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A PILOT STUDY OF SOCIAL-EMOTIONAL SKILL MEASURES FOR JUMPSTART PRESCHOOLERS AND CORPS MEMBERS

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Introduction

Jumpstart is a national organization committed to providing programming for preschool children from under-resourced communities in order to ensure kindergarten readiness. Jumpstart's curriculum is targeted towards preschoolers' language and literacy skills; although in recent years, Jumpstart has revised their curriculum to focus more explicitly on preschoolers' social-emotional skill development with specific attention to emotion awareness. Jumpstart's model involves recruiting volunteers from local colleges and the community to deliver Jumpstart's curriculum through two-hour twice-a-week sessions. These volunteers, known as Corps members, are provided with a set of tools, resources, and supports that are expected to expand their workforce readiness, including their own social-emotional skill development.

Research has demonstrated the importance of students' social-emotional skill development for future success.[1] Skills such as self-regulation, emotional awareness, and executive function have been shown to be crucial factors in early childhood development.[2] These skills are particularly important for preschoolers' successful transition to kindergarten, and lacking such skills can have considerable negative consequences on academic outcomes.[3] In older students, intrapersonal and interpersonal skills have been found to positively affect college and labor market outcomes.[4] The well-established research base showing the importance of social-emotional skills, along with Jumpstart's focus on the development of these skills for preschoolers and Corps members alike, provide a strong rationale for identifying appropriate assessments of social-emotional skills to administer nationally to Jumpstart preschoolers and Corps members.

We at Transforming Education (TransformEd) have partnered with Jumpstart to better understand Jumpstart's contribution to participants' social-emotional skill development. Through a pilot study undertaken during the 2016-17 school year, we have: (1) developed a theory of action outlining the ways in which Jumpstart's model is hypothesized to affect preschoolers' and Corps members' social-emotional skills; (2) prioritized a set of social-emotional competencies to assess; (3) identified measures of the prioritized competencies; (4) provided guidance on the administration of those measures; and (5) analyzed results from the newly-administered assessments to inform findings related to validity, reliability, and additional information added from the measures.

In this report, we summarize the results from this study and provides recommendations targeted toward helping Jumpstart better understand the impact of their model on preschoolers' and Corps members' social-emotional skill development. We recommend that Jumpstart:

1. **Ensure that their theory of action is refined and updated as needed to be useful as an overarching framework to guide organizational decisions;**

2. **Consider administering the DECA and MEFS to preschoolers and social-emotional scales to Corps members, in the fall and the spring as part of their battery of assessments, in order to assess change in skills over time;**

3. **Conduct future studies examining (a) the effect of Jumpstart's curriculum on preschoolers' social-emotional and executive function skills; (b) the characteristics of sites in which preschoolers exhibit strong growth in social-emotional and executive function skills; (c) the effect of participating in Jumpstart on Corps members' self-management, growth mindset, and cultural awareness development; and (d) the experiences of Corps members showing strong growth in social-emotional skills over the course of the year;**

4. **Consider additional revisions to their model to more fully integrate social-emotional and executive function skills.**

Background

There are specific elements of Jumpstart's model that target preschoolers' social-emotional development. These include: (1) supportive relationships between preschoolers and Corps members, which may foster children's attachment/relationship skills and self-regulation skills; (2) Jumpstart's problem-solving approach, which may help children identify feelings and learn relationship skills through resolving conflicts; and (3) specific curriculum components (i.e., unit themes and group activities) that can enhance social-emotional and executive function skills.[5] In recent years, Jumpstart has revised their curriculum in order to further develop preschoolers' oral language with specific attention to mental state vocabulary and emotion understanding.[6] Through a review of documentation, observations of their model, and the development of a theory of action, we have identified additional social-emotional skills, beyond emotion understanding, that the Jumpstart model may be impacting. These skills include self-regulation, attachment/relationship skills, initiative (e.g., desire to learn/motivation), as well as executive function (executive function), a set of cognitive processes linked to emerging self-regulation that involves working memory, inhibitory control, and cognitive flexibility.

Jumpstart's model is based on having dedicated adults, either college students or older adult volunteers, lead two-hour sessions twice-a-week in each preschool site. This allows volunteers to form nurturing relationships with the children and implement Jumpstart's curriculum. During the 2015-2016 year, 11,263 children were served by 3,862 Corps members across 75 sites. Jumpstart Corps members are a diverse group of volunteers, particularly across the age, race and ethnicity, and education spectrum. Prior to the start of the school year, Corps members are trained on implementing effective strategies and a research-based curriculum targeted towards developing children's language, literacy, and social-emotional skills. It is through this training, associated supports, and experience with preschoolers in diverse sites, that Corps members are expected to gain greater civic engagement and work-related skills, including social-emotional skills shown to be important for labor market outcomes.

Review of Prior Research

Research on Preschoolers' Social-Emotional Skill Development

Rigorous longitudinal research has conclusively shown the importance of social-emotional skill development in children as young as preschool.[7] This includes interpersonal skills such as relationship skills and social awareness. It also includes intrapersonal skills such as self-regulation, initiative, and self-awareness.[8] Research has also demonstrated the importance of executive function, which is not only a predictor of receptive vocabulary skills in preschoolers, but has also been shown to help children develop the foundational skills needed to learn and adapt to school.[9]

Prior Studies Related to Jumpstart Model and Preschoolers

Prior research on the Jumpstart model that is relevant to this study falls into two areas. The first is research examining the validity and reliability of current and newly piloted measures. The second is research on how Jumpstart's model may affect preschoolers' skills related to their social-emotional development.

Validity and Reliability Studies. In "The Psychometric Properties of the Jumpstart School Success Checklist: Testing Item- and Score- Level Equivalency across Sex and Program Samples" the author examines the reliability and validity of the Jumpstart Student Success Checklist (JSSC). [10] The JSSC is a 15-item observational protocol derived from the HighScope Educational Research Foundation's Preschool *Child Observation Record.* It has been administered nationally to Jumpstart preschoolers since the 1999-2000 school year, and is intended to capture preschooler literacy skills and prosocial skills.[11] The author finds that the JSSC demonstrates high internal consistency and content validity; however, it is primarily measuring literacy skills as opposed to social relationships. The author suggests continuing to investigate the psychometric properties of the JSSC, particularly the predictive validity of the measure.

In "Assessment of Language, Literacy, and Socio-Emotional Development Among Children Attending Preschools Served by Jumpstart", the authors examined the validity and reliability of a piloted set of social-emotional measures, including direct measures such as the Challenging Situations Task (CST), Self-Description Questionnaire for Preschoolers (SDQP), Emotion Recognition Questionnaire (ERQ), Simon Says, and the teacher-reported Devereaux Early Childhood Assessment (DECA).[12] The underlying competencies measured by each assessment differ slightly: for example, the ERQ assesses emotion understanding, whereas Simon Says measures inhibitory control, which is a direct sub-domain of executive function. The study's findings indicate that most of the direct measures of social-emotional functioning demonstrated lower reliability (both internal and intertemporal), with the exception of Simon Says. Scores from Simon Says were also found to be moderately correlated with academic and social-emotional factors, including the DECA. The study also looked at the relationship between the JSSC items measuring social relationships (items 9-15) and the direct and teacher-reported measures of social-emotional skills. Correlations with direct measures of social-emotional skills

ranged from 0.05 (SDQP verbal) to 0.16 (Simon Says) to 0.46 (emotion recognition). Correlations between the JSSC social relationship items and the teacher-reported measure of students' social-emotional skills (DECA) ranged from 0.46 to 0.62, depending on DECA subscale examined.

