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 in the medium-term from economically large employment and earnings impacts. We find no systematic evidence of broad impacts on socio-emotional skills, although the program appears to develop some skills related to self-control. We also find some evidence to suggest that youth who have higher initial socio-emotional skills may benefit more from the program. 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.

1. Introduction

Despite Brazil's progress in labor market outcomes over the last decade, labor market outcomes of youth – particularly those from disadvantaged socio-economic contexts – continue to be markedly worse than almost any other demographic group. Youth face lower wages, higher levels of informality, and more frequent unemployment spells. Their attachment to the labor market is also tenuous and irregular, with frequent entry and exit.

This paper analyzes an innovative approach at dealing with unemployment among disadvantaged youth living in Rio de Janeiro's slums (or *favelas*), pioneered by a small NGO, *Galpão Aplauso*. The novel dimension of this program is the use of expressive arts and theatre as a pedagogical tool. This tool is used as part of a training program that also includes vocational and academic training, as well as training in work-readiness skills.

We expect that the bundle offered by *Galpão* may impact employment through a number of channels. First, it can teach specific academic and vocational skills which employers demand. These are basic numeracy, reading, as well as specific skills required by certain trades. Second, it can teach specific conducts required to work in a formal job environment. These work-readiness skills are conducts that employers expect from the workforce, but that youth in the marginalized communities in Rio's *favelas* often lack.

Beyond the specific technical or work-readiness skills, the program can build broader cognitive and socio-emotional skills (sometimes referred to as non-cognitive skills) that are known to be important for labor market outcomes. The economics and psychology literature

shows that socio-emotional skills do change over the life-cycle and can me molded, particularly at younger ages. However, whereas specific work-readiness skills may be easier to change, we are more ambivalent regarding the ability of youth-training programs to impact broader types of socio-emotional skills for youth and young adults.

Program participants could see higher labor market outcomes due to formation of vocational, academic, and socio-emotional skills. Using standard labor market participation questions, we can test the program's overall impact on employment and earnings. We can also test the program's impact on broad socio-emotional skills measured by standard psychological tests. However, we cannot parse out what share of the program impacts is due to higher vocational skills, higher academic skills, or higher socio-emotional skills, as the experiment was not designed with separate treatment arms that would allow for separate estimation of these different channels.[1]

The program can also impact outcomes by signaling higher-skills youth, particularly youth with higher socio-emotional skills. To the extent that the program attracts youth with higher socio-emotional skills, such as the capacity to sustain interest and persevere, employers may be actually valuing not only the human capital acquired through the program, but also higher initial levels of certain sought-after skills. This impact can be thought of as an impact through signaling.

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. And other than a study on the impact of arts and theatre on socio-emotional skills (Schellenberg, 2004), we are unaware of any literature documenting the effectiveness of arts and theatre as a pedagogical tool. Second, the paper analyzes the role of socio-emotional skills in labor market outcomes, and their importance both as skills demanded by employers and as a determinant of program effectiveness. Despite recent advances in research in this area (Almlund et al., 2011; Heckman and Kautz, 2012), understanding how these skills are jointly determined and how they impact labor market outcomes remains quite limited.

The remainder of the paper is organized as follows. Section 2 discusses the evidence on the effectiveness of youth training in Latin American and the Caribbean (LAC). It also describes how cognitive and socio-emotional skills are related to labor market outcomes. Section 3 presents the *Galpão Aplauso* program and the experimental design of the study. Section 4 presents the data collection and estimation methodology. Empirical impact estimates on a series of outcomes are presented in Section 5. Section 6 discusses findings and concludes.

2. Youth training and socio-emotional skills

2.1. Youth training programs

Youth (un-)employment is one of the most persistent problems in public policy. 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. The frequency of dismissals is much higher for youth than for adults (Gonzaga et al., 2014; Cunningham and Salvagno, 2011). Youth employment is 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 are particularly persistent in the case of youth with low levels of schooling (Burgess et al., 2003). Research also suggests that both the duration and the frequency of

these unemployment spells may be higher for youth with lower levels of schooling and other economic disadvantages (Quintini et al., 2007).

Youth from marginal communities also face disadvantages due to poorly developed cognitive and socio-emotional skills.

Active Labor Market Policies (ALMPs), which are the most common public policy used to address youth and young adult unemployment, often have modest labor market impacts. 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 some impacts on earnings (Card et al., 2010; Kluve, 2010). They have generally small or negative impact in the short-run, but tend to increase over time (Card et al., 2010; Heinrich et al., 2013; Caliendo et al., 2011). Evidence for the effectiveness of ALMPs for emerging economies – and for Brazil in particular – is much less common. Urzúa and Puentes (2010) report on the findings from the LAC region and find that impacts also tend to be modest, is somewhat larger than in the industrialized context. However, many of the studies they review have a relatively poor evidentiary basis.

There are few high-quality quantitative evaluations of ALMPs in LAC, and the impacts documented in more rigorous program reviews tend to be small. Card et al. (2011) provide the first experimental evidence on the effectiveness of a youth training program. They evaluate the impacts for the Dominican Republic's *Juventud y Empleo (JE)*, a labor training program consisting of vocational and 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 percent treatment effect) and formality. Ibarrarán et al. (2014) look at the second phase of the *JE* program and essentially find identical results: quality of employment and earnings increase, but there are no employment impacts. Attanasio et al. (2011) look at the case of Colombia's *Jóvenes 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 percent treatment effect on wages). Alzua et al. (2015) look at a small-scale, NGO-run training program in Argentina, and again find no employment effects, but do find some effects on labor earnings. Recent empirical evidence suggests that even as ALMP have only modest impacts, these may endure over time (Ibarrarán et al., 2015; Kugler et al., 2015; Attanasio et al., 2015).

