040]	[0.066]	[0.066]	[0.025]	[0.025]	[0.047]	[0.047]	[0.022]	[0.019]	[0.025]	[0.026]
Cohort 2	-0.022	-0.022	-0.022	-0.068	0.000	0.000	0.043	0.029	-0.022	-0.022	-0.022	-0.025
	[0.061]	[0.061]	[0.113]	[0.100]	[0.000]	[0.000]	[0.043]	[0.042]	[0.031]	[0.031]	[0.031]	[0.032]
Cohort 3	-0.070	-0.049	0.104	0.080	0.001	0.001	0.001	0.006	0.037	0.037	0.073	0.077
	[0.071]	[0.072]	[0.117]	[0.120]	[0.051]	[0.051]	[0.051]	[0.053]	[0.036]	[0.037]	[0.051]	[0.054]
Cohort 2–3	-0.041	-0.035	0.035	0.024	0.006	0.006	0.034	0.031	0.006	0.006	0.020	0.022
	[0.045]	[0.045]	[0.080]	[0.081]	[0.023]	[0.023]	[0.033]	[0.034]	[0.023]	[0.023]	[0.029]	[0.029]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	282	282	282	282	282	282	282	282	282	282	282	282
Control means: Full sample	0.068				0.014				0.020			
Control means: Cohort 1	0.055				0.014				0.027			
Control means: Cohort 2	0.065				0.000				0.022			
Control means: Cohort 3	0.107				0.036				0.000			
Control means: Cohort 2–3	0.081				0.014				0.014			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the second follow-up: N=282, Cohort 1= 158, Cohort 2=69, Cohort 3=55. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 9. Impact on socio-emotional skills (z-scores)

	Total CPS Score				CPS: Leadership				CPS: Behavior in situations of conflict			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)	(3a)	(3b)	(3c)	(3d)
Panel A: First Follow-up												
Full Sample	-0.086	-0.013	0.105	0.113	0.019	0.044	0.109	0.116	-0.134	-0.029	0.169	0.173
	[0.111]	[0.103]	[0.122]	[0.123]	[0.110]	[0.106]	[0.133]	[0.134]	[0.111]	[0.107]	[0.126]	[0.127]
Cohort 1	-0.123	-0.047	0.062	0.067	-0.002	0.015	0.081	0.092	-0.141	-0.028	0.171	0.188
	[0.153]	[0.142]	[0.165]	[0.167]	[0.155]	[0.153]	[0.186]	[0.188]	[0.148]	[0.142]	[0.164]	[0.166]
Cohort 2	0.167	0.150	0.035	0.094	0.220	0.178	0.031	0.062	0.010	0.020	0.107	0.127
	[0.177]	[0.177]	[0.252]	[0.263]	[0.217]	[0.211]	[0.288]	[0.302]	[0.192]	[0.192]	[0.270]	[0.279]
Cohort 3	-0.063	0.073	0.191	0.238	-0.189	-0.050	0.081	0.162	-0.195	-0.146	-0.113	-0.065
	[0.303]	[0.274]	[0.295]	[0.302]	[0.252]	[0.209]	[0.248]	[0.242]	[0.326]	[0.286]	[0.302]	[0.311]
Cohort 2–3	0.030	0.069	0.148	0.168	0.038	0.066	0.119	0.140	-0.116	-0.060	0.044	0.035
	[0.163]	[0.155]	[0.189]	[0.195]	[0.162]	[0.149]	[0.194]	[0.199]	[0.176]	[0.167]	[0.199]	[0.204]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	328	328	328	328	328	328	328	328	328	328	328	328
Control means: Full sample	0.031				-0.015				0.050			
Control means: Cohort 1	-0.026				0.006				0.042			
Control means: Cohort 2	0.122				-0.099				0.097			
Control means: Cohort 3	0.016				0.084				-0.018			
Control means: Cohort 2–3	0.084				-0.034				0.056			
Panel B: Second Follow-up												
Full Sample	-0.025	0.029	0.150	0.155	-0.101	-0.097	-0.077	-0.080	0.135	0.238**	0.472***	0.475***
	[0.117]	[0.113]	[0.138]	[0.139]	[0.118]	[0.117]	[0.153]	[0.154]	[0.118]	[0.115]	[0.137]	[0.138]
Cohort 1	0.002	0.056	0.132	0.133	-0.089	-0.112	-0.159	-0.154	0.158	0.291*	0.483***	0.488***
	[0.156]	[0.142]	[0.169]	[0.171]	[0.157]	[0.149]	[0.179]	[0.180]	[0.160]	[0.152]	[0.171]	[0.172]
Cohort 2	0.096	0.099	-0.032	0.036	-0.077	-0.049	-0.258	-0.180	0.447*	0.456*	0.569*	0.548
	[0.237]	[0.239]	[0.318]	[0.324]	[0.247]	[0.247]	[0.380]	[0.384]	[0.251]	[0.253]	[0.324]	[0.333]
Cohort 3	-0.031	0.037	0.292	0.258	0.012	0.012	0.309	0.237	-0.074	-0.015	0.193	0.197
	[0.282]	[0.283]	[0.348]	[0.355]	[0.283]	[0.289]	[0.396]	[0.402]	[0.254]	[0.250]	[0.328]	[0.340]
Cohort 2–3	0.038	0.053	0.193	0.189	-0.050	-0.057	0.053	0.018	0.155	0.199	0.402*	0.386
	[0.178]	[0.179]	[0.234]	[0.241]	[0.183]	[0.183]	[0.271]	[0.278]	[0.178]	[0.178]	[0.227]	[0.234]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	282	282	282	282	282	282	282	282	282	282	282	282
Control means: Full sample	0.021				0.064				-0.074			
Control means: Cohort 1	-0.130				-0.036				-0.158			
Control means: Cohort 2	0.145				0.211				0.031			
Control means: Cohort 3	0.211				0.082				-0.030			
Control means: Cohort 2–3	0.170				0.162				0.008			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. And for the second follow-up: N=282, Cohort 1= 158, Cohort 2=69, Cohort 3=55. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 9. Impact on socio-emotional skills (z-scores) (*Continued*)