Taken together, both studies indicate that the JSSC is a consistent and valid measure of preschoolers' kindergarten readiness, particularly as it pertains to early literacy skills. Measures of social-emotional skills (e.g., the DECA) and executive function (e.g., Simon Says) appear to provide supplemental information over and above what we can learn about preschoolers' development from the JSSC. Further, both measures provide valid and reliable evidence of preschoolers' underlying skills. However, given the small sample size of both studies, additional research is needed to further inform whether measures of social-emotional skills and executive function should be administered to Jumpstart preschoolers at scale.

Studies of Effectiveness. Three studies examined the impact of Jumpstart's program on various outcomes, including children's academic skills, social-emotional skills and executive function skills. In "A Multisystem Approach to Examining Effects of Jumpstart on Children's Stress Response", the authors collected measures of behavioral self-regulation through the Snack Delay test and Pencil Tapping task, both of which have been used in other studies as measures of executive function.[13] The study found that children enrolled in Jumpstart scored higher on the Snack Delay test compared to the control group. These differences suggest that Jumpstart may be improving aspects of executive function in preschoolers.

Two studies focused on social-emotional skills as measured by the DECA and select items on the JSSC. Authors of the study, "Impact of individualized, supplementary preschool intervention on literacy, school readiness, and socio-emotional skills" found that Jumpstart preschoolers had average gains on the DECA social-emotional skills that were more than two-and-one-half times as large as children in the control group.[14] The 2014-15 National Evaluation of Jumpstart looked at the gains preschoolers made on the JSSC. They found that preschoolers made gains on items measuring ability to solve problems with materials, resolve interpersonal conflict, understanding and express feelings, and relating to other children of 1.01 to 1.18 points over the course of the year (on a 5 point Likert scale) as reported by the teacher.[15]

Taken together, these studies suggest that Jumpstart's model may have a positive impact on preschoolers' social-emotional skills and executive function. However, study limitations, including small sample sizes and lack of a comparison group (for the national evaluation report), highlight the need for further research.

Research on Social-Emotional Skill Development in College Students and Adults

Research suggests that college students' involvement with volunteer service-learning projects like Jumpstart can have a positive impact on social-emotional skills, such as leadership and conflict resolution skills, along with self-awareness and cultural awareness.[16] Further, studies of

social-emotional skills have shown the importance of a variety of such skills for outcomes related to college success (e.g., GPA, college persistence and graduation rates) and workforce success (e.g., employability, salary, long-term earnings, job-match and job satisfaction). [17] Not only have social-emotional skills been found to lead to better workforce outcomes, but national surveys also suggest that such skills are highly valued by employers.[18]

A strong research base has identified three skills as being particularly salient for college students' success: growth mindset, self-management/self-control, and social skills, of which cultural awareness is a key component.

Growth Mindset. Growth mindset is the belief that one's own intelligence can grow with effort. Based on a recently released report by the National Academies of Science, Engineering and Medicine, results from impact studies on growth mindset suggest that college is a particularly salient time to improve students' mindsets and that interventions targeted toward this skill have a promising impact on students' college GPA and course test performance. [19] Carol Dweck, the leading researcher of growth mindset, has found that successful people, measured across a range of outcomes, tend to have a growth rather than fixed mindset about their intelligence.[20]

Self-Management. Self-management, which is also referred to as "self-control" or "self-regulation," is the ability to regulate one's emotions, thoughts, and behaviors effectively in different situations. Among older students, this includes managing stress, delaying gratification, motivating oneself, and setting and working toward personal and academic goals. A seminal study by leading economists examining labor market outcomes among males and females found that individuals' perceptions of their self-control is as important, if not more so, than cognitive skills in terms of college graduation, probability of employment and salary.[21]

Social Skills/Cultural Awareness. Social skills encompass a set of competencies that facilitate interaction and communication with others. In a recent study on the importance of social skills for labor market outcomes, the author finds that employees with strong social skills across a number of measures fare better than employees with weak social skills.[22] Social skills can encompass many different aspects, including communication and collaboration, social awareness/competence, cultural awareness/competence/humility, relationship-building skills, leadership skills, and teamwork. Cultural awareness is defined as being "cognizant, observant, and conscious of similarities and differences among and between cultural groups".[23] It involves having an appreciation for, respect for, and eagerness to continue learning about cultural norms and lived experiences that differ from one's own and actively seeking those perspectives when making decisions. With the changing economy, cultural awareness/competence has become a particularly relevant skill, valued by employers and required in today's workforce.[24]

Prior Studies Related to Jumpstart Model and Corps Members

Two primary studies have examined the ways in which Jumpstart affects Corps members' workforce skills. The first is Jumpstart's national evaluation, which found that among the 2,586

Corps members included in the study, 77% agreed that the Jumpstart experience helped them academically and 97% agreed that it helped them build their leadership skills. A second study that looked at differences in pre- and post-survey responses of Jumpstart Corps members compared to non-Jumpstart Corps members found positive effects of the Jumpstart model on workforce skills including public speaking, improvising in unexpected situations, oral communication, being a leader, time management, and managing a group of colleagues.[25] Both studies found that Corps members' knowledge related to early childhood development also improved as a result of participation in Jumpstart.

Purpose of the Pilot Study

This study builds upon prior studies of the Jumpstart model to further investigate which assessments can provide valid and reliable measures of preschoolers' and Corps members' social-emotional skills. We first developed a unifying theory of action for each group in order to both explicate the ways in which Jumpstart's model is hypothesized to affect social-emotional skills and to prioritize a set of social-emotional competencies to assess. Next, we worked with experts and reviewed literature to identify appropriate assessments of the prioritized skills. We then provided guidance to Jumpstart on the administration of those assessments in Jumpstart sites throughout the US. Finally, we analyzed the results from survey administration to understand how the new measures performed.

The main goal of the pilot is to recommend assessments for future years that can be used to evaluate Jumpstart's impact on preschoolers' and Corps members' social-emotional skills. This current study is not intended to assess the impact of Jumpstart because we did not administer pre-tests (i.e., fall tests to compare to) and we did not administer the assessments to a group of non-Jumpstart students in order to compare results.