In Brazil, there are two studies that review the effectiveness of ALMPs: Oliveira and Rios-Neto (2007) and Corseuil et al. (2013). Oliveira and Rios-Neto evaluate the impact of a vocational training program conducted in the Brazilian state of 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. (2013) 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 as well as 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 impacts on wages, small impacts on full-time employment, but no impact on overall employment (part-time or full-time).

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

Both cognitive and socio-emotional skills are important in shaping labor market outcomes (Bowles et al., 2001; Osborne Groves, 2005; Heckman et al., 2006; Mueller and Plug, 2006; Heineck and Anger, 2010; Heckman et al., 2011; Almlund et al., 2011; Cattan, 2012). 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 cognitive skills to be more important

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[1] According to program administrators, the program's brand has value to potential employers in that it signals that youth have successfully completed a series of high quality treatments (vocational, academic, socio-emotional). Administrators were not willing to provide completion certificates to youth who did not complete the entire package, therefore a multi-arm strategy was not possible.

than socio-emotional skills, but also find that cognitive skills have mostly an indirect impact on employment, acting through higher educational attainment.[2] Ibarrarán et al. (2014) collect experimental data from latter rounds of the Dominican Republic youth training program (*JE*), and measure both cognitive and socio-emotional skills. Although they find evidence that the program impacts the formation of socio-emotional skills,[3] they find that these skills were uncorrelated with labor market outcomes in a cross-section.

3. The *Galpão Aplauso* Program in Rio de Janeiro

3.1. The Galpão *program*

In 2009, the *Instituto Stimulu Brasil,* a Brazilian NGO, implemented a youth skills development program for at-risk youth in Rio de Janeiro, commonly known as *Galpão Aplauso* (or just *Galpão*).[4] The program sought to improve the socio-economic and labor market outcomes of youth by teaching basic academic skills (including remedial courses in both mathematics and Portuguese), vocational skills (e.g., construction-related skills, carpentry, soldering), and work-readiness skills. These work-readiness skills emphasized conducts and behaviors required for success in a formal workplace, such as the importance of being on time, the importance of finishing tasks, as well as the proper way to address colleagues in the workplace. These simple work-readiness conducts are lacking among youth in marginalized neighborhoods. In addition to specific conducts, the program also attempted to build broader socio-emotional skills, such as the ability to persevere and follow through, and the ability to self-control-as well as certain values such as respect, courage, and tolerance.

The pedagogic model employed by the program also set it apart from others. It made extensive use of arts and theatre as training mechanisms, employed throughout the curricula. Art and theatre allow communicating contents and transferring knowledge through playful activities, referred to in the program as the "dynamics" approach.

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 violence surrounding these areas, 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 control the drug trade and other illicit activities in the city. The program's response was to create a neutral downtown space, located 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 was intensive, if compared with other youth training programs in the region.[5] The program's duration was approximately six months, and included five hours of training a day, and for five days a week, delivered in three shifts—morning, afternoon, and evening. The treatment included 300 h of vocational training, 180 h of training on basic skills, and 120 h in work-readiness skills.

Due to the long program duration and high number of training hours per day, Galpão was a relatively expensive program. Based on administrative data, the average cost per youth in 2013 was $810

Table 1
Trends in labor market indicators in Rio de Janeiro and other metropolitan regions (MR), 2010–2013.
Source: *Pesquisa Mensal do Emprego* (*PME*).

	Unemployment rate (percent)				Employment share of manufacturing (pecent)			
	All		Youth		All		Youth	
	Rio	Other MRs	Rio	Other MRs	Rio	Other MRs	Rio	Other MRs
2010	5.90	7.80	11.50	14.20	20.10	25.50	18.10	24.60
2012	5.50	6.00	11.20	11.30	19.80	25.40	18.80	24.80
2013	4.80	6.00	10.10	11.40	19.50	24.90	18.70	23.90

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 baseline data (first half of 2012), and some months after the training when the follow-up was conducted (first half of 2013).

Brazilian *Reais* (about $386 US dollars) a month, or $4680 *Reais* (about $2229 US dollars) for the entire curriculum per student.

Galpão's job placement strategy was loosely structured around informal agreements with local private sector firms. In some cases, *in situ* vocational training was sponsored by partner firms. That is, firms collaborated with *Galpão* to set up specific training programs for youth in skills that they required. This is the case of *Galpão's* partnership with a large national retail store chain (*Lojas Americanas*), where training grounds for warehousing skills were built *in situ*. In other instances, firms made contributions to the program but did not specifically sponsor any type of training. The program did not have a structured job-placement program or formal internships.

According to interviews with the program administrators, demand for the program was elicited by word-of-mouth, relying mainly on former participants, teachers, and private sector partners to announce the opening of each of the cohorts. Program administrators deliberately limited broader dissemination of their program's programs, so as not to attract large numbers of youths who would then not be able to be admitted due to space limitations.

The *Galpão* program was implemented against the backdrop of a generally positive labor market context. According to the *Pesquisa Mensal do Emprego* (PME), Brazil's main, continuous, labor force survey, Rio de Janeiro had seen a significant improvement in terms of employment, earnings, and formality over the period between 2010 and 2013 (see Tables 1 and 2). In fact, the overall employment trend for youth in Rio de Janeiro during this period was better than that for youth in other Brazilian metropolitan regions.

3.2. *Design and implementation of the experiment*

The youth who participated in the *Galpão* program were selected in a two-stage process. In the first stage, youths responding to the announcement of a new cohort were given a "pre-inscription" questionnaire that included information related to personal and household situation, current employment, educational status, etc. These data were used for screening purposes, ensuring that youth met the program's eligibility criteria, such as income limits (participants' families could not earn more than two minimum wages), and age restrictions (participants could not be older than 29 years old). In the second stage, eligible youth were contacted and administered mathematics and Portuguese tests. Program slots were offered to those who scored highest in the academic tests. A pre-program interview was also conducted, mainly as a means to identify those who were actively involved in dealing drugs or in gang activity; those identified as

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[2] 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.