	CPS: Self-esteem				CPS: Abilities to relate with others				CPS: Order and self-organization			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(4a)	(4b)	(4c)	(4d)	(5a)	(5b)	(5c)	(5d)	(6a)	(6b)	(6c)	(6d)
Panel A: First Follow-up												
Full Sample	-0.012	-0.023	-0.048	-0.044	0.005	0.016	0.076	0.088	-0.009	0.051	0.294**	0.298**
	[0.112]	[0.107]	[0.133]	[0.133]	[0.112]	[0.111]	[0.144]	[0.143]	[0.111]	[0.110]	[0.139]	[0.139]
Cohort 1	0.058	0.038	-0.002	0.003	-0.036	-0.022	0.040	0.009	0.049	0.071	0.156	0.163
	[0.158]	[0.150]	[0.182]	[0.182]	[0.158]	[0.156]	[0.194]	[0.194]	[0.156]	[0.153]	[0.193]	[0.195]
Cohort 2	-0.147	-0.215	-0.522**	-0.531*	0.265	0.262	0.192	0.381	0.136	0.140	0.180	0.283
	[0.201]	[0.203]	[0.260]	[0.271]	[0.206]	[0.207]	[0.297]	[0.300]	[0.193]	[0.194]	[0.265]	[0.272]
Cohort 3	0.016	0.093	0.281	0.284	-0.175	-0.154	-0.067	-0.033	-0.182	-0.006	0.563*	0.633*
	[0.272]	[0.265]	[0.323]	[0.328]	[0.274]	[0.271]	[0.345]	[0.352]	[0.278]	[0.296]	[0.330]	[0.335]
Cohort 2–3	-0.081	-0.094	-0.138	-0.149	0.065	0.069	0.100	0.162	-0.040	0.032	0.368*	0.432**
	[0.161]	[0.157]	[0.202]	[0.208]	[0.164]	[0.164]	[0.221]	[0.226]	[0.161]	[0.163]	[0.204]	[0.206]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	328	328	328	328	328	328	328	328	328	328	328	328
Control means: Full sample	-0.003				-0.024				0.004			
Control means: Cohort 1	-0.067				-0.011				-0.081			
Control means: Cohort 2	0.098				-0.097				0.107			
Control means: Cohort 3	-0.020				0.076				0.036			
Control means: Cohort 2–3	0.056				-0.036				0.082			
Panel B: Second Follow-up												
Full Sample	-0.086	-0.091	-0.139	-0.150	-0.034	-0.029	0.015	0.017	0.057	0.123	0.341**	0.362**
	[0.118]	[0.118]	[0.159]	[0.158]	[0.118]	[0.118]	[0.158]	[0.159]	[0.119]	[0.117]	[0.146]	[0.146]
Cohort 1	-0.028	-0.038	-0.112	-0.130	-0.010	-0.015	-0.064	-0.065	0.183	0.198	0.239	0.243
	[0.153]	[0.152]	[0.212]	[0.212]	[0.153]	[0.152]	[0.207]	[0.209]	[0.158]	[0.153]	[0.193]	[0.195]
Cohort 2	0.014	-0.011	-0.394	-0.383	-0.042	-0.043	-0.053	0.078	0.144	0.139	0.111	0.209
	[0.225]	[0.233]	[0.297]	[0.310]	[0.264]	[0.266]	[0.349]	[0.352]	[0.224]	[0.223]	[0.276]	[0.277]
Cohort 3	-0.307	-0.312	-0.076	-0.244	0.080	0.128	0.362	0.331	-0.269	-0.168	0.653*	0.754**
	[0.321]	[0.326]	[0.420]	[0.391]	[0.270]	[0.270]	[0.361]	[0.359]	[0.307]	[0.346]	[0.377]	[0.369]
Cohort 2–3	-0.107	-0.109	-0.183	-0.216	0.033	0.048	0.181	0.210	-0.070	0.003	0.381*	0.494**
	[0.188]	[0.189]	[0.248]	[0.249]	[0.186]	[0.186]	[0.248]	[0.255]	[0.183]	[0.188]	[0.225]	[0.224]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	282	282	282	282	282	282	282	282	282	282	282	282
Control means: Full sample	0.033				0.028				-0.015			
Control means: Cohort 1	-0.074				-0.125				-0.137			
Control means: Cohort 2	0.016				0.156				0.086			
Control means: Cohort 3	0.339				0.216				0.139			
Control means: Cohort 2–3	0.138				0.179				0.106			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. And for the second follow-up: N=282, Cohort 1= 158, Cohort 2=69, Cohort 3=55. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 9. Impact on socio-emotional skills (z-scores) (*Continued*)

	CPS: Empathy and communication skills				Total Grit Scale				Brief Grit Scale			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(7a)	(7b)	(7c)	(7d)	(8a)	(8b)	(8c)	(8d)	(9a)	(9b)	(9c)	(9d)
Panel A: First Follow-up												
Full Sample	-0.128	-0.130	-0.136	-0.129	-0.098	-0.068	-0.024	-0.017	0.008	0.028	0.058	0.057
	[0.110]	[0.104]	[0.128]	[0.129]	[0.110]	[0.100]	[0.120]	[0.120]	[0.110]	[0.101]	[0.121]	[0.121]
Cohort 1	-0.249*	-0.210	-0.141	-0.139	-0.096	-0.082	-0.061	-0.049	0.074	0.035	-0.010	-0.003
	[0.149]	[0.141]	[0.169]	[0.171]	[0.153]	[0.141]	[0.166]	[0.168]	[0.156]	[0.142]	[0.161]	[0.163]
Cohort 2	0.156	0.117	-0.028	-0.057	-0.050	-0.125	-0.268	-0.194	-0.057	-0.114	-0.224	-0.131
	[0.180]	[0.176]	[0.243]	[0.255]	[0.210]	[0.201]	[0.237]	[0.243]	[0.216]	[0.206]	[0.246]	[0.250]
Cohort 3	0.303	0.243	0.132	0.102	-0.017	0.079	0.190	0.234	0.065	0.167	0.410	0.481
	[0.286]	[0.271]	[0.326]	[0.337]	[0.259]	[0.225]	[0.271]	[0.278]	[0.232]	[0.220]	[0.299]	[0.306]
Cohort 2–3	0.179	0.143	0.058	0.037	-0.083	-0.070	-0.051	-0.019	-0.049	0.000	0.103	0.136
	[0.159]	[0.151]	[0.193]	[0.199]	[0.162]	[0.146]	[0.176]	[0.180]	[0.157]	[0.147]	[0.189]	[0.192]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	328	328	328	328	328	328	328	328	328	328	328	328
Control means: Full sample	0.065				0.045				0.003			
Control means: Cohort 1	-0.040				0.023				-0.065			
Control means: Cohort 2	0.275				0.173				0.186			
Control means: Cohort 3	-0.047				-0.132				-0.154			
Control means: Cohort 2–3	0.161				0.065				0.065			
Panel B: Second Follow-up												
Full Sample	-0.095	-0.097	-0.102	-0.097	0.029	0.056	0.096	0.107	0.128	0.144	0.173	0.176
	[0.119]	[0.115]	[0.146]	[0.146]	[0.119]	[0.110]	[0.130]	[0.131]	[0.120]	[0.113]	[0.137]	[0.138]
Cohort 1	-0.145	-0.084	0.009	0.008	0.080	0.084	0.089	0.100	0.218	0.196	0.153	0.165
	[0.165]	[0.153]	[0.181]	[0.182]	[0.161]	[0.146]	[0.170]	[0.170]	[0.164]	[0.156]	[0.185]	[0.186]
Cohort 2	-0.104	-0.111	-0.274	-0.248	0.158	0.096	0.005	-0.048	0.092	0.015	-0.063	-0.092
	[0.236]	[0.239]	[0.319]	[0.332]	[0.257]	[0.247]	[0.272]	[0.279]	[0.252]	[0.234]	[0.253]	[0.257]
Cohort 3	0.177	0.121	-0.172	-0.218	-0.078	-0.039	0.057	0.065	0.037	0.098	0.329	0.398
	[0.242]	[0.242]	[0.349]	[0.358]	[0.261]	[0.249]	[0.325]	[0.334]	[0.261]	[0.258]	[0.351]	[0.361]
Cohort 2–3	0.069	0.053	-0.119	-0.171	0.008	0.024	0.054	0.046	0.031	0.076	0.169	0.177
	[0.168]	[0.168]	[0.238]	[0.243]	[0.181]	[0.172]	[0.205]	[0.212]	[0.179]	[0.170]	[0.209]	[0.215]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	282	282	282	282	282	282	282	282	282	282	282	282
Control means: Full sample	0.060				0.001				-0.048			
Control means: Cohort 1	-0.051				-0.088				-0.125			
Control means: Cohort 2	0.120				0.144				0.101			
Control means: Cohort 3	0.251				0.001				-0.093			
Control means: Cohort 2–3	0.169				0.090				0.027			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. And for the second follow-up: N=282, Cohort 1= 158, Cohort 2=69, Cohort 3=55. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 9. Impact on socio-emotional skills (z-scores) (*Continued*)