Results from the Pilot Study: Preschoolers

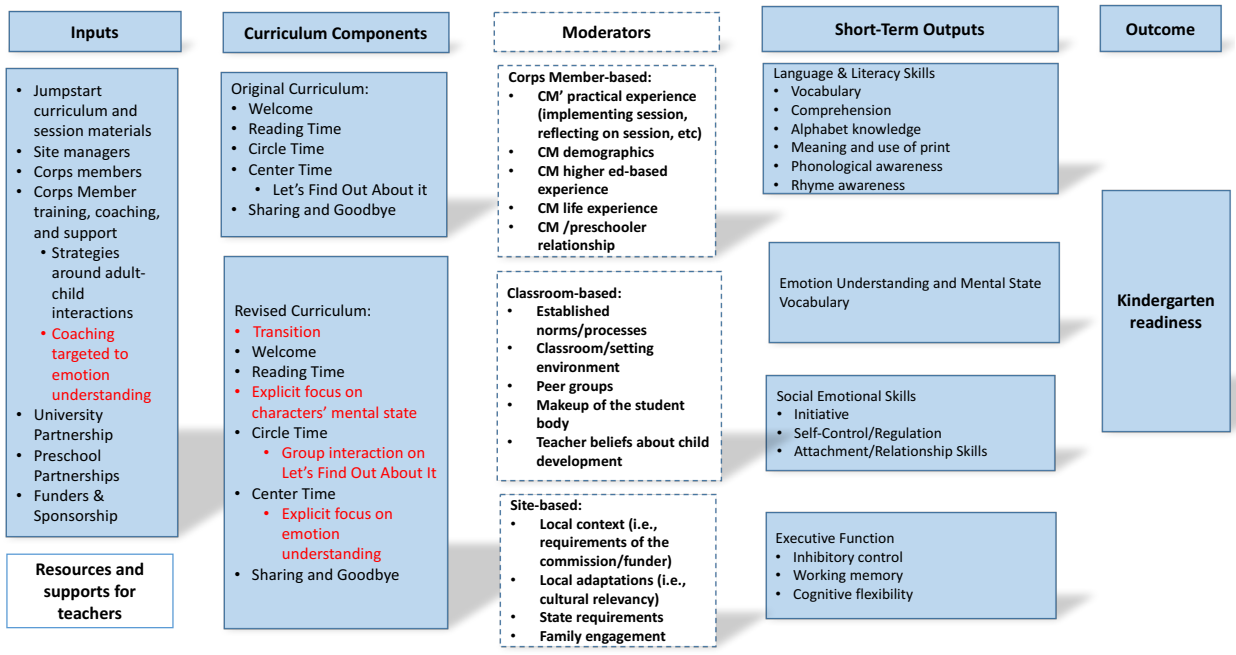
A Theory of Action

The following theory of action lays out the ways in which the programmatic components of Jumpstart are hypothesized to impact preschoolers' social-emotional and executive function skills, and ultimately their kindergarten readiness. The theory of action, developed collaboratively with Jumpstart, is based on: (1) a thorough review of prior Jumpstart impact studies and program documentation; (2) sites visits to observe Corps members working with preschoolers on both the original and revised curriculum; and (2) iterative feedback on the theory of action from the Jumpstart national leadership team. See Figure 1.

A theory of action is intended to serve as a unifying organizational framework, and therefore should be seen as a dynamic document that reflects changes in model design (e.g., moving fully to the revised curriculum) or programmatic goals (e.g., prioritizing social-emotional learning or executive function). Therefore, we recommend that Jumpstart continue to update the theory of action as needed. As a first step, we suggest building consensus around what Jumpstart means by

"kindergarten readiness" (i.e., what level of skills, awareness, dispositions, and academic knowledge does a child need to have in order to be kindergarten ready?).

Figure 1: A Theory of Action of How the Jumpstart Model Affects Preschoolers' Social-Emotional Skills



Note: Text in red font signifies components that are part of the revised curriculum.

Inputs. Several inputs are required for Jumpstart's programmatic model, including curriculum and session materials, site managers, Corps member volunteers, Corps member training and coaching, university partnerships, preschool partnerships, and funders and sponsorships. Resources and supports for teachers are also a key input, although not one formally provided by Jumpstart (signified by the different color of the text box).

Components. Three main aspects of the Jumpstart model are believed to enhance social-emotional skills: (1) supportive relationships between preschoolers and Corps members, which may foster children's attachment/relationship skills and self-regulation skills; (2) Jumpstart's problem-solving approach, which may help children identify feelings and learn relationship skills related to resolving conflicts and teach children initiative; and (3) specific curriculum components (e.g., unit themes and group activities) that can enhance both social-emotional and executive function skills. [26] In this theory of action, we include curriculum components specific to Jumpstart's original and revised curriculum (with text in red). In Appendix A, Table A1, we show more concretely which skills we believe each component is fostering.

Output and Outcomes. Based on Jumpstart's programmatic model, as well as prior studies on Jumpstart discussed above, we have identified four specific sets of outputs. These include (1) Language and Literacy Skills; (2) Emotion Understanding; (3) Social-Emotional Skills, which includes initiative, self-regulation, and attachment/relationship skills; and (4) Executive Function Skills, which include inhibitory control, working memory and cognitive flexibility. While both the revised and original curriculum are intended to support preschoolers' overall social-emotional skill development, the revised curriculum focuses more explicitly on emotion understanding, through books focused on characters' feelings and a group activity explicitly focused on discussions of preschoolers' emotion. The primary outcome specified by Jumpstart is to enhance kindergarten readiness for children. We recommend that Jumpstart focus on articulating their definition of kindergarten readiness in order to inform future studies that assess the extent to which this goal is being achieved.

Moderators. In understanding the relationship between the inputs/components (left hand side) and outputs/outcomes (right hand side) in this theory of action, we must also consider different factors that can moderate the impact between the inputs/components of the theory of action and the outputs/outcomes. We have identified moderators related to Corps members, classrooms and sites that may affect Jumpstart's impact on the identified outputs and outcomes. For example, in sites in which teachers do not have established norms and rules in the classroom, Corps members may have to re-focus their energy and time on classroom management instead of teaching the Jumpstart curriculum.

Lastly, measures must be identified in order to test whether the inputs/components actually produce the desired outcomes and outputs. We turn to this below.

Prioritization of Competencies

TransformEd developed the 3Ms model in order to guide the prioritization of competencies for systems and organizations with which we partner. The 3Ms model requires that selected competencies are meaningful, measurable, and malleable. "Meaningful" competencies have a strong research and theoretical base that indicates their importance for academic and life outcomes. "Measurable" competencies are those that can be validly and reliably measured at scale. And, "malleable" competencies can be influenced by instruction or programming in school or after-school settings.

For this study, we prioritized a set of social-emotional skills, including self-regulation, attachment/relationship skills and initiative, as well as executive function skills, which include inhibitory control, working memory and cognitive flexibility. Self-regulation refers to a child's ability to express emotions and manage behaviors in healthy ways.[27] Attachment/relationship skills refers to a child's ability to promote and maintain mutual, positive connections with other children and significant adults.[28] Initiative refers to a child's ability to use independent action and thought to meet his or her needs.[29] And executive function involves skills such as inhibitory

control, working memory and cognitive flexibility that allow students to plan, focus attention, remember, and engage in multiple tasks.

Each of the identified competencies meets the requirements of the 3Ms model. First, research has demonstrated the importance of these skills for kindergarten readiness and has demonstrated a meaningful co-relationship between social-emotional skill development and executive function. Second, these skills are measureable: several measures exist to assess initiative, self-control, relationship skills and executive function.[30] Finally, these competencies are malleable. Not only has research demonstrated the efficacy of programs and practices in early childhood, particularly for kindergarten readiness, [31] but based on the inputs and curriculum components, several tasks within the Jumpstart curriculum concretely align to these skills (see Appendix A, Table A1).[32]

Identification of Measures

To find appropriate measures for preschoolers of the prioritized competencies, We sought the advice of leading experts in early childhood social-emotional development.[33] We also conducted a large search of relevant literature that summarized measures in the field.[34] In collaboration with Jumpstart, we chose the following validated assessments:

1. The Devereaux Early Childhood Assessment (DECA)
2. The Minnesota Executive Function Scale (MEFS)

The Devereaux Early Childhood Assessment is an indirect (i.e., teacher-reported) assessment of preschoolers' (ages 3-5) social-emotional skills which takes approximately 10 minutes to complete per student. It includes developmentally appropriate items about preschoolers' initiative, self-control, attachment, and behavior problems and can be used for progress monitoring and program evaluation purposes. Internal consistency alpha coefficients range from 0.71 to 0.94, which meet benchmark thresholds of 0.70. Test-retest reliabilities range from 0.68 to 0.94 for teachers, and from 0.55 to 0.80 for parents, all of which are quite high.[35] Results are provided for each of the subscales (e.g., initiative, self-control and attachment) as standardized scores, relative to the nationally normed sample of preschoolers. The nationally normed sample includes 3,553 preschoolers, ages 3-5, that closely approximate the preschool population of the US with respect to age, gender, geographic region of residence, race, ethnicity, and socioeconomic status.[36]

Children can be assessed on the DECA by teachers or teacher assistants/aides. The interrater reliability between teacher scores and teacher assistant/aide scores is 0.72, suggesting that both groups are generally providing similar scores for preschoolers. The Center for Resilient Children, which is the research arm of the DECA, advises that to assess a child, a "teacher should, at a minimum, observe the child for two to three hours a day, for two to three days per week, for four weeks".[37] Since Corps members meet these criteria, and to not overburden teachers, Jumpstart leadership decided to have Corps members fill out the DECA for each preschooler in the sample who had parental consent to be assessed.

The MEFS is a direct assessment of preschoolers' executive function. Administered to preschoolers by a trained adult through a tablet or computer, it takes approximately 5 minutes for a child to complete and provides an objective, norm-based score of preschoolers' executive function skills. Results to date suggest strong psychometric properties of the measure in a sample of low-income preschoolers.[38] Like with the DECA, results are provided as standardized scores based on the nationally-normed sample. However, results are not broken down by subscales (e.g., inhibitory control, self-control and working memory) but rather are provided as a total score of executive function. Since MEFS is a direct assessment, the training to administer it to preschoolers is quite comprehensive. It includes a webinar in addition to practice hours in which the trainer is required to administer the assessment to another individual.

As noted above, Jumpstart currently administers the JSSC as a pre- and post-test to all preschoolers participating in Jumpstart who have permission to be assessed. The TOPEL, a direct assessment of preschoolers' early literacy skills, is also administered to preschoolers, though only in select sites. With the TOPEL, students receive an overall score known as the Early Literacy Index (ELI), as well as scores on the sub-domains of print knowledge, definitional vocabulary and phonological awareness. Since MEFS, DECA and TOPEL results are reported as standardized scores relative to a nationally normed sample, we standardized JSSC scores within age to ensure comparable metrics and to remove age as a confounder.[39]

Research Questions and Methods

We analyze preschooler data on each measure and across measures with the goal of providing recommendations to Jumpstart about which measures accurately measure the impact of the Jumpstart model on preschoolers' development.[40] We asked the following research questions:

1. What do the results from this pilot study suggest about Jumpstart preschoolers' social-emotional skills and executive function skills?
2. Is the Jumpstart School Success checklist identifying preschoolers' social-emotional skills, executive function skills and early literacy skills?
3. To what extent do Jumpstart preschoolers' social-emotional skills and executive function skills predict their early literacy skills?

Sample

For the pilot study, 8 sites opted into administering the DECA, while only 2 sites opted into administering the MEFS. To be in the analytic sample, preschoolers needed to have permission to be assessed, have pre- and post-data and have been in Jumpstart for more than 120 days. As shown in Table 1 below the makeup of the analytic sample varies depending on the measure(s) assessed. The sample size ranges from 977 preschoolers in our dataset who have JSSC scores to only 16 preschoolers with MEFS and TOPEL scores. The sample of preschoolers with MEFS scores is substantively different in makeup from the Jumpstart population in terms of demographics and academic achievement (see Sample 5 and Sample 6). This makes it difficult to ascertain whether results based on MEFS scores are generalizable to the entire population. That

said, our analytic sample is much larger than samples from prior studies on Jumpstart, which ranged from 9 to 51 preschoolers.

Table 1. Makeup of Preschoolers in the Jumpstart Population and Each Analytic Sample

	Jumpstart population	Sample 1: JSSC	Sample 2: TOPEL + JSSC	Sample 3: DECA + JSSC	Sample 4: DECA+ TOPEL	Sample 5: MEFS + JSSC	Sample 6: MEFS + TOPEL
% Hispanic	39%	30%	28%	32%	21%	33%	44%
% Black	35%	25%	23%	25%	19%	27%	37%
% White	8%	16%	25%	15%	31%	0%	0%
% Female	53%	50%	53%	52%	43%	48%	53%
Average ELI score	96.4	96.6	96.6	95.1	95.1	94.1	94.1
Average JSSC score	3.7	3.7	3.6	3.7	3.6	3.3	3.2
Total N	9,857	977	130	376	70	33	16

Note: For each analytic sample, only preschoolers that have permission to be assessed, have pre- and post-data, and have been in Jumpstart for more than 120 day are included. Note that since not all students are assessed with the TOPEL, the n-size for the average ELI score in the Jumpstart population and Sample 1 is smaller than the total N indicated in the respective cell. The average JSSC score is based on the average raw score across all 15 items (on a 1-5 Likert scale).

Analytic Results

The results presented below summarize the findings from this study.

What do the results from this pilot study suggest about Jumpstart preschoolers' social-emotional and executive function skills? Preschoolers in the sample outperformed national norms in terms of their social-emotional skills. While preschoolers in the sample did not outperform national norms in their executive function skills, the non-representative sample of preschoolers who have MEFS scores makes it impossible to generalize results to the entire Jumpstart population.

Sixty-three percent of Jumpstart preschoolers had reported social-emotional scores in the top half of the nationally-normed sample. Further, Jumpstart preschoolers were one and a half to two times more likely than the nationally-normed sample to have social-emotional scores in the top tier of the nationally-normed distribution (e.g., strength category). Specifically, in the DECA nationally normed group, 16% of preschoolers have scores that would fall in the strength category of each subscale (as opposed to the typical or area of need categories). In the Jumpstart sample, 25% of preschoolers have Initiative scores that fall in the strength category; 32% of preschoolers have self-regulation scores that fall in the strength category; and 30% of preschoolers have attachment/relationship skill scores that fall in the strength category.

Showing strength in initiative suggests that a preschooler is capable of showing interest in and trying new things, making decisions for himself/herself, choosing difficult tasks, persisting even when unsuccessful at a task, and organizing play. Showing strength in self-regulation means that a preschooler handles frustration well, shows patience, cooperates with others, calms himself/herself down and plays well with others. Showing strength in attachment/relationship means that the preschooler shows affection for familiar adults and asks them to play with or read to him/her, seeks help from children/adults when necessary, and appears happy to engage in activities with others.

These findings suggest that Jumpstart preschoolers have higher levels of social-emotional skills, on average, compared to the group of preschoolers that DECA scores are normed against. One-quarter of preschoolers in DECA's nationally-normed sample receive public assistance or subsidized child care.[41] Given that the majority of Jumpstart sites are located in low-income neighborhoods, these findings suggests that Jumpstart may be helping to mitigate the effects of poverty on students' social-emotional skill development.

Because of the small number of preschoolers receiving the revised curriculum that participated in the pilot, any difference in scores between revised curriculum sites and original curriculum sites are likely reflective of the sample of preschoolers and not of the curriculum. Therefore, we did not explore differences in DECA scores between preschoolers receiving the original curriculum and preschoolers receiving the revised curriculum.