[3] The authors use two different scales to measure socio-emotional skills: The Social and Personal Competencies Scale (CPS) and the Grit Scale.

[4] The program received funding from the Inter-American Development Bank's Multilateral Investment Fund (MIF).

[5] For instance, in Colombia, *Jóvenes en Acción* included three months of classroom training (vocational skills) and three months of on-the-job training (Attanasio et al., 2011). In the Dominican Republic, *JE* included 75h of life-skills training, and 150hours of technical or vocational training (Ibarrarán et al., 2014). In Argentina, the *Entra21* program included 100h of technical classroom training, 64h of life-skills training, and 16 extra hours of other types of training.

Table 2
Trends in job quality indicators in Rio de Janeiro and other metropolitan regions, 2010–2013.
Source: *Pesquisa Mensal do Emprego* (*PME*).

	Percent informal (private sector)				Average labor earnings			
	All		Youth		All		Youth	
	Rio	Other MRs	Rio	Other MRs	Rio	Other MRs	Rio	Other MRs
2010	20.70	21.00	25.80	24.40	1.00	0.97	0.65	0.65
2012	18.80	17.40	23.30	20.90	1.24	1.17	0.80	0.81
2013	17.00	16.40	21.50	19.90	1.35	1.26	0.91	0.87

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 de Janeiro in 2010=1).

participating in those activities were not offered a slot, regardless of their academic scores.

Given that the program was oversubscribed, it was possible to employ an experimental design to evaluate the program, by which eligible beneficiaries were be randomly assigned to either a treatment or a control group. The randomized selection was double blinded.[6] Program administrators called applicants and informed them of their status, and applicants that had been 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.[7] These pre-selected individuals were identified before the randomization took place and excluded from the experiment.[8] We did not include these 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.[9]

The experimental design mirrored the program's cohort structure, in order to not interfere with program operation. The study design 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, a baseline and two follow-up surveys were collected. In total, 451 applicants who met the eligibility criteria were identified during the registration process. Table 3 presents the total number of program applicants, broken down by treatment status.[10]

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[6] 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.

[7] Individuals who were allowed to enroll outside the lottery included those who attained a particularly high score in mathematics and Portuguese tests (whose exclusion would be deemed inappropriate given their high score), those who were deemed to be from particularly disadvantaged backgrounds, as well as, in some instances, siblings (who were accepted together). Program administrators agreed to limit these "pre-selected" participants to 10 percent of the total study sample. The actual number was roughly six percent of the study sample size.

[8] 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 in both the cases of *JE* in the Dominican Republic and *Jóvenes en Acción* in Colombia.

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

[10] There were no instances of "always-takers/non-compliers" as no controls were able to enroll post-randomization. Just over 10 percent 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 by the survey firm between June and October 2012. Of the 451 program applicants, 381 answered the baseline survey: 163 in the treatment group, 195 in the control group, and 23 non-randomly assigned treated youths (pre-selected). The same survey firm carried out all the survey work, implementing interview protocols appropriate for high-risk locations, a process that in practice required multiple visits to the same neighborhoods.[11] The vast majority of interviews took place face-to-face in the households where the youths lived. In a small percentage of cases (eight percent), surveys had to be administered in different locations, due to security concerns. Furthermore, in order to minimize the non-response rate, the survey firm made sustained attempts to track and interview subjects. After three unsuccessful attempts had been made, a monetary incentive was offered to encourage subjects to complete the questionnaire (eventually six youths took up the monetary incentive).[12] As a result, only 15.5 percent of the original group (70 respondents) could not be interviewed.

After the completion of the program, two follow-up surveys were conducted. The first follow-up measures the effect of the program in the short-run (two to five months after program termination), and the second follow-up measures the effect in the medium-run (11 to 13 months after program termination). Fig. 1 shows the cohort roll-out as well as the data collection timeline. To ensure comparability, the surveys included the same set of questions and data collection proceeded in identical fashion. In the first follow-up, the survey firm was able to interview a total of 348 youths, comprising of 150 youths in the treatment group, 178 youths in the control group, and 20 pre-selected youths. Only eight percent of those interviewed at baseline were not re-interviewed at the first follow-up survey. In the second follow-up survey,[13] this attrition rate increased to 21 percent.[14] However, we found no evidence that participants assigned to the treatment group attrited 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 Table A1).

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[11] According to the survey firm, 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.

[12] The incentive offered was $50 *Reais* (about $24 US dollars).

[13] 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.

[14] These attrition rates are comparable to those found in other randomized trials of youth training programs in LAC: *Entra 21* in Argentina (18.5 percent), *JE* in the Dominican Republic (38 percent), and *Jóvenes en Acción* in Colombia (18.5 percent).

Table 3
Treatment status of youths.
Source: *Galpão Aplauso* administrative data.

	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

2012	April	Beginning of Training - Cohort 1
	June - October	Baseline Data
	June	Beginning of Training - Cohort 2
	July	Beginning of Training - Cohort 3
	October - December	First Follow-up - Cohort 1

2013	April - May	First Follow-up - Cohorts 2 and 3
	October - December	Second Follow-up

Fig. 1. Timeline of data collection and intervention.