	Consistency of interest				Perseverance of effort				Ambition			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(10a)	(10b)	(10c)	(10d)	(11a)	(11b)	(11c)	(11d)	(12a)	(12b)	(12c)	(12d)
Panel A: First Follow-up												
Full Sample	-0.247**	-0.249**	-0.254**	-0.243*	0.039	0.057	0.086	0.089	0.046	0.065	0.110	0.109
	[0.111]	[0.103]	[0.123]	[0.124]	[0.110]	[0.101]	[0.123]	[0.123]	[0.110]	[0.106]	[0.132]	[0.132]
Cohort 1	-0.385**	-0.372**	-0.344*	-0.333*	0.090	0.063	0.012	0.032	0.163	0.147	0.110	0.092
	[0.153]	[0.146]	[0.177]	[0.178]	[0.153]	[0.144]	[0.174]	[0.174]	[0.160]	[0.154]	[0.184]	[0.186]
Cohort 2	0.017	-0.055	-0.168	-0.196	0.132	0.103	0.063	0.192	0.024	0.023	0.017	0.121
	[0.213]	[0.192]	[0.242]	[0.253]	[0.227]	[0.211]	[0.242]	[0.244]	[0.203]	[0.198]	[0.241]	[0.242]
Cohort 3	-0.171	-0.168	-0.166	-0.211	-0.076	0.029	0.204	0.233	-0.150	-0.105	0.028	0.081
	[0.276]	[0.240]	[0.256]	[0.263]	[0.233]	[0.209]	[0.274]	[0.284]	[0.238]	[0.226]	[0.326]	[0.336]
Cohort 2–3	-0.077	-0.129	-0.190	-0.224	-0.001	0.061	0.151	0.183	-0.097	-0.053	0.060	0.081
	[0.167]	[0.148]	[0.173]	[0.178]	[0.162]	[0.147]	[0.178]	[0.182]	[0.153]	[0.146]	[0.194]	[0.198]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	328	328	328	328	328	328	328	328	328	328	328	328
Control means: Full sample	0.097				-0.008				-0.012			
Control means: Cohort 1	0.185				-0.065				-0.087			
Control means: Cohort 2	0.011				0.097				0.122			
Control means: Cohort 3	0.030				-0.054				-0.065			
Control means: Cohort 2–3	0.017				0.044				0.056			
Panel B: Second Follow-up												
Full Sample	-0.171	-0.155	-0.112	-0.107	0.124	0.144	0.182	0.188	0.062	0.080	0.133	0.142
	[0.120]	[0.116]	[0.143]	[0.144]	[0.120]	[0.114]	[0.136]	[0.137]	[0.118]	[0.115]	[0.144]	[0.145]
Cohort 1	-0.248	-0.229	-0.184	-0.178	0.215	0.190	0.140	0.158	0.077	0.072	0.052	0.066
	[0.162]	[0.155]	[0.192]	[0.192]	[0.165]	[0.157]	[0.187]	[0.189]	[0.157]	[0.155]	[0.191]	[0.192]
Cohort 2	0.145	0.141	0.121	0.010	0.073	0.065	0.059	0.051	-0.153	-0.141	-0.111	-0.152
	[0.230]	[0.228]	[0.297]	[0.302]	[0.245]	[0.221]	[0.238]	[0.237]	[0.264]	[0.260]	[0.292]	[0.286]
Cohort 3	-0.159	-0.167	-0.189	-0.285	0.124	0.178	0.422	0.477	0.301	0.339	0.429	0.455
	[0.299]	[0.295]	[0.342]	[0.344]	[0.268]	[0.268]	[0.353]	[0.364]	[0.267]	[0.249]	[0.346]	[0.360]
Cohort 2–3	-0.030	-0.036	-0.058	-0.133	0.064	0.128	0.257	0.269	0.066	0.111	0.228	0.193
	[0.183]	[0.180]	[0.221]	[0.224]	[0.178]	[0.170]	[0.203]	[0.205]	[0.185]	[0.179]	[0.225]	[0.230]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	282	282	282	282	282	282	282	282	282	282	282	282
Control means: Full sample	0.082				-0.044				-0.015			
Control means: Cohort 1	0.069				-0.177				-0.056			
Control means: Cohort 2	0.119				0.173				0.086			
Control means: Cohort 3	0.056				-0.054				-0.073			
Control means: Cohort 2–3	0.095				0.087				0.026			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. And for the second follow-up: N=282, Cohort 1= 158, Cohort 2=69, Cohort 3=55. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 10. Summary Indexes and p-values adjusted of families of outcomes