In addition to assessing the students on the DECA, a small sample of students (n=33) in two sites were assessed on the MEFS. Jumpstart had difficulty finding sites willing to commit to piloting the MEFS because, unlike the DECA, the MEFS involves considerable training on the part of assessors (e.g., site managers), greater resources (e.g., tablets) and more constraints (e.g., Wi-Fi availability in the site), and additional parental consent because it is a direct assessment. One of the two site managers who administered the MEFS to preschoolers did acknowledge the challenges with the MEFS administration related to staffing, the internet connection, and multiple assessments that were being administered during the same time frame. However, the second site manager gave glowing feedback on the MEFS saying, "The children loved it and were engaged throughout the entire assessment. It is very easy to administer. The teachers were totally fine with me being there for such a little amount of time."

While executive function is made up of several sub-domains (working memory, self-control and mental flexibility), it is viewed as one construct rather than several. As such, results are reported as an overall score of executive function instead of separately for each sub-domain. Among the 33 preschoolers included in the analytic sample who have MEFS scores, Jumpstart preschoolers scored slightly *lower* than the national norm on executive function skills. Only one-third of Jumpstart preschoolers in the sample scored in the top half of the nationally normed distribution. However, given the fact that this sample of students is substantively different than the Jumpstart population as shown in Table 1, it is unlikely that these results are generalizable to the entire Jumpstart population.

Is the Jumpstart School Success checklist identifying preschoolers' social-emotional skills, executive function skills, and early literacy skills? While the JSSC is a highly reliable tool, it does not appear to be a strong measure of the social-emotional skills measured by the DECA (initiative, self-control, and attachment) or the specific early literacy skills measured by the TOPEL (print knowledge, definitional vocabulary, and phonological awareness). However, it may be picking up on aspects of preschoolers' executive function skills as measured by the MEFS.

The JSSC includes items that are intended to measure kindergarten readiness. This includes items that assess both literacy skills as well as social relationships. The reliability of the JSSC in our analytic sample across all 15 items is 0.95, and the reliability on just the social relationship items (9-15) is 0.91. This is in line with results from the Immekus study and suggests that the JSSC total score and social relationship score offer reliable scores of the underlying construct.[42]

Using a theoretical approach, we identified items on the JSSC that may be aligned to the DECA subscales (Appendix A, Table A2). If in fact the JSSC is providing a measure of students' social-emotional skills, in line with the DECA, we'd expect to see large correlations (i.e., >0.5) between the identified JSSC items and the corresponding DECA subscales. As shown in Appendix A, Table A3, the correlations among the subscales of the DECA and the select JSSC items identified are positive and significant, but quite small, ranging from 0.14 to 0.26. The correlation among all identified JSSC items (based on an average standardized score) and each DECA subscale ranges from 0.11 to 0.29. The lack of strong correlations at the item level indicates that the JSSC is not necessarily identifying social-emotional skills in preschoolers. This is supported by the conclusion from the Immekus study, which, using a psychometric approach, found that the JSSC is primarily measuring one construct related to literacy skills.

The correlations between JSSC and DECA scores are much smaller than those reported in the Meyers et al. study. Meyers and colleagues found that DECA subscales had a moderate relationship with JSSC items measuring social relationships (0.46 to 0.54).[43] There are two potential reasons for the discrepancy in findings across the two studies. First, for this pilot study, different raters completed the JSSC (teachers) and DECA (Corps members), whereas for the Meyers et al. study, teachers rated students on both the JSSC and DECA. As such, the lower correlations in this study may partly reflect differences in perceptions of/familiarity with preschoolers among teachers versus Corps members.[44] Alternatively, given that the results from the Meyers et al. study was based on a much smaller number of preschoolers (34 versus 376) who were not randomly selected, it is possible that their results do not generalize to the larger Jumpstart population.[45]

Given that the JSSC is intended to provide a measure of kindergarten readiness that includes both academic and social components, and executive function includes domains in both the cognitive and social-emotional realm, we would expect JSSC scores to be correlated with MEFS scores. And in fact, as seen in Appendix A, Table A4, this study found a moderate correlation among the overall JSSC average standardized score and the MEFS score (0.44). At the item

level, correlations with the MEFS score ranged from small to moderate: the highest correlation occurs with JSSC item 4 (showing awareness of sounds in words; 0.43), item 11 (initiating play; 0.51), item 13 (understanding and expressing feelings; 0.42), and item 14 (relating to adults; 0.44) (see Appendix A, Table A4.

Finally, as shown in Appendix A, Table A5, we find a small but significant correlation between preschoolers' JSSC average standardized score and the TOPEL Early Literacy Index (ELI) (0.27). The ELI is an automated composite score obtained by combining the scores from the Print Knowledge, Definitional Vocabulary, and Phonological Awareness subtest. The strongest correlations at the subscale/item level occurs with item 4 (showing awareness of sounds in words; 0.25-0.36) and item 6 (using letter names and sounds; 0.25-0.35) (see Appendix A, Table A5). This suggests that there is little overlap in student academic skills that is being identified by both measures. As such both the JSSC and TOPEL may be useful in assessing Jumpstart's overall contribution to preschooler outcomes.

To what degree do Jumpstart preschoolers' social-emotional skills and executive function skills predict their early literacy skills? Executive function appears to be a strong predictor of preschoolers' definitional vocabulary skills, while self-regulation is moderately predictive of preschoolers' phonological awareness.

Correlations among each of the DECA scales and each of the TOPEL sub-scales is small to moderate. The largest correlation occurs between the DECA sub-scale of self-regulation and phonological awareness (0.37) (see Appendix A, Table A6).[46] Important to note is that we would not necessarily expect the TOPEL to pick up aspects of social-emotional skills given that early literacy and social-emotional skills are two very different constructs.[47]

A strong significant correlation was found between preschoolers' MEFS scores and their scores on the Definitional Vocabulary sub-scale of the TOPEL (0.62) (see Appendix A, Table A7). Given that both assessments are direct measures of preschoolers' skills that do not share rater variance, and given that the analytic sample is quite small, this finding highlights the strong role that executive function plays in early language and literacy skills, particularly among students with lower levels of language and literacy skills.

Discussion

This study finds that preschoolers in the Jumpstart pilot sample outperformed national norms in terms of their social-emotional skills. Importantly, the nationally normed group contains a much smaller percentage of children living in poverty compared to the Jumpstart population. Results also suggest that preschoolers' social-emotional skills are not being measured by current Jumpstart assessments. As such, we recommend including the DECA as part of Jumpstart's battery of assessments. Administering it at scale, as both a pre-test and a post-test, will provide Jumpstart with an additional measure with which to assess the impact of their model on preschooler outcomes. Guidance from the Center for Resilient Children suggests that the DECA can be used for program evaluation in this way.[48]

We find that executive function, as measured by the MEFS, is a strong predictor of preschoolers' definitional vocabulary skills, as measured by the TOPEL. While preschoolers in the sample did not outperform national norms in terms of their executive function skills, the non-representative sample of Jumpstart preschoolers that were assessed with the MEFS makes it impossible to generalize results to the entire Jumpstart population. Given the importance of executive function skills for kindergarten readiness, the alignment between Jumpstart's model and the development of executive function skills as demonstrated in the theory of action and the positive feedback from one of the sites that administered the MEFS, we recommend piloting the MEFS to a larger group of sites, as both a pre-test and post-test, in future years. To ensure scalability, we recommend working with sites as early as the summer to discuss with teachers and parents the importance of executive function in early childhood development and the rationale for administering the MEFS instrument. While implementing the MEFS will require considerable work on the part of Jumpstart staff, we believe executive function will be an important component to track as part of Jumpstart's impact.[49]