4.2. Descriptive analysis of the baseline data

Tables 4 and 5 present summary statistics and balancing results for observable characteristics at baseline—i.e., at random assignment for socio-demographic covariates (see Table 4), and for life skills (see Table 5).[15] The data indicate that the youths in our sample are on average around 23 years old and predominantly male.[16] The households in which these youths live have an average of about four household members. Almost all respondents (97 percent) report that they can read and write. Few of them live in households that receive social benefits like the *Bolsa Família* or *Familia Carioca,* two government conditional cash payments made to poor households.[17]

The summary data also show that the program youth do not score particularly poorly in socio-emotional tests. This study uses two instruments to measure socio-emotional skills: the Grit scale and the Social and Personal Competencies Scale (CPS for its acronym in Spanish, *Escala de Competencias Personales y Sociales*).[18] The median

total score on the Grit test is 55. When normalized according to the standard Grit scale (Duckworth et al., 2007), the average is 4.2. The results on the CPS scale are similar.[19] In other words, *Galpão* youths actually had reasonably high levels of socio-emotional skills at the beginning of the program.

In general, we find that treatment and control groups are relatively well-balanced at random assignment. The majority of covariates do not display significant differences in mean values. Some covariates, however, do show significant differences: the share of youths who are single, for instance, is 8.2 percentage points lower in the control group, and the household size in the treatment group is significantly larger (see Table 4). The age at first job is also larger for treated (16.3 years old) than for control youths (15.6 years old), meaning that treated youths entered the workforce a few months later than control youths. Monthly earnings are also lower for treatment youths (by $95 *Reais;* about $45 US dollars). Whereas the majority of covariates capturing 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 (see Table 5). Taken together, these balancing results indicate the groups are comparable, although the control group is marginally better in some pre-treatment outcomes (labor market and life skills) at random assignment. Furthermore, the summary statistics from Tables 4 and 5 also show that there are very few difference 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.[20]

4.3. Estimation methods

We identify the intent to treat (ITT) effect of the *Galpão* program on the outcome of interest by estimating two equations. First, we estimate the average effect of being offered the program across the two follow-up surveys:

$$Y_{it} = \alpha + \beta Assigned_i + \sum_{t=1}^{2} \sum_{c=1}^{3} \delta_{tc} 1(follow-up=t) \times 1(cohort=c) + \varepsilon_{it} \tag{1}$$

where i stands for individual, t indexes the first and second follow-up, $Assigned_i$ is a dummy variable indicating whether the individual was offered the program, and δ_{tc} denotes the interaction of cohort and period in which the survey was collected.

We estimate the impact of the program for a series of outcomes classified into two categories: (i) labor market results, and (ii) socio-emotional skills. To address a potential concern with multiple-hypotheses testing, for each of the "families" of outcomes associated with

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[15] Tables 4, 5 and 6 present sample balancing data for selected variables. Means for treatment and control groups are presented in columns (1) and (2) and corresponding differences-in-means in column (3). The treatment and control means reported are for youths for which data were available both at baseline and follow-up. Additional balancing results are presented in columns (4) and (6) containing baseline averages for the group of youths that could not be reached in the first follow-up and second follow-up, respectively. Columns (5) and (7) provide differences between means for these baseline group values and the means for the full-sample baseline values. These difference-in-means provide the standard metric to assess the degree to which attrition is systematic.

[16] Only about 13 percent are women, which is in line with the type of vocational training offered.

[17] The incidence of these benefits, as reported by program youths, may underestimate the true incidence, since these youths may be unaware of the household's recipient status; typically, their mothers or sisters receive the cash benefits.

[18] The Grit scale measures persistency of effort, enthusiasm about long-term goals, consistency of interests, and ambition. The CPS was jointly developed by the Inter-American Development Bank and the World Bank to measure socio-emotional development in the context of the *Juventud y Empleo* program (Brea, 2010; Ibarrarán et al., 2014). It measures six basic competencies: i) leadership; ii) behavior in situations of conflict; iii) self-esteem; iv) ability to relate with others; v) order; and, vi) empathy and

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(footnote continued)
communication skills.

[19] 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.

[20] In the first follow-up survey, two of the 32 indicators differ at the 10 percent level, and six indicators in the second follow-up at the 10 or 5 percent level - which is only slightly more than what would be expected simply due to sampling error.

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	0.000	0.012	0.013	-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	1706.45	1560.33	146.13	1709.18	82.03	1676.45	53.86
	(1207.34)	(1220.52)	[134.61]	(1040.03)	[229.19]	(1251.28)	[155.30]
Literate persons in HH	0.975	0.967	0.008	0.985	-0.015	0.970	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	0.480	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]
N	150	178		30		76	
Ever worked	0.933	0.949	-0.016	1.000	-0.058	0.961	-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	0.050
	(0.381)	(0.370)	[0.042]	(0.407)	[0.072]	(0.340)	[0.049]
Conditional monthly labor earnings	749.37	760.46	(11.09)	884.94	(128.99)	767.05	(0.44)
	(305.05)	(340.39)	[48.62]	(332.79)	[82.65]	(297.21)	[55.87]
Unconditional monthly labor earnings	406.80	499.47	-92.67*	501.47	(43.98)	462.33	(1.21)
	(436.54)	(454.97)	[51.05]	(509.94)	[86.82]	(442.26)	[60.01]
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)	[2.30]
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.

these categories, we estimate a summary index of all the outcome variables of a family, using the method proposed by 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. The index is the simple average across the standardized variables.

Second, to explore dynamic effects we estimate the interaction of being offered the program with dummy variables for each of the two follow-up surveys.

$$Y_{it}=\alpha+\sum_{t=1}^{2}\gamma_t Assigned_i\times 1(follow-up=t)+\sum_{t=1}^{2}\sum_{c=1}^{3}\delta_{tc}1(follow-up=t)\times$$

$$1(cohort=c)+\upsilon_i+\varepsilon_{it} \qquad (2)$$

where the notation is the same as Eq. (1), except that υ_i denotes individual fixed effects.