	Summary Index-Labor market results				Summary Index-Risky behaviour (Use of alcohol, tobacco, and drugs)				Summary Index-Risky behaviour(Acts of violence and victimization)				Summary Index-Social-emotional skills			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)	(3a)	(3b)	(3c)	(3d)	(4a)	(4b)	(4c)	(4d)
Panel A: First Follow-up																
Full Sample	-0.142	-0.125	0.128	0.122	-0.007	-0.019	-0.049	-0.048	-0.209**	-0.207**	-0.158**	-0.159**	0.052	0.049	-0.048	-0.053
Adjusted p-value	*0.600*	*0.732*	*0.535*	*0.490*	*0.898*	*0.732*	*0.535*	*0.490*	*0.012*	*0.016*	*0.020*	*0.020*	*0.898*	*0.732*	*0.535*	*0.490*
Cohort 1	-0.198	-0.130	-0.128	-0.120	-0.005	-0.021	-0.107	-0.109	-0.190	-0.184	-0.190**	-0.190**	0.055	0.043	-0.014	-0.019
Adjusted p-value	*0.585*	*0.766*	*0.901*	*0.866*	*0.942*	*0.766*	*0.552*	*0.534*	*0.112*	*0.132*	*0.028*	*0.028*	*0.942*	*0.766*	*0.901*	*0.866*
Cohort 2	0.271	0.262	0.709**	0.767**	-0.059	-0.035	-0.021	-0.076	-0.200	-0.206	-0.183	-0.136	-0.084	-0.080	0.055	-0.014
Adjusted p-value	*0.618*	*0.723*	*0.036*	*0.028*	*0.645*	*0.791*	*0.909*	*0.936*	*0.618*	*0.676*	*0.549*	*0.936*	*0.645*	*0.791*	*0.909*	*0.936*
Cohort 3	-0.358	-0.355	-0.025	0.116	0.126	0.146	0.077	0.092	0.041	0.032	-0.074	-0.029	0.068	0.111	-0.139	-0.168
Adjusted p-value	*0.766*	*0.819*	*0.939*	*0.860*	*0.766*	*0.819*	*0.939*	*0.860*	*0.766*	*0.819*	*0.939*	*0.860*	*0.766*	*0.819*	*0.939*	*0.860*
Cohort 2–3	-0.024	-0.021	0.382	0.470	0.023	0.030	0.024	0.015	-0.106	-0.115	-0.173	-0.154	0.022	0.055	-0.065	-0.082
Adjusted p-value	*0.885*	*0.903*	*0.240*	*0.104*	*0.885*	*0.903*	*0.840*	*0.902*	*0.885*	*0.903*	*0.240*	*0.381*	*0.885*	*0.903*	*0.840*	*0.902*
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Panel B: Second Follow-up																
Full Sample	0.107	0.093	0.235	0.254	0.000	0.008	-0.068	-0.067	0.053	0.052	0.045	0.052	-0.002	0.003	-0.099	-0.103
Adjusted p-value	*0.993*	*0.966*	*0.432*	*0.336*	*0.993*	*0.966*	*0.485*	*0.426*	*0.993*	*0.966*	*0.485*	*0.426*	*0.993*	*0.966*	*0.485*	*0.426*
Cohort 1	0.128	0.136	0.147	0.161	0.032	0.047	-0.036	-0.036	0.070	0.076	0.069	0.066	-0.036	-0.042	-0.074	-0.080
Adjusted p-value	*0.743*	*0.704*	*0.702*	*0.704*	*0.743*	*0.704*	*0.702*	*0.704*	*0.743*	*0.704*	*0.702*	*0.704*	*0.743*	*0.704*	*0.702*	*0.704*
Cohort 2	0.429	0.417	0.497	0.506	-0.121	-0.124	-0.172	-0.208	0.144	0.189	0.083	0.160	-0.069	-0.025	0.037	0.029
Adjusted p-value	*0.200*	*0.220*	*0.424*	*0.436*	*0.677*	*0.760*	*0.863*	*0.476*	*0.677*	*0.423*	*0.863*	*0.476*	*0.677*	*0.880*	*0.863*	*0.895*
Cohort 3	-0.271	-0.355	0.061	0.146	0.105	0.145	-0.003	0.020	0.029	-0.023	-0.252	-0.249	0.008	0.015	-0.168	-0.166
Adjusted p-value	*0.964*	*0.851*	*0.977*	*0.838*	*0.964*	*0.851*	*0.977*	*0.838*	*0.964*	*0.851*	*0.492*	*0.568*	*0.964*	*0.851*	*0.948*	*0.838*
Cohort 2–3	0.140	0.102	0.308	0.358	-0.044	-0.030	-0.105	-0.111	0.042	0.029	-0.069	-0.046	-0.046	-0.001	-0.134	-0.126
Adjusted p-value	*0.703*	*0.991*	*0.492*	*0.460*	*0.703*	*0.991*	*0.492*	*0.650*	*0.703*	*0.991*	*0.492*	*0.650*	*0.703*	*0.991*	*0.492*	*0.650*
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Note: The table presents the summary indexes following Kling et al. [2007]. P-values are adjusted using Hochberg method (Hochberg, 1988). The original p-values are ordered in an increasing way, such that $p1 > \ldots pi > \ldots pK$; where K is the number of family outcomes. The $i-th$ p-value adjusted corresponds to:

$$p_i^{adj} = min(1p_1, 2p_2, \ldots, ip_i)$$

Table 11. Heterogeneity with respect to socio-emotional scores (Grit and CPS)

	Differential impact on:							
	Last week salaried job				Monthly labor income (in R$)			
	SD OLS		DD OLS		SD OLS		DD OLS	
Treatment Interaction with:	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)
Panel A: First Follow-up								
High Grit score	0.214**	0.228**	0.199	0.203	-43.963	-54.684	-90.646	-94.606
	[0.100]	[0.099]	[0.130]	[0.130]	[100.553]	[95.161]	[113.717]	[114.601]
Raw Grit score	0.219*	0.234**	0.177	0.179	-145.405	-142.655	-153.975	-159.491
	[0.117]	[0.116]	[0.151]	[0.152]	[117.487]	[111.074]	[131.913]	[133.253]
High CPS score	0.123	0.135	-0.076	-0.082	27.128	45.326	-73.734	-70.612
	[0.101]	[0.100]	[0.130]	[0.130]	[100.565]	[95.236]	[111.632]	[113.982]
Raw CPS score	0.009**	0.011**	0.002	0.002	-2.153	-1.112	-5.706	-5.580
	[0.004]	[0.004]	[0.005]	[0.006]	[4.595]	[4.351]	[4.957]	[5.032]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes
Panel B: Second Follow-up								
High Grit score	0.113	0.130	0.032	0.025	61.406	131.307	387.154**	405.019**
	[0.087]	[0.087]	[0.140]	[0.141]	[119.368]	[112.091]	[181.046]	[180.973]
Raw Grit score	0.096	0.115	-0.014	-0.026	33.063	130.518	302.724	317.714
	[0.104]	[0.104]	[0.166]	[0.166]	[140.431]	[132.452]	[211.659]	[211.729]
High CPS score	0.180**	0.195**	0.077	0.069	27.128	45.326	-73.734	-70.612
	[0.086]	[0.085]	[0.140]	[0.140]	[100.565]	[95.236]	[111.632]	[113.982]
Raw CPS score	0.002	0.003	-0.002	-0.003	-8.144	-4.167	-5.506	-4.268
	[0.004]	[0.004]	[0.006]	[0.006]	[5.174]	[4.905]	[7.720]	[7.836]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes

Note: The table presents the interaction term of treatment with the high/low socio-emotional baseline score (Grit and CPS), and with the raw baseline score. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 12. Treatment effects for different percentiles of Grit scale