We recommend a future study that utilizes both the DECA and MEFS in order to measure the impact of the Jumpstart model on students' social-emotional and executive function skills. To conduct such a study, we suggest administering the DECA and MEFS as a pre-test and post-test to a representative sample of preschoolers. We also suggest identifying a set of preschools to serve as the comparison group (i.e., sites which have similar preschooler makeup to Jumpstart sites but do not receive Jumpstart services). To identify these sites, Jumpstart could (1) select sites which have requested to receive Jumpstart services but are unable to for various reasons (e.g., not enough volunteers willing to serve as Corps members in the geographic location); (2) select classrooms located in the same sites as other Jumpstart preschool classrooms that just miss the minimum age requirement; or (3) select sites which will receive Jumpstart services in the following year to serve as comparison sites in the current year. Administering the MEFS and DECA in representative Jumpstart treatment sites and comparable sites that do not take part in Jumpstart will allow for a more precise estimate of the impact of Jumpstart's model on preschooler social emotional and executive function skills. We can provide additional guidance on the study design and analytics.

We'd also recommend a qualitative study in which sites where preschoolers are outperforming their peers in their social-emotional and executive function skill development are identified and investigated. Deeper examinations could be based on observations of the classroom, interviews with teachers, site managers and Corps members, and even focus group with preschoolers. The point of the study would be to further understand what is happening in higher-growth classrooms that may be particularly meaningful for social-emotional skill and executive function development.

Finally, Jumpstart should consider additional revisions to its revised curriculum over time to more fully integrate social-emotional and executive function skills into its model. For example, Stephanie Jones of the Harvard Graduate School of Education has developed a series of "games"

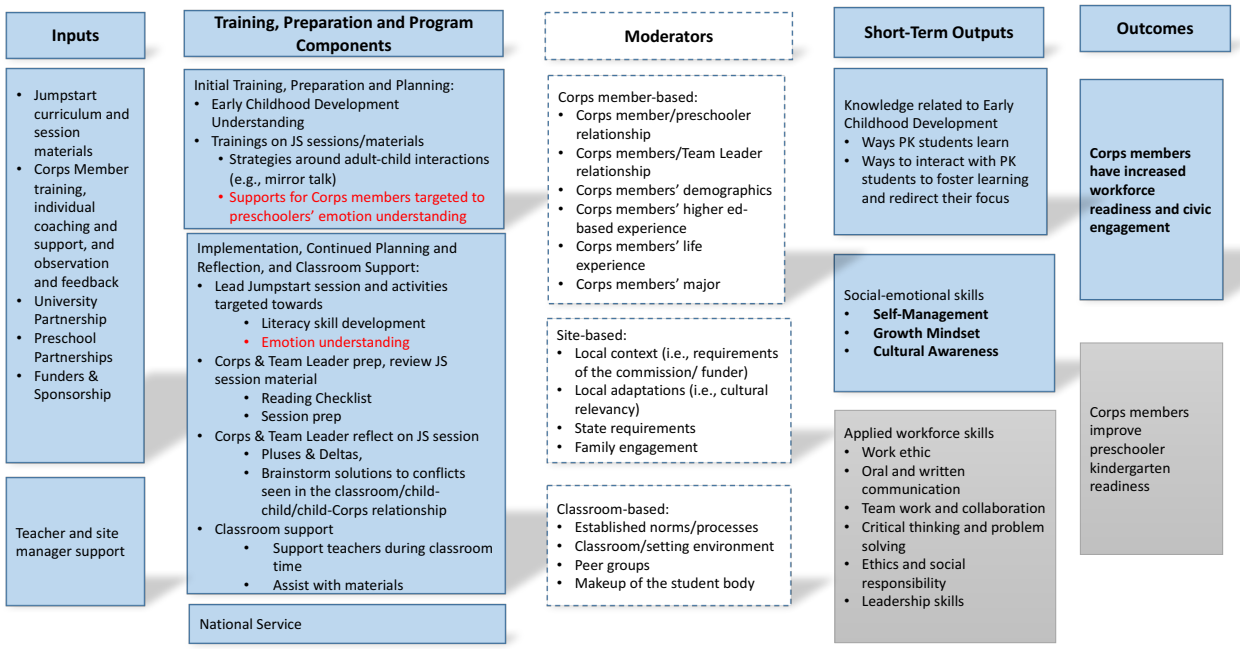
known as Brain Games, that are designed to build and practice children's executive function and self-regulation skills.[50] Jones has also identified a set of "kernels" or "bite-sized" strategies that can be incorporated into existing programs and have been shown to address specific social-emotional learning areas.[51] Both sets can be easily adapted to preschoolers and included in the curriculum as explicit strategies employed by Corps members. Further, we at TransformEd have created toolkits that provide strategies for social-emotional skill development and has provided guidance to other organizations around more fully integrating prioritized social-emotional skills throughout their curriculum.

Results from the Pilot Study: Corps Members

A Theory of Action

The following theory of action lays out the ways in which the programmatic components of Jumpstart are hypothesized to impact Corps members' social-emotional skills and ultimately, workforce readiness. The theory of action, developed collaboratively with Jumpstart, is based on: (1) a thorough review of prior Jumpstart studies and program documentation; (2) sites visits to observe Corps members working with preschoolers under both the original and revised curriculum; and (3) iterative feedback on the theory of action from the Jumpstart National Program Division.

Figure 2. A Theory of Action of How the Jumpstart Model Affects Corps Members' Social-Emotional Skills



Note: Text in red font signifies components that are part of the revised curriculum.

Inputs. Several inputs feed into Jumpstart's programmatic model with respect to Corps members, including curriculum and session materials, training and coaching, university partnerships, preschool partnerships, and funders and sponsorships. Support from site managers and teachers are also a key input.

Components. Training, preparation and program components are the crucial aspects of the Jumpstart experience that are expected to improve Corps member knowledge related to early childhood development along with their own social-emotional and applied workforce skills. In this theory of action, we include components specific to Jumpstart's original curriculum and revised curriculum (in red font). In Appendix B, Table B1, we detail more concretely which social-emotional skills we believe each component is fostering.

Outputs. Based on Jumpstart's programmatic model, as well as prior studies on Jumpstart discussed above, there are three specific sets of outputs. These include (1) knowledge related to Early Childhood development; (2) Social Emotional Skills which include growth mindset, self-management and cultural awareness; and (3) Applied Workforce skills, which include factors such as worth ethic, communication, collaboration, leadership skills, etc. These are discrete factors related to workforce readiness and civic engagement; however, they have not been prioritized in the pilot study due to the need to limit the set of additional scales/measures (as such this box has been greyed out in Figure 2).

Outcomes. There are two primary outcomes identified in the theory of action above. The first is increased workforce readiness and civic engagement. A second outcome is Corps members' ability to improve kindergarten readiness in the sites they serve through their participation in Jumpstart and accumulation of social-emotional skills and early-childhood related knowledge. We've greyed out corps members improve preschooler kindergartener readiness since it is not being explicitly measured in the current study.