In addition, for the case of labor market outcomes, we estimate the above model by level of socio-emotional ability, as measured by the Grit and CPS psychometric baseline scores. This is done in order to 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. In this case, ζ_{tg} captures the effect of the program by follow-up (t) and by level of socio-emotional ability (g). The dummy variable $1(score=g)$ takes on a value of 1 for youth with more than the median scale score, and 0 otherwise. Eq. (3) specifies this model.

$$Y_{it}=\alpha+\sum_{t=1}^{2}\sum_{g=1}^{2}\zeta_{tg}Assigned_i\times 1(follow-up=t)\times 1(score=g)+\sum_{t=1}^{2}\sum_{g=1}^{2}\theta_{tg}1$$

$$(follow-up=t)\times 1(score=g)+\sum_{t=1}^{2}\sum_{c=1}^{3}\delta_{tc}1(follow-up=t)\times 1(cohort=c)+$$

$$\upsilon_i+\varepsilon_{it} \qquad (3)$$

Table 5
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	-0.050	0.040	-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	0.020	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	-0.020	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	0.020	-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.

5. Empirical results

5.1. Labor market outcomes

Table 6 presents ITT estimates for a set of labor market outcomes corresponding to the program's average impact both in the short- and

Table 6
Impact on labor market outcomes.

	Last week salaried job	Unconditional monthly labor income (in R$)	Conditional monthly labor income (in R$)
	(1)	(2)	(3)
Treatment	-0.027	47.221	60.934
	[0.037]	[52.211]	[43.787]
Observations	610	605	471
Individuals	342	341	300
	Formal Contract	Weekly hours	Summary Index - Labor market results
	(4)	(5)	(6)
Treatment	0.020	0.160	0.036
	[0.044]	[1.068]	[0.088]
Observations	421	458	610
Individuals	285	296	342

Note: The table presents estimates of the average effect of being offered the program across the two follow-up surveys. Regressions include interactions of cohorts and the period in which the information was collected (first or second follow-up). Standard errors are clustered at the individual level. Significance levels are indicated by: *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level. The number of observations varies across columns due to different response rates by outcome variable.

medium-term. This is the estimator for Eq. (1). As can be seen, we do not find statistically significant effects in this case. However, as seen in Table 7 when we examine short- and medium-term results separately (the parameter estimates for Eq. (2)), we do find statistically significant and economically large employment and earnings effects. The estimates show that at the time of the first follow-up survey, the impact on employment probability was 3.8 percentage points, and on unconditional monthly earnings, $90.60 *Reais*—but these are not statistically significant. These estimated impacts increase to 12.9 percentage points and $175.70 *Reais*, respectively, in the second follow-up, and here they are statistically significant. Furthermore, looking at all labor market outcomes taken together (our summary index), we find positive and statistically significant results in the medium-term.

The results show that the time elapsed since program completion is important, as results become more pronounced in the medium-term. This dynamic may be due to "lock-in" or "incapacitation" effects (Ham and Lalonde, 1996), whereby participants are kept from engaging in other job-search activities due to their time commitments to the program. The "lock-in" effects disappear after program time commitments cease, yet program treatment effects (due to enhanced skills, expanded networks, etc.) continue over time. In the case of *Galpão*, we expect this dynamic will generate a time-lag of between 10 and 16 months for the positive program training effects to overtake the negative "lock-in" effect. "Lock-in" effects are particularly important for time-intensive programs, such as *Galpão*, which significantly reduce the free time participants have available for job-search activities. These "lock-in" effects may be partially responsible for the well-documented pattern of higher ALMP impacts in the medium-term than in the short-term (Card et al., 2015; Caliendo et al., 2011).

Table 7
Impact on labor market outcomes, dynamic effects.

	Last week salaried job	Unconditional monthly labor income (in R$)	Conditional monthly labor income (in R$)
	(1)	(2)	(3)
Treatment×1st follow-up	0.038	90.576	73.443
	[0.064]	[62.866]	[56.766]
Treatment×2nd follow-up	0.129*	175.664**	58.368
	[0.069]	[76.118]	[77.284]
Mean control, 1st follow-up	0.747	663.280	887.900
Mean control, 2nd follow-up	0.837	856.701	1028.042
Observations	949	944	675
Individuals	358	358	327
R-squared	0.112	0.232	0.254
	Formal Contract	Weekly hours	Summary Index - Labor market results
	(4)	(5)	(6)
Treatment×1st follow-up	-0.003	-0.064	0.107
	[0.084]	[2.211]	[0.113]
Treatment×2nd follow-up	-0.011	-0.876	0.279**
	[0.093]	[2.275]	[0.130]
Mean control, 1st follow-up	0.802	42.964	-0.220
Mean control, 2nd follow-up	0.821	43.404	-0.188
Observations	579	664	949
Individuals	307	322	358
R-squared	0.056	0.017	0.037

Note: Regressions include interactions of cohorts and the period in which the information was collected (first or second follow-up), and fixed effects by individual. Standard errors are clustered at the individual level. Significance levels are indicated by: ***significant at the 1 percent level.
The number of observations varies across columns due to different response rates by outcome variable.
** significant at the 5 percent level.
* significant at the 10 percent level.

The impact estimates are large, compared to those found in other labor training RCTs in the region, such as *JE* in the Dominican Republic or *Jóvenes en Acción* in Colombia. The earnings impacts are roughly twice those found in the Dominican Republic (Card et al., 2011) and on the same order as those seen in Colombia (Attanasio et al., 2011). And neither the Dominican Republic nor Colombia studies found employment impacts for the full sample of beneficiaries.