	Last week salaried job				Monthly labor income (in R$)			
	SD OLS		DD OLS		SD OLS		DD OLS	
	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)
Panel A: First Follow-up								
Treatment at percentil 5 of Gi	-0.238**	-0.245**	-0.058	-0.064	152.882	142.039	173.977	183.933
	[0.101]	[0.101]	[0.131]	[0.132]	[110.522]	[104.648]	[121.211]	[123.174]
Treatment at percentil 10 of Gi	-0.204**	-0.209**	-0.031	-0.036	111.871	101.803	138.445	147.127
	[0.086]	[0.086]	[0.112]	[0.112]	[82.249]	[77.946]	[95.188]	[96.870]
Treatment at percentil 25 of Gi	-0.120*	-0.119**	0.037	0.033	63.402	54.251	79.224	85.785
	[0.056]	[0.056]	[0.073]	[0.073]	[56.172]	[53.331]	[61.594]	[62.766]
Treatment at percentil 50 of Gi	-0.069	-0.065	0.078	0.074	29.847	21.331	43.691	48.979
	[0.050]	[0.050]	[0.065]	[0.065]	[49.529]	[47.044]	[55.720]	[56.522]
Treatment at percentil 75 of Gi	-0.001	0.007	0.132	0.129	-14.893	-22.563	-3.686	-0.095
	[0.063]	[0.062]	[0.081]	[0.081]	[61.675]	[58.445]	[71.1978]	[71.718]
Treatment at percentil 90 of Gi	0.032	0.043	0.159*	0.157	-37.263	-44.510	-39.218	-36.900
	[0.075]	[0.075]	[0.097]	[0.097]	[73.887]	[69.951]	[93.299]	[93.869]
Treatment at percentil 95 of Gi	0.082	0.095	0.200	0.198	-70.818	-77.430	-51.063	-49.169
	[0.097]	[0.096]	[0.125]	[0.125]	[95.747]	[90.578]	[101.629]	[102.247]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes
Panel B: Second Follow-up								
Treatment at percentil 5 of Gi	-0.057	-0.074	0.143	0.163	43.330	-44.058	-133.465	-140.158
	[0.091]	[0.090]	[0.144]	[0.145]	[122.956]	[116.158]	[182.947]	[183.370]
Treatment at percentil 10 of Gi	-0.035	-0.048	0.141	0.159	50.960	-13.938	-86.892	-91.278
	[0.070]	[0.070]	[0.123]	[0.123]	[95.837]	[90.512]	[155.336]	[155.712]
Treatment at percentil 25 of Gi	-0.005	-0.012	0.136*	0.149*	61.133	26.221	29.540	30.919
	[0.049]	[0.049]	[0.079]	[0.079]	[67.384]	[63.500]	[100.283]	[100.419]
Treatment at percentil 50 of Gi	0.018	0.015	0.131*	0.141**	69.081	57.595	122.686	128.678
	[0.044]	[0.043]	[0.071]	[0.071]	[59.251]	[55.619]	[91.332]	[91.124]
Treatment at percentil 75 of Gi	0.046	0.050	0.128	0.135	78.936	96.500	192.545*	201.996*
	[0.055]	[0.054]	[0.087]	[0.087]	[73.477]	[68.885]	[112.348]	[111.977]
Treatment at percentil 90 of Gi	0.061	0.068	0.126	0.131	84.023	116.579	262.405*	275.315*
	[0.066]	[0.065]	[0.104]	[0.104]	[88.003]	[82.567]	[147.222]	[146.795]
Treatment at percentil 95 of Gi	0.076	0.085	0.124	0.128	91.653	146.699	285.691*	299.755*
	[0.078]	[0.078]	[0.124]	[0.124]	[114.076]	[107.158]	[160.474]	[160.041]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes

Note: The table shows the treatment effects for different percentiles of Grit baseline score. Gi corresponds to Grit's scale score. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 12. Treatment effects for different percentiles of CPS scale (*Continued*

	Last week salaried job				Monthly labor income (in R$)			
	SD OLS		DD OLS		SD OLS		DD OLS	
	(3a)	(3b)	(3c)	(3d)	(4a)	(4b)	(4c)	(4d)
Panel A: First Follow-up								
Treatment at percentil 5 of Gi	-0.253***	-0.277***	0.033	0.041	76.510	46.104	157.448	160.181
	[0.098]	[0.097]	[0.130]	[0.131]	[99.792]	[94.464]	[109.060]	[111.189]
Treatment at percentil 10 of Gi	-0.207***	-0.224***	0.047	0.052	67.896	41.655	134.625	137.862
	[0.080]	[0.080]	[0.103]	[0.104]	[84.420]	[79.905]	[92.551]	[94.397]
Treatment at percentil 25 of Gi	-0.132**	-0.138**	0.066	0.066	50.669	32.759	88.978	93.225
	[0.057]	[0.057]	[0.074]	[0.075]	[59.077]	[55.901]	[65.325]	[66.612]
Treatment at percentil 50 of Gi	-0.067	-0.063	0.082	0.079	35.595	24.974	49.037	54.167
	[0.050]	[0.050]	[0.065]	[0.065]	[50.251]	[47.537]	[55.555]	[56.402]
Treatment at percentil 75 of Gi	-0.002	0.012	0.098	0.091	20.521	17.189	9.096	15.109
	[0.060]	[0.059]	[0.077]	[0.077]	[60.245]	[57.005]	[65.676]	[66.381]
Treatment at percentil 90 of Gi	0.063	0.087	0.115	0.104	5.447	9.405	-30.845	-23.949
	[0.080]	[0.080]	[0.102]	[0.103]	[82.480]	[78.065]	[89.154]	[90.073]
Treatment at percentil 95 of Gi	0.100	0.130	0.124	0.111	-3.166	4.956	-53.669	-46.267
	[0.094]	[0.094]	[0.120]	[0.121]	[97.701]	[92.480]	[105.388]	[106.514]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes
Panel B: Second Follow-up								
Treatment at percentil 5 of Gi	-0.013	-0.048	0.178	0.224	242.250*	142.849	194.954	175.800
	[0.090]	[0.090]	[0.148]	[0.149]	[125.403]	[118.942]	[173.845]	[176.585]
Treatment at percentil 10 of Gi	-0.003	-0.029	0.167	0.203*	193.385*	117.846	175.682	160.861
	[0.071]	[0.071]	[0.113]	[0.114]	[99.184]	[93.996]	[151.319]	[153.562]
Treatment at percentil 25 of Gi	0.013	0.001	0.153*	0.175**	116.014*	78.258	120.618	118.178
	[0.049]	[0.049]	[0.078]	[0.079]	[66.757]	[62.983]	[100.081]	[100.766]
Treatment at percentil 50 of Gi	0.024	0.022	0.141**	0.153**	63.077	51.171	82.073	88.301
	[0.043]	[0.043]	[0.070]	[0.070]	[59.659]	[56.015]	[89.951]	[89.788]
Treatment at percentil 75 of Gi	0.036	0.044	0.130	0.131	10.139	24.085	49.035	62.691
	[0.051]	[0.051]	[0.085]	[0.084]	[70.171]	[65.888]	[105.309]	[105.160]
Treatment at percentil 90 of Gi	0.046	0.064	0.122	0.116	-34.654	1.165	18.750	39.215
	[0.066]	[0.065]	[0.104]	[0.104]	[88.576]	[83.350]	[132.696]	[133.002]
Treatment at percentil 95 of Gi	0.051	0.074	0.116	0.103	-67.231	-15.503	-11.535	15.740
	[0.075]	[0.074]	[0.123]	[0.123]	[104.824]	[98.775]	[166.529]	[167.438]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes

Note: The table shows the treatment effects for different percentiles of CPS baseline score. Gi corresponds to CPS's scale score. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Figure 1. Timeline of data collection and intervention

2012	April	Beginning of Training - Cohort 1
	June - Oct.	Baseline Data
	June	Beginning of Training - Cohort 2
	July	Beginning of Training - Cohort 3
	Oct. - Dec.	First Follow-up - Cohort 1
2013	April - May	First Follow-up - Cohorts 2 and 3
	Oct.- Dec.	Second Follow-up

Table A1. Attrition and Treatment Status

	First Follow-up (1)	Second Follow-up (2)
Assigned to Treatment	-0.0004	-0.0598
	[0.030]	[0.044]
Control group attrition rate	0.0898	0.2077
Sample size	358	358

Note: Column (1) reports the coefficient from regressing a dummy for attrited between baseline and first follow-up on treatment status. Column (2) reports the coefficient from regressing a dummy for attrited between baseline and second follow-up on treatment status. All the regressions include controls for Cohorts applied for. Standard errors are in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table A2. Covariate balancing socio-demographic characteristics by Cohort