Moderators. In understanding the relationship between the inputs/components and outputs/outcomes in this theory of action, we must also consider different factors that can moderate the impact between the inputs/components and the outputs/outcomes. We've identified Corps member-based moderators, site-based moderators, and classroom-based moderators which may affect Jumpstart's impact on the identified outputs and outcomes. For example, in sites in which teachers do not have established norms and rules in the classroom, Corps members may have to re-focus their energy and time on classroom management instead of teaching the Jumpstart curriculum.

Measures. Lastly, measures must be identified in order to test whether the inputs/components actually produce the desired outcomes and outputs. We turn to this below.

Prioritization of Competencies

We sought to prioritize additional competencies for Jumpstart to assess through their Corps Member Survey using the 3Ms model. However, research has shown that lots of skills matter for workforce readiness (i.e. meaningful)[52] and many of these skills can be developed throughout the college years (i.e., malleable).[53] Further, there are many validated measures capable of being administered in practice, particularly self-reports (i.e., measurable).[54] Prioritizing the entire set of competencies that are meaningful, measureable and malleable would add a great deal of length to the survey. We therefore limited our focus to two intrapersonal skills: self-management and growth mindset; and one interpersonal skill: cultural awareness.[55] We did so because, as demonstrated more clearly in Appendix B, Table B1, Jumpstart's model lends itself to these skills in particular. Research on service learning as well as Jumpstart's model suggest these skills can be enhanced through the Jumpstart experience, and these skills have been shown to be especially crucial in today's economy.

Identification of Measures

Working with Jumpstart, we prioritized measures which could be included in Jumpstart's Corps Member Survey for end of year (post) administration. As such, we searched for scales that measure individuals' perceptions of their growth mindset, self-management and cultural awareness. Two of these scales, growth mindset and self-management, had already been developed through our work with the Boston Charter Research Collaborative, a multi-year partnership between six Boston-area charter schools or charter management organizations (CMOs), Harvard University, MIT, and TransformEd. While both scales had been developed for teachers, they were easily adaptable to Jumpstart Corps members.

The final scale of cultural awareness was chosen after a thorough review of validated measures.[56] We selected the Teacher Multicultural Attitude Survey because it was developed for use with pre-service teachers who tend to have some similar experiences to Corps members and many of the items aligned to the Corps member experience. [57] However, there were select items that asked about factors outside of Corps members' purview. Therefore, Jumpstart team members engaged in a process whereby they placed items into three tiers: Tier 1, which contained items that were believed to most closely match the Corps member experience; Tier 2 which contained items that somewhat matched the Corps member experience; and Tier 3, which contained items that asked about aspects entirely unrelated to the Corps member experience. For this pilot study, Tier 1 and Tier 2 questions were tested in the spring Corps Member Survey.

See Appendix B, Table B2 for the new items included in the post-survey.

Research Questions and Methods

The goal of this pilot study is to analyze data from the newly administered scales in order to make recommendations on which scales/items to include in future years to assess programmatic impact. With this goal in mind, we asked three primary research questions:

1. Do the newly administered items/scales provide reliable scores of Corps members' social-emotional skills?
2. How do Corps members report on their social-emotional skills, and are there meaningful differences in self-reports across subgroups?
3. Do the newly administered social-emotional scales provide information not already captured through existing questions on the Corps Member Survey?

Sample

A total of 3,918 Corps members participated in Jumpstart in the 2016-17 school year, and 3,401 filled out the post-survey. Our analytic sample consists of 2,568 Corps members (or 65%) that have results on the newly administered social-emotional scales. We describe the makeup of our analytic sample in Table 2. Because the Jumpstart Corps Member Survey is the primary instrument through which demographic data are collected, we cannot directly compare our analytic sample to the entire Corps member population across race/ethnicity. However, overall, the percentages in our analytic sample align with those in Jumpstart's analytic sample.

Table 2. Makeup of Corps Members in Analytic Sample

	Analytic Sample
% Female	89%
% Hispanic	25%
% Black	18%
% White	36%
% Asian	11%
% Multiple races	10%
% Spanish as the primary spoken language	5%
% Participating in revised curriculum	9%
% First year in Jumpstart	66%
% College students	95.7%
% College students with an education-related major/minor	27.8%
Total N	2,568

Note: The percentages for gender and race are based on a slightly lower total N (2,092 and 2,080, respectively) due to missing demographic data on the post-survey. We defined college students as all responders in non-community Corps member sites that did not identify as graduate students (n=2,428). We defined individuals with an education-related major or minor as those that reported on the post-survey that they have an education major/minor or early childhood education major/minor (n=676).

Analytic Results

The results presented below briefly summarize our analytic findings.

Do the newly administered items/scales provide reliable scores of Corps member social-emotional skills? The newly administered scales meet typical thresholds required to demonstrate reliability.

When any new scale or survey is administered, results should be examined to ensure that the survey is providing reliable (consistent) scores of the underlying construct. The reliabilities of the newly administered social-emotional scales included in the Corps member survey are quite high, 0.75 for growth mindset scale; 0.80 for self-management; and 0.79 for cultural awareness, and meet typical benchmarks of 0.7 for internal consistency (see Appendix B, Table B3). This suggests that the newly administered items provide a consistent picture of the underlying construct being assessed.

In addition to assessing reliability at the scale level, we were particularly interested in the item-level reliability of the cultural awareness scale, as one way to inform which items do not add to our understanding of Corps members' cultural awareness and thus should be removed. Only three items demonstrated lack of consistency with other items in the scale (see Appendix B, Table B4).

How do Corps members report on their social-emotional skills, and are there meaningful differences in self-reports across subgroups? Corps members reported, on average, strong beliefs in growth mindset, self-management skills and cultural awareness. We find that college students who have two or more years of service report higher self-management scores compared to those with up to one year of service, even controlling for grade-level.

Corps members reported an average growth mindset score of 4.67 (on a 5-point scale), with 92% indicating that on average, it is mostly or completely true that their intelligence is malleable and can grow with effort. Corps members also reported an average self-management score of 3.40 (on a 4-point scale), with 93% indicating that on average, they somewhat or strongly agree that they are capable of managing their behavior, emotions and actions in order to be more effective in the classroom. And, Corps members reported an average cultural awareness score of 4.43 (on a 5-point scale), with 85% indicating, on average, that they agree or strongly agree that cultural diversity in the classroom is an attribute and that they have a responsibility to be aware of preschoolers' background. We show the means, standard deviations and ranges in Appendix B, Table B5.

We find significant differences in self-reported self-management skills across key factors. Among college students, those who have 2 or more years of service with Jumpstart have statistically significantly higher scores relative to those with up to one year of service (3.45 vs

3.38), even after controlling for grade-level and gender.[58] This finding suggests that the Jumpstart experience may help to improve college students' self-management skills over time.

We also find that among college students, those who have an education-related major/minor have statistically significantly higher self-reported scores relative to those that do not (3.44 vs 3.39). Further, we find that college Corps members report statistically significant higher self-management scores relative to community Corps members; however, this finding is explained almost entirely by differences in the ages of the two groups (i.e., college Corps members are typically in their early 20s while community Corps members are typically in their early 70s). Therefore, we cannot determine whether it's the type/experience of Corp member or age of Corp member that is driving the difference in self-reported scores.

Do the newly administered social-emotional scales provide information not already captured by the Corps Member Survey? Yes, the newly administered scales provide additional information on Corps members' social-emotional skills, as evidenced by the fact that Corps members' responses on the scales do not correlate with their responses on identified questions already being asked in the survey.