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 the only dimension in which most other rigorously evaluated training programs in LAC have had a clear impact and *Galpão* has not—point estimators are close to zero and always statistically insignificant. A couple of remarks, however, should be made on this. First, the percentage of formal jobs rose particularly fast in Rio de Janeiro from the first half of 2012 to the first half of 2013. And formality was already high in Rio de Janeiro compared to the cities in which the other randomized trials were done. Second, other evaluated youth training programs, such as *JE*, have a structured internship program and *Galpão* does not. Since temporary internships are formal jobs, to the extent that some of them become permanent jobs, formality is expected to be positively impacted.

5.2. The role of socio-emotional skills

Tables 8 and 9 present ITT estimates for socio-emotional skills. There are few consistent results at the global level, although there some evidence that the program can impact behaviors related to conducts in situations of conflict as well as order and organization skills. 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.[21]

We find few significant program impacts on levels of socio-emotional development. As is visible in Table 8 (Eq. (1)), the only significant difference is related with one of the dimensions of the Grit scale ("Consistency of interest") for which the treatment group actually presents lower results, which would be a negative impact. However, this negative estimate disappears in the medium-term. Meanwhile, the coefficient estimates from the CPS scale show that *Galpão* youths present higher results in two of the subscales—"Order and self-organization" and "Behavior in situations of conflict"—being particularly strong for the latter. The higher score on behavior in situations of conflict can be important given the violent context in which youths live their lives in the *favelas*. This is one of the skills taught by *Galpão*.

The absence of consistently significant socio-emotional results may be due to a variety of reasons. First, it may be that socio-emotional skills, although evolving over one's lifetime, may be difficult to shape through employment training programs, at least in the short- to medium-term. Second, the Grit scale disproportionally emphasizes skills that seem to be more malleable earlier in life. Skills such as perseverance and passion for long-term goals may be more difficult to change for young adults, than, say, skills related to initiative, problem solving, or self-control.[22] In fact, the CPS's sub-score related to "behavior in situations of conflict", for which self-control is important, is precisely one of the few dimensions where we do see positive impacts. Furthermore, the tests applied were standard psychological tests used in this field and as such did not measure the specific conducts targeted by the work-readiness approach. It is possible that even as there are no clear impacts on broad socio-emotional development, the work-readiness skills could have been impacted by the program. Indeed, behavior in situations of conflict, which is a specific

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[21] For instance, in Table 8 the parameter estimate for the "Total Grit" score, in column (8), implies that the Grit total score for individuals assigned to the treatment group is 0.011 standard deviations higher than the Grit total score for the control group. This explanation is just for illustration, however, since the point estimate is not statistically

(footnote continued)
different from zero.
[22] Recent empirical evidence from Liberia highlights the importance of teaching self-control to at-risk young adult men. Participants who learn how to cool their anger, make better decisions, and plan and set goals, were less likely to participate in criminal activities, carry weapons, participate in fights, among others (Blattman et al., 2015). Similar results were found in Chicago where a same kind of intervention was implemented (Ludwig and Shah, 2014).

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Table 8
Impact on socio-emotional skills (z-scores).

CPS				
	Total CPS Score	CPS: Leadership	CPS: Behavior in situations of conflict	CPS: Self-esteem
	(1)	(2)	(3)	(4)
Treatment	-0.005 [0.091]	-0.018 [0.088]	0.022 [0.088]	-0.024 [0.090]
Observations	610	610	610	610
Individuals	342	342	342	342
	CPS: Abilities to relate with others	CPS: Order and self-organization	CPS: Empathy and communication skills	
	(5)	(6)	(7)	
Treatment	0.007 [0.084]	0.065 [0.093]	-0.057 [0.089]	
Observations	610	610	610	
Individuals	342	342	342	
GRIT				
	Total Grit Scale	Brief Grit Scale	Consistency of interest	
	(8)	(9)	(10)	
Treatment	0.011 [0.094]	0.111 [0.094]	-0.197** [0.096]	
Observations	610	610	610	
Individuals	342	342	342	
	Perseverance of effort	Ambition	Summary Index - Socio-emotional skills	
	(11)	(12)	(13)	
Treatment	0.131 [0.094]	0.085 [0.093]	0.015 [0.065]	
Observations	610	610	610	
Individuals	342	342	342	

Note: The table presents estimates of the average effect of being offered the program across the two follow-up surveys. Regressions include interactions of cohorts and the period in which the information was collected (first or second follow-up). Standard errors are clustered at the individual level. Significance levels are indicated by:
*** significant at the 1 percent level;
**significant at the 5 percent level.
*significant at the 10 percent level.
The number of observations varies across columns due to different response rates by outcome variable.

conduct taught by the program, is one of the few psychological metrics for which we do see a sustained positive impact.

Despite the finding that socio-emotional skills may be difficult to change with a 6-month youth training program—particularly for young adults—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.

The evidence suggests that youth with high social-emotional skills may benefit more from the program than their peers with low socio-emotional skills. Table 10 presents the labor market outcome results by high/low socio-emotional score status (Eq. (3)). The estimates show that treatment effects on employment and unconditional earnings (earnings which include zero earnings for the unemployed) are larger for youth with higher levels of baseline CPS scores in the medium-term. Similarly, the results using the Grit scores reveal positive and significant effects on unconditional and conditional earnings for those individuals with Grit scores higher than the median scale value. The latter findings are also corroborated when we look at the interaction parameter estimates of the summary index in the medium-term. Given that spurious results are a concern with imprecise estimates, we did

test the joint equality of treatment effect coefficients. We cannot reject the null at conventional levels, so we cannot rule out that the result may be spurious.[23] However, the results do follow what we would expect given the prior treatment effect findings. Particularly in the case of the Grit measure of socio-emotional skill, the results that we would expect to be significant are for employment and earnings—which were the only large and statistically significant impacts overall. These are precisely the results with the lowest p-values (0.20–0.27 for the case of Grit). We interpret this as indicative, if not clear evidence, of heterogeneous impacts on employment and earnings by initial Grit socio-emotional score.