Variable	Cohort 1			Cohort 2			Cohort 3		
	Treated (T)	Control (C)	Difference T-C	Treated (T)	Control (C)	Difference T-C	Treated (T)	Control (C)	Difference T-C
Age	22.281	22.965	-0.683	24.538	24.083	0.455	23.786	22.879	0.907
	(3.589)	(3.759)	[0.547]	(3.467)	(3.441)	[0.810]	(3.755)	(3.343)	[0.909]
Female	0.083	0.118	-0.034	0.038	0.083	-0.045	0.393	0.303	0.090
	(0.278)	(0.324)	[0.045]	(0.196)	(0.279)	[0.060]	(0.497)	(0.467)	[0.124]
Single	0.802	0.788	0.014	0.654	0.583	0.071	0.786	0.636	0.149
	(0.401)	(0.411)	[0.060]	(0.485)	(0.497)	[0.116]	(0.418)	(0.489)	[0.118]
Familia Carioca benefit	0.021	0.012	0.009	0.000	0.017	-0.017	0.000	0.000	0.000
	(0.144)	(0.108)	[0.019]	(0.000)	(0.129)	[0.025]	(0.000)	(0.000)	[0.000]
Bolsa Familia benefit	0.135	0.082	0.053	0.115	0.150	-0.035	0.107	0.152	-0.044
	(0.344)	(0.277)	[0.047]	(0.326)	(0.360)	[0.082]	(0.315)	(0.364)	[0.088]
Household size	4.063	3.612	0.451*	3.692	3.583	0.109	3.786	3.424	0.361
	(1.782)	(1.641)	[0.256]	(1.463)	(1.555)	[0.359]	(1.771)	(1.562)	[0.427]
Household income	1637.926	1692.635	-54.709	2051.730	1424.400	627.330**	1620.786	1466.667	154.119
	(1143.009)	(1187.788)	[173.395]	(1574.050)	(995.537)	[281.118]	(1007.039)	(1618.254)	[352.711]
Literate persons in HH	0.977	0.980	-0.003	0.974	0.947	0.027	0.968	0.970	-0.002
	(0.084)	(0.072)	[0.012]	(0.078)	0.130)	[0.027]	(0.106)	(0.105)	[0.027]
Official int. water access	0.729	0.753	-0.024	0.692	0.617	0.076	0.821	0.576	0.246**
	(0.447)	(0.434)	[0.066]	(0.471)	(0.490)	[0.114]	(0.390)	(0.502)	[0.117]
Pay Water	0.531	0.482	0.049	0.385	0.300	0.085	0.393	0.394	-0.001
	(0.502)	(0.503)	[0.075]	(0.496)	(0.462)	[0.111]	(0.497)	(0.496)	[0.128]
Garbage collection	0.781	0.835	-0.054	0.769	0.733	0.036	0.786	0.758	0.028
	(0.416)	(0.373)	[0.059]	(0.430)	(0.446)	[0.104]	(0.418)	(0.435)	[0.110]
Ever worked	0.938	0.941	-0.004	0.923	0.950	-0.027	0.929	0.970	-0.041
	(0.243)	(0.237)	[0.036]	(0.272)	(0.220)	[0.056]	(0.262)	(0.174)	[0.056]
Age at first job	16.322	15.488	0.835*	16.833	15.842	0.991	15.885	15.406	0.478
	(2.561)	(2.994)	[0.426]	(3.655)	(3.189)	[0.811]	(2.535)	(3.368)	[0.799]
Employed	0.579	0.671	-0.092	0.808	0.733	0.074	0.536	0.697	-0.161
	(0.496)	(0.473)	[0.072]	(0.402)	(0.446)	[0.102]	(0.508)	(0.467)	[0.125]
Unemployed	0.189	0.153	0.037	0.154	0.217	-0.063	0.143	0.091	0.052
	(0.394)	(0.362)	[0.057]	(0.368)	(0.415)	[0.094]	(0.356)	(0.292)	[0.083]
Monthly labor income	745.174	685.689	59.485	861.875	867.136	-5.261	634.571	700.045	-65.474
	(295.859)	(324.995)	[65.124]	(243.508)	(322.209)	[88.695]	(368.243)	(365.224)	[125.259]
Weekly hours worked	41.208	43.667	-2.458	45.625	44.273	1.352	41.000	37.818	3.182
	(13.271)	(15.932)	[3.033]	(9.294)	(11.833)	[3.279]	(17.267)	(11.104)	[4.714]
Formal Contract	0.676	0.613	0.063	0.714	0.824	-0.109	0.778	0.684	0.094
	(0.475)	(0.495)	[0.118]	(0.469)	(0.387)	[0.131]	(0.441)	(0.478)	[0.189]
Secondary Education	0.882	0.875	0.007	0.727	0.830	-0.103	0.882	0.957	-0.074
	(0.325)	(0.333)	[0.057]	(0.456)	(0.379)	[0.102]	(0.332)	(0.209)	[0.086]
N	96	85		26	60		28	33	

Note: The treatment and control groups reported are youths for which data at both the baseline and at the first follow-up are available. Standard deviations are in parenthesis. Standard errors are in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table A3. Covariate balancing risky behavior and social activities by Cohort

Variable	Cohort 1			Cohort 2			Cohort 3		
	Treated (T)	Control (C)	Difference T-C	Treated (T)	Control (C)	Difference T-C	Treated (T)	Control (C)	Difference T-C
Party	0.729	0.765	-0.036	0.885	0.683	0.201*	0.714	0.636	0.078
	(0.447)	(0.427)	[0.065]	(0.326)	(0.469)	[0.101]	(0.460)	(0.489)	[0.122]
Sports	0.719	0.659	0.060	0.731	0.633	0.097	0.536	0.515	0.021
	(0.452)	(0.477)	[0.069]	(0.452)	(0.486)	[0.112]	(0.508)	(0.508)	[0.130]
Church	0.510	0.459	0.052	0.500	0.600	-0.100	0.357	0.515	-0.158
	(0.503)	(0.501)	[0.075]	(0.510)	(0.494)	[0.117]	(0.488)	(0.508)	[0.128]
Ever smoked	0.219	0.235	-0.017	0.192	0.267	-0.074	0.071	0.242	-0.171*
	(0.416)	(0.427)	[0.063]	(0.402)	(0.446)	[0.102]	(0.262)	(0.435)	[0.094]
Last week alcohol	0.385	0.306	0.080	0.385	0.267	0.118	0.357	0.364	-0.006
	(0.489)	(0.464)	[0.071]	(0.496)	(0.446)	[0.108]	(0.488)	(0.489)	[0.125]
Having five or more drinks on one ocassion	0.541	0.615	-0.075	0.500	0.563	-0.063	0.500	0.583	-0.083
	(0.505)	(0.496)	[0.128]	(0.527)	(0.512)	[0.209]	(0.527)	(0.515)	[0.223]
Last week smoked marijuana	0.010	0.035	-0.025	0.000	0.050	-0.050	0.036	0.061	-0.025
	(0.102)	(0.186)	[0.022]	(0.000)	(0.220)	[0.043]	(0.189)	(0.242)	[0.056]
Ever used drugs (cocaine, heroin, esctasy, others)	0.000	0.024	-0.024	0.038	0.050	-0.012	0.036	0.030	0.005
	(0.000)	(0.152)	[0.016]	(0.196)	(0.220)	[0.050]	(0.189)	(0.174)	[0.047]
Witnessed any incidence of violence last year	0.542	0.565	-0.023	0.577	0.500	0.077	0.464	0.485	-0.021
	(0.501)	(0.499)	[0.074]	(0.504)	(0.504)	[0.118]	(0.508)	(0.508)	[0.130]
Witnessed firearms last year	0.354	0.365	-0.011	0.423	0.367	0.056	0.393	0.364	0.029
	(0.481)	(0.484)	[0.072]	(0.504)	(0.486)	[0.115]	(0.497)	(0.489)	[0.127]
Witnessed physical attack last year	0.326	0.318	0.009	0.231	0.167	0.064	0.286	0.273	0.013
	(0.471)	(0.468)	[0.070]	(0.430)	(0.376)	[0.092]	(0.460)	(0.452)	[0.117]
Victim discrimination	0.188	0.176	0.011	0.154	0.167	-0.013	0.107	0.273	-0.166
	(0.392)	(0.383)	[0.058]	(0.368)	(0.376)	[0.088]	(0.315)	(0.452)	[0.102]
Victim beaten	0.063	0.106	-0.043	0.000	0.050	-0.050	0.000	0.000	0.000
	(0.243)	(0.310)	[0.041]	(0.000)	(0.220)	[0.043]	(0.000)	(0.000)	[0.000]
Victim threatened with arms	0.010	0.059	-0.048*	0.000	0.017	-0.017	0.000	0.030	-0.030
	(0.102)	(0.237)	[0.027]	(0.000)	(0.129)	[0.025]	(0.000)	(0.174)	[0.033]
N	96	85		26	60		28	33	