6. Conclusions

This paper provides the first instance of a rigorous evaluation, based on a randomized trial, of an arts- and theatre-based employment-generation program for at-risk youth. As such, it adds to the evidence on the effectiveness of the toolkit of ALMPs that policy-makers have to address youth (un-)employment. The findings show that the "*Galpão* model" can be an effective alternative to traditional pedagogic approaches to youth training. The evidence we present shows positive and significant effects for the probability of being employed and for conditional earnings, in the medium-term.

Contrary to the evidence on almost all other youth training programs in LAC, the results show no impact on the formality of jobs. This may be due to both the fact that the Rio de Janeiro labor market was already highly formal, and to the fact that the *Galpão* program lacked a tool to promote formality, such as a structured internship program. Demand-driven component of youth training, such as internships, have been interpreted as one of the success factors in other ALMP programs in LAC (Urzúa and Puentes, 2010).

This paper also contributes to the evidence on the importance of socio-emotional skills for labor market outcomes for youth. The estimates show no clear program impacts on aggregate measures of socio-emotional skills, such as those measured by the overall CPS and Grit test averages. However, there is evidence of a more circumspect impact on certain socio-emotional behaviors, including self-control, which are critical in determining hoy youth respond in situations of conflict. Although socio-emotional skills change markedly over one's lifetime, the evidence suggests that few of them can be changed in the short-run by ALMPs—at least for the age group corresponding to *Galpão* participants. This is consistent with the literature on the readiness to learn, which identifies different age windows in which different types of socio-emotional skills can be developed (Guerra et al., 2014). For the *Galpão* age group, many socio-emotional skills may already be difficult to change. And for those skills which continue to develop through early adulthood, such as self-control, it is reassuring to find that our psychological tests did pick up some impacts.

However, there is some evidence that socio-emotional skills, although not clearly impacted by the program, seem to be important for its success. This evidence is indicative, and we cannot rule out that it is driven by spurious findings, but we believe it reflects a real underlying dynamic of youth training programs. Participants with higher levels of socio-emotional skills did better, 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 youths, 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 attracts youths with higher socio-emotional skills. In this context, the role of socio-emotional skills may

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[23] We conduct a test of equality of treatment effects across the four subgroups (both short- and medium-term status; both high and low socio-emotional scores status), to explore whether there is significant heterogeneity in treatment effects with respect to initial socio-emotional scores. As shown in Table 10, we cannot reject the null hypothesis of equality of treatment effects across these subgroups.

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

	Total CPS score	CPS: leadership	CPS: behavior in situations of conflict	CPS: self-esteem
	(1)	(2)	(3)	(4)
Treatment×1st follow-up	0.072	0.047	0.097	-0.055
	[0.121]	[0.131]	[0.118]	[0.137]
Treatment×2nd Follow-up	0.178	-0.016	0.467***	-0.117
	[0.135]	[0.151]	[0.134]	[0.160]
Mean control, 1st follow-up	0.031	-0.015	0.05	-0.003
Mean control, 2nd follow-up	0.021	0.064	-0.074	0.033
Observations	968	968	968	968
Individuals	358	358	358	358
R-squared	0.016	0.011	0.037	0.006
	CPS: Abilities to relate with others	CPS: Order and self-organization	CPS: Empathy and communication skills	
	(5)	(6)	(7)	
Treatment×1st Follow-up	0.032	0.246*	-0.063	
	[0.143]	[0.140]	[0.125]	
Treatment×2nd Follow-up	0.075	0.341**	-0.088	
	[0.153]	[0.144]	[0.142]	
Mean control, 1st follow-up	-0.024	0.004	0.065	
Mean control, 2nd follow-up	0.028	-0.015	0.06	
Observations	968	968	968	
Individuals	358	358	358	
R-squared	0.009	0.029	0.043	

	Total grit scale	Brief grit scale	Consistency of interest
	(8)	(9)	(10)
Treatment×1st follow-up	-0.075	0.007	-0.265**
	[0.117]	[0.121]	[0.123]
Treatment×2nd follow-up	0.074	0.142	-0.146
	[0.127]	[0.136]	[0.143]
Mean control, 1st follow-up	0.045	0.003	0.097
Mean control, 2nd follow-up	0.001	-0.048	0.082
Observations	968	968	968
Idividuals	358	358	358
R-squared	0.008	0.011	0.011
	Perseverance of effort	Ambition	Summary index - socio-emotional skills
	(11)	(12)	(13)
Treatment×1st follow-up	0.040	0.055	0.012
	[0.122]	[0.132]	[0.075]
Treatment×2nd follow-up	0.174	0.089	0.100
	[0.135]	[0.142]	[0.086]
Mean control, 1st follow-up	-0.008	-0.012	0.00
Mean control, 2nd follow-up	-0.044	-0.015	0.00
Observations	968	968	968
Idividuals	358	358	358
R-squared	0.008	0.015	0.016

Note: Regressions include interactions of cohorts and the period in which the information was collected (first or second follow-up), and fixed effects by individual. Standard errors are clustered at the individual level. Significance levels are indicated by:
*** significant at the 1 percent level;
** significant at the 5 percent level;
* significant at the 10 percent level.

actually be to help develop more conventional cognitive skills, such as literacy, numeracy, and other specific conducts related to work-readiness, which the program also emphasizes. This would be consistent with the literature that suggests that the early development of some skills, such as socio-emotional skills, may facilitate development of cognitive skills later in life; a process termed *dynamic complementarity* in skill formation by some authors (Carneiro and Heckman, 2003; Heckman and Masterov, 2007).