Note: The treatment and control groups reported are youths for which data at both the baseline and at the first follow-up are available. Standard deviations are in parenthesis. Standard errors are in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table A4. Covariate balancing socio-emotional skills (z-scores) by Cohort

Variable	Cohort 1			Cohort 2			Cohort 3		
	Treated (T)	Control (C)	Difference T-C	Treated (T)	Control (C)	Difference T-C	Treated (T)	Control (C)	Difference T-C
Total CPS Score	-0.190	-0.005	-0.185	0.418	0.286	0.132	-0.273	-0.018	-0.254
	(1.038)	(0.907)	[0.146]	(0.844)	(0.908)	[0.209]	(0.957)	(1.032)	[0.257]
CPS: Leadership	-0.067	0.016	-0.083	0.321	0.132	0.189	-0.335	-0.065	-0.270
	(0.996)	(0.794)	[0.135]	(0.965)	(1.132)	[0.255]	(1.094)	(1.120)	[0.285]
CPS: Behavior in situations of conflict	-0.356	-0.044	-0.312**	0.294	0.392	-0.098	-0.115	-0.032	-0.083
	(0.929)	(0.882)	[0.135]	(0.622)	(1.011)	[0.214]	(1.044)	(1.039)	[0.268]
CPS: Self-esteem	0.004	-0.055	0.059	0.434	0.059	0.375*	-0.124	0.140	-0.265
	(1.016)	(1.090)	[0.157]	(0.834)	(0.897)	[0.206]	(1.054)	(1.043)	[0.269]
CPS: Abilities to relate with others	-0.051	0.025	-0.075	0.193	0.120	0.073	-0.073	0.035	-0.108
	(0.979)	(0.940)	[0.143]	(0.926)	(0.952)	[0.222]	(1.060)	(1.039)	[0.269]
CPS: Order and self-organization	-0.264	-0.158	-0.106	0.345	0.389	-0.044	-0.358	0.387	-0.745***
	(1.046)	(0.937)	[0.148]	(0.769)	(0.872)	[0.198]	(1.059)	(0.844)	[0.244]
CPS: Empathy and communication skills	0.018	0.127	-0.108	0.224	0.040	0.184	-0.130	-0.301	0.171
	(0.970)	(1.000)	[0.147]	(0.947)	(0.902)	[0.215]	(1.031)	(1.177)	[0.286]
Total Grit Scale	-0.128	-0.092	-0.035	0.436	0.218	0.219	-0.171	0.036	-0.207
	(0.959)	(1.055)	[0.150]	(0.729)	(0.899)	[0.200]	(1.074)	(1.167)	[0.289]
Brief Grit Scale	-0.066	-0.150	0.084	0.432	0.265	0.167	-0.412	-0.067	-0.345
	(0.977)	(0.981)	[0.146]	(0.747)	(0.928)	[0.206]	(1.041)	(1.230)	[0.295]
Grit: Consistency of interest	-0.073	-0.032	-0.041	0.146	-0.040	0.186	0.115	0.120	-0.005
	(0.982)	(1.006)	[0.148]	(0.730)	(1.154)	[0.246]	(0.917)	(0.915)	[0.235]
Grit: Perseverance of effort	-0.055	-0.133	0.078	0.280	0.210	0.069	-0.313	-0.033	-0.280
	(1.032)	(0.982)	[0.150]	(0.828)	(0.914)	[0.209]	(1.049)	(1.191)	[0.290]
Grit: Ambition	-0.059	-0.111	0.053	0.296	0.289	0.007	-0.307	-0.129	-0.177
	(0.938)	(1.020)	[0.146]	(0.730)	(0.842)	[0.190]	(1.167)	(1.302)	[0.319]
N	96	85		26	60		28	33	

Note: The treatment and control groups reported are youths for which data at both the baseline and at the first follow-up are available. Standard deviations are in parenthesis. Standard errors are in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table A5. Impact on risky behavior

	Ever smoked				Number of cigarettes (last week)				Alcohol consumption (last week)				More than five drinks			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)	(3a)	(3b)	(3c)	(3d)	(4a)	(4b)	(4c)	(4d)
Panel A: First Follow-up																
Full Sample	-0.030	0.009	0.031	0.032	0.410	0.087	0.000	0.071	0.080	0.045	0.004	0.003	-0.033	-0.044	0.002	-0.008
	[0.048]	[0.039]	[0.042]	[0.043]	[0.275]	[0.282]	[0.309]	[0.308]	[0.052]	[0.046]	[0.054]	[0.054]	[0.091]	[0.105]	[0.157]	[0.164]
Cohort 1	0.016	0.028	0.033	0.025	-0.195	-0.096	0.019	-0.231	0.147**	0.104*	0.068	0.075	-0.197*	-0.089	-0.009	-0.014
	[0.063]	[0.043]	[0.046]	[0.046]	[0.403]	[0.372]	[0.399]	[0.376]	[0.070]	[0.059]	[0.067]	[0.067]	[0.116]	[0.139]	[0.197]	[0.205]
Cohort 2	-0.086	-0.054	-0.012	-0.005	1.702***	0.591	0.250	0.114	0.118	0.086	0.000	0.074	0.000	-0.089	0.167	0.113
	[0.107]	[0.099]	[0.114]	[0.120]	[0.514]	[0.486]	[0.395]	[0.318]	[0.108]	[0.106]	[0.131]	[0.131]	[0.210]	[0.294]	[0.438]	[0.503]
Cohort 3	-0.053	0.057	0.118	0.111	0.386	-0.267	-0.143	0.217	-0.180	-0.177	-0.173	-0.182	0.308	0.400	-0.222	-0.203
	[0.117]	[0.104]	[0.106]	[0.107]	[0.574]	[1.601]	[1.993]	[2.819]	[0.119]	[0.106]	[0.127]	[0.130]	[0.199]	[0.232]	[0.427]	[0.560]
Cohort 2–3	-0.071	-0.008	0.057	0.058	1.045***	0.724	0.137	0.246	-0.016	-0.040	-0.085	-0.061	0.101	0.064	-0.025	-0.016
	[0.078]	[0.071]	[0.078]	[0.080]	[0.381]	[0.573]	[0.596]	[0.694]	[0.079]	[0.075]	[0.091]	[0.092]	[0.154]	[0.177]	[0.293]	[0.311]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	328	328	328	328	84	54	54	54	328	328	328	328	106	70	70	70
Control means: Full sample	0.270				1.979				0.287				0.706			
Control means: Cohort 1	0.224				2.368				0.259				0.864			
Control means: Cohort 2	0.317				1.632				0.267				0.500			
Control means: Cohort 3	0.303				1.900				0.394				0.692			
Control means: Cohort 2–3	0.312				1.724				0.312				0.586			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table A5. Impact on risky behavior *(Continued)*

	Ever used drugs (cocaine, heroin, esctasy, others)				Last month fight				Witness firearms last year				Witness physical attack last year			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(5a)	(5b)	(5c)	(5d)	(6a)	(6b)	(6c)	(6d)	(7a)	(7b)	(7c)	(7d)	(8a)	(8b)	(8c)	(8d)
Panel A: First Follow-up																
Full Sample	-0.011	-0.011	0.009	0.008	0.014	0.014	0.017	0.016	0.093*	0.090*	0.085	0.083	0.085	0.073	0.044	0.047
	[0.009]	[0.009]	[0.019]	[0.019]	[0.012]	[0.012]	[0.020]	[0.020]	[0.050]	[0.046]	[0.056]	[0.056]	[0.052]	[0.050]	[0.060]	[0.060]
Cohort 1	-0.012	-0.012	0.012	0.013	0.009	0.009	0.025	0.025	0.088	0.092	0.098	0.102	0.126*	0.125*	0.120	0.108
	[0.011]	[0.011]	[0.019]	[0.019]	[0.019]	[0.019]	[0.035]	[0.035]	[0.067]	[0.060]	[0.073]	[0.073]	[0.074]	[0.069]	[0.081]	[0.081]
Cohort 2	-0.017	-0.017	-0.005	-0.007	0.000	0.000	0.000	0.000	0.129	0.106	0.073	0.071	0.026	0.025	-0.038	-0.073
	[0.025]	[0.026]	[0.057]	[0.060]	[0.000]	[0.000]	[0.000]	[0.000]	[0.103]	[0.091]	[0.113]	[0.118]	[0.090]	[0.091]	[0.128]	[0.132]
Cohort 3	0.000	0.000	-0.005	-0.005	0.036	0.036	0.036	0.041	0.060	0.052	0.030	0.021	-0.006	-0.013	-0.019	-0.020
	[0.000]	[0.000]	[0.047]	[0.048]	[0.033]	[0.033]	[0.033]	[0.032]	[0.125]	[0.122]	[0.153]	[0.156]	[0.125]	[0.113]	[0.128]	[0.133]
Cohort 2–3	-0.011	-0.011	-0.005	-0.008	0.019	0.019	0.019	0.017	0.112	0.098	0.070	0.061	0.041	0.027	-0.014	-0.018
	[0.014]	[0.014]	[0.037]	[0.038]	[0.014]	[0.014]	[0.014]	[0.014]	[0.078]	[0.073]	[0.091]	[0.093]	[0.075]	[0.073]	[0.090]	[0.092]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	328	328	328	328	328	328	328	328	328	328	328	328	328	327	327	327
Control means: Full sample	0.011				0.006				0.247				0.208			
Control means: Cohort 1	0.012				0.012				0.235				0.176			
Control means: Cohort 2	0.017				0.000				0.217				0.167			
Control means: Cohort 3	0.000				0.000				0.333				0.364			
Control means: Cohort 2–3	0.011				0.000				0.258				0.237			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table A5. Impact on risky behavior *(Continued)*

	Victim discrimination				Victim beaten				Victim threatened with arms			
	SD OLS		DD OLS		SD OLS		DD OLS		SD OLS		DD OLS	
Specification Model	(9a)	(9b)	(9c)	(9d)	(10a)	(10b)	(10c)	(10d)	(11a)	(11b)	(11c)	(11d)
Panel A: First Follow-up												
Full Sample	0.048	0.051	0.072	0.069	0.041**	0.044**	0.068**	0.070**	-0.009	-0.010	0.024	0.024
	[0.038]	[0.037]	[0.053]	[0.053]	[0.017]	[0.017]	[0.028]	[0.028]	[0.015]	[0.015]	[0.023]	[0.023]
Cohort 1	0.050	0.049	0.039	0.039	0.040	0.045*	0.084*	0.090**	-0.001	-0.002	0.047	0.045
	[0.051]	[0.050]	[0.071]	[0.071]	[0.027]	[0.026]	[0.045]	[0.045]	[0.016]	[0.016]	[0.031]	[0.031]
Cohort 2	0.109	0.111	0.122	0.090	0.038	0.038	0.088*	0.081	0.005	0.005	0.022	0.019
	[0.075]	[0.075]	[0.107]	[0.110]	[0.025]	[0.025]	[0.050]	[0.052]	[0.044]	[0.044]	[0.051]	[0.053]
Cohort 3	-0.039	-0.022	0.127	0.095	0.036	0.036	0.036	0.041	-0.030	-0.031	0.000	-0.015
	[0.097]	[0.099]	[0.133]	[0.133]	[0.033]	[0.033]	[0.033]	[0.032]	[0.033]	[0.033]	[0.047]	[0.048]
Cohort 2–3	0.048	0.057	0.123	0.115	0.037*	0.037*	0.069**	0.069**	-0.014	-0.014	0.008	0.000
	[0.059]	[0.059]	[0.082]	[0.084]	[0.020]	[0.020]	[0.031]	[0.032]	[0.028]	[0.028]	[0.035]	[0.035]
Including covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	328	328	328	328	328	328	328	328	328	328	328	328
Control means: Full sample	0.112				0.006				0.022			
Control means: Cohort 1	0.106				0.012				0.012			
Control means: Cohort 2	0.083				0.000				0.033			
Control means: Cohort 3	0.182				0.000				0.030			
Control means: Cohort 2–3	0.118				0.000				0.032			

Note: The table presents estimates of the ATET. For each outcome four different regressions are presented: the first two columns (a) and (b) correspond to the SD specification without and with controls for baseline values of the outcome. The next two columns (c) and (d) report the DD specification without and with covariates. The covariates include gender, household income, and age. Full sample size for the first follow-up is N=328, Cohort 1=181, Cohort 2=86, Cohort 3=61. Standard errors in brackets. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.