We also discuss the possibility that some of the positive treatment effects observed may be due to a signaling effect (Stiglitz, 1975), by which completion of the *Galpão* program serves as an indication to employers that the youth possess higher levels of cognitive and socio-emotional skills. This may be due to the program's role in developing these skills, but it could also be due to the fact that the program attracts more motivated youths to begin with—those with higher socio-emotional skills such as perseverance. This type of sorting has been verified

in a variety of settings, from the value of a General Educational Development equivalency credential (Tyler et al., 2000) to the value of an MBA (Hussey, 2012). How much of the program's impact is driven by human capital formation and how much by sorting? The data do not allow us to parse this out, but given that socio-emotional skills are typically not observable to the employer at the time of hiring, and that program participants have higher socio-emotional skills going in, it is likely that sorting accounts for part of the program's impact.

The role that human capital and signaling play can be important moving forward, if the model tested here is to be taken to scale. The estimated employment and earnings impacts, particularly those in the medium-run, are larger than those found in other ALMP, and as such they could play a role in making ALMP programs more effective. However, *Galpão* is a private initiative that is selective in its approach, in its identification of private-sector partners, and even in its targeting of beneficiaries. Were it to re-emerge as a public policy, it would

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Table 10
Heterogeneity with respect to CPS socio-emotional scores.

	Last week salaried job	Unconditional monthly labor income (in R$)	Conditional monthly labor income (in R$)
Treatment Interaction with:	(1)	(2)	(3)
1st Follow-up×CPS above median	0.024	45.46	26.51
	[0.089]	[91.66]	[84.11]
1st Follow-up×CPS below median	0.049	133.21	120.66
	[0.090]	[85.59]	[77.49]
2nd Follow-up×CPS above median	0.191**	215.60*	10.40
	[0.092]	[119.10]	[131.06]
2nd Follow-up×CPS below median	0.08	149.27	108.98
	[0.102]	[103.30]	[98.47]
p-value for testing equality:	0.329	0.54	0.86
Observations	949	944	675
Individuals	358	358	327
R-squared	0.116	0.236	0.257
	Formal Contract	Weekly hours	Summary Index - Labor market results
Treatment Interaction with:	(4)	(5)	(6)
1st Follow-up×CPS above median	-0.046	-1.313	-0.018
	[0.118]	[3.096]	[0.156]
1st Follow-up×CPS below median	0.039	0.979	0.221
	[0.120]	[2.891]	[0.161]
2nd Follow-up×CPS above median	-0.046	0.326	0.306
	[0.138]	[3.023]	[0.187]
2nd Follow-up×CPS below median	0.029	-1.998	0.265
	[0.123]	[3.339]	[0.185]
p-value for testing equality:	0.968	0.763	0.365
Observations	579	664	949
Individuals	307	322	358
R-squared	0.059	0.02	0.041
Heterogeneity with respect to Grit socio-emotional scores			
1st Follow-up×Grit above median	0.109	176.56**	109.28
	[0.083]	[85.93]	[74.98]
1st Follow-up×Grit below median	-0.048	-13.25	15.58
	[0.100]	[90.33]	[85.44]
2nd Follow-up×Grit above median	0.135	258.32**	180.44*
	[0.086]	[105.62]	[108.01]
2nd Follow-up×Grit below median	0.120	74.46	-123.58
	[0.110]	[111.56]	[103.89]
p-value for testing equality:	0.271	0.262	0.205
Observations	949	944	675
Individuals	358	358	327
R-squared	0.117	0.237	0.267
	Formal Contract	Weekly hours	Summary Index - Labor market results
Treatment Interaction with:	(4)	(5)	(6)
1st Follow-up×Grit above median	-0.079	-1.161	0.195
	[0.109]	[3.245]	[0.152]
1st Follow-up×Grit below median	0.096	1.376	0.001
	[0.127]	[2.752]	[0.168]
2nd Follow-up×Grit above median	-0.031	-0.39	0.369**
	[0.122]	[2.952]	[0.175]
2nd Follow-up×Grit below median	0.024	-1.108	0.161
	[0.140]	[3.469]	[0.191]
p-value for testing equality:	0.693	0.857	0.456
Observations	579	664	949
Individuals	307	322	358
R-squared	0.073	0.03	0.041

Note: Regressions include interactions of cohorts and the period in which the information was collected (first or second follow-up), and fixed effects by individual. Standard errors are clustered at the individual level. Significance levels are indicated by:

*** significant at the 1 percent level;

** significant at the 5 percent level.

* significant at the 10 percent level.

The number of observations varies across columns due to different response rates by outcome variable.

certainly face challenges. A broad public training program open to all youth would certainly not be as selective, and it is not clear if it could retain its current effectiveness if applied to broader populations—which would include youth who, for instance, may not have the same motivation and other socio-emotional skills as the current participants of *Galpão*. And to the extent that skills acquired during *Galpão* complement cognitive skills, if youths targeted by a broader policy have significant cognitive deficits (e.g., literacy, numeracy, memory),

this too may limit the impact of a similar program at scale. In any case, this is a hypothesis that can and should be tested in a scaled-up program.

At the same time, the evidence presented suggests that ALMP policies likely need to be more discriminating in their approach in order to become effective at reducing unemployment. Multi-component programs such as *Galpão* seem to be more effective than traditional training programs at achieving that goal. For some, socio-

emotional skills training may constitute precisely the channel through which outcomes in vocational skills can be made to be successful. But it is also clear that this model is not equally effective across different groups—and may in fact be detrimental to some due to "lock-in" effects.

This too constitutes a challenge for policy-makers, who can at times struggle to tailor public services and products to a population which, it seems, is measurably heterogeneous in ways that we are only now becoming aware of.

Appendix A

See Table A1.

Table A1
Attrition and treatment status.

	First follow-up	Second follow-up
	(1)	(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. 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.

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