We identified specific questions in the survey under the Workforce Development section that we believed most closely aligned to the constructs measured by the newly administered scales compared to all of the other questions asked (Appendix B, Table B6). We then examined the correlations between Corp member scores on each newly administered scales and responses on the questions asking members to rank their skills after participation in Jumpstart. As shown in Appendix B, Table B6, there are very low correlations between scores on the newly administered scales and scores on the existing survey questions, ranging from 0.05 to 0.20. This suggests that the Corps Member Survey is not already measuring Corps members' social-emotional skills and, importantly, that the newly administered scales provide added value.

Discussion

The findings from this report suggest that newly administered social-emotional scales provide reliable and supplemental information on Corps members skills of self-management, growth mindset and cultural awareness. Overall, Corps members report fairly high scores across the three domains, with higher self-management scores reported by college students with an education-related major or minor and college students who have greater years of service. The latter finding suggests that the Jumpstart experience may help to improve college students' self-management skills over time.

Without benchmark/comparison scores, or pre-scores, we cannot ascertain whether participation in Jumpstart is positively impacting Corps members social-emotional skills. As such, it will be important in future years to administer this survey in the beginning of the year and end of year in order to assess change over time Corps members' skills.[59] Of course, there are biases inherent in self-reports, particularly when assessing change over time. For example, we know from results

with other partnerships that when students in grades 4-12 are administered a survey of social-emotional skills in the fall and spring, there tends to be a decline in scores due to time-of-year effects. However, it's unclear whether this same trend would occur with college students and adults who may be more capable of holding their perceptions of their skills to the same standard across the two time-points.

There are two additional avenues for future studies based on these results. First, we would recommend administering the survey as a pre-test and post-test to better understand how social-emotional scores of Corps members change over the course of the year and whether there are meaningful differences in these changes for particular subgroups of Corps members. This could further involve identifying individuals, groups or sites in which Corps members are reporting particularly high growth from fall to spring, and interviewing select volunteers in order to learn more about the experiences that may be positively impacting their social-emotional skills. Secondly, to isolate Jumpstart's impact on Corps members' social-emotional skill development, Jumpstart should consider finding a comparable group of college students who are not participating in Jumpstart in order to provide a comparison group with which to analyze differences over time across groups. This could involve students who are interested in participating in Jumpstart in the following year.

Conclusion

There's a popular adage that what gets reported gets supported. The administration of any measure at scale should be informed by (1) empirical data that speak to the validity and reliability of scores; (2) the alignment between the measure and outputs/outcomes prioritized through the theory of action; (3) the usefulness of the results for stakeholders; (4) and the burden on stakeholders of test administration. Based on these four criteria, we believe that the DECA and Corps member social-emotional scales would be appropriate additions to Jumpstart's battery of assessments. Weighing the burden of administering the MEFS at scale with the usefulness of the results, we would recommend administering it to a larger number of sites in order to obtain further feedback from stakeholders on test administration before administering it at scale.

We offer four primary recommendations for Jumpstart based on results from this pilot study.

1. **Ensure that their theory of action is refined and updated as needed to be useful as an overarching framework to guide organizational decisions;**

2. **Consider administering the DECA, MEFS and Corps member social-emotional measures at greater scale, in the fall and the spring as part of their battery of assessments, in order to assess change in skills over time;**

3. **Conduct future studies examining (a) the effect of Jumpstart's curriculum on preschoolers' social-emotional and executive function skills; (b) the characteristics of sites in which preschoolers exhibit strong growth in social-emotional and executive function skills; (c) the effect of participating in Jumpstart on Corps**

members' self-management, growth mindset, and cultural awareness development; and (d) the experiences of Corps members showing strong growth in social-emotional skills over the course of the year;

4. **Consider additional revisions to their model to more fully integrate social-emotional and executive function skills.**

TransformEd would welcome a partnership with Jumpstart in future years to design and carry out the recommended studies and/or identify specific strategies that can be incorporated more fully into Jumpstart's revised curriculum to more explicitly target preschooler and Corps member social-emotional skills.

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Appendix: Tables

Table A1: Hypothesized alignment between Jumpstart activities under revised curriculum and SEL-related outputs

Activity	Tasks	Skill/Competency
Welcome	Support children's transition into small groups	Inhibitory control (EF) Self-Regulation (SEL)
	Review all elements of the Jumpstart session using a routine chart	Working memory (EF)
	Remind children of book they read (second session)	Working memory (EF)
Reading	Make a few comments related to the illustration on the cover, and connect to pre-reading discussion and welcome	Cognitive flexibility (EF)
	Develop children's comprehension of the story by talking about what characters are thinking, desiring, feeling, and linking these mental states to their actions in the story	Mental state vocabulary (EU) Emotion understanding (EU)
	Predict what will happen next and summarize chunks of text to help children remember events up to this point in the story	Cognitive flexibility (EF) Working memory (EF)
Transition	Give a one minute warning to each reading group to let Corps members and children know that Group Meeting will be next	Inhibitory control (EF) Self-Regulation (SEL)
Group Meeting	Show and tell children… Remind children…. Ask children…. Give children an opportunity…. Conclude by connecting activity to center time activities	Cognitive flexibility (EF) Initiative (SEL) Attachment/Relationships(SEL) Self-Regulation (SEL)
Center time	Puzzles and manipulatives: children develop mental state vocabulary and emotion understanding as they play a game with feelings and mirrors	Mental state vocabulary (EU) Emotion understanding (EU) Attachment/Relationships(SEL) Self-Regulation (SEL) Initiative (SEL)
Transition	Cue end of activity; modeling cleaning by joining in to help	Inhibitory control (EF) Self-Regulation (SEL)
Sharing and goodbye	Ask preschoolers to talk about favorite activities from the day	Working memory (EF) Initiative (SEL)
	Remind preschoolers what will happen in next session	Working memory (EF)
Relationship with Corps members	Preschoolers work with same Corps members twice a week, two hours a day	Relationship Skills (SEL)

EF = executive function, SEL = social-emotional learning, EU = emotion understanding

Table A2: Alignment of JSSC items to DECA subscales

JSSC Items	DECA
#9 Making Choices and Plans	*Initiative*
#11 Initiating Play	
#10 Solving Problems with Materials	*Self-Regulation*
#12 Resolving interpersonal Conflict	
#14 Relating to Adults	*Attachment/Relationships*
#15 Relating to other children	

Table A3: Correlations between JSSC item scores and DECA subscale scores (n=376)

	JSSC items 9+11	JSSC items 10+12	JSSC items 14+15	JSSC Social Relationship (items 9-15)
DECA initiative	0.26***			0.29***
DECA self-regulation		0.14**		0.11*
DECA attachment			0.16**	0.25***

* p<0.05 ** p<0.01 *** p<0.001

Table A4: Correlations between JSSC item scores and MEFS score (n=33)

JSSC Item 1: Listening to and understanding speech	0.3959*
JSSC Item 2: Using vocabulary	0.3721*
JSSC Item 3: Using complex patterns of speech	0.3447*
JSSC Item 4: Showing awareness of sounds in words	0.4293*
JSSC Item 5: Demonstrating knowledge about books	0.1543
JSSC Item 6: Using letter names and sounds	0.3430
JSSC Item 7: Reading	0.3161
JSSC Item 8: Writing	-0.0033
JSSC Item 9: Making choices and plans	0.3982*
JSSC Item 10: Solving problems with materials	0.3737*
JSSC Item 11: Initiating play	0.5113*
JSSC Item 12: Resolving interpersonal conflict	0.3427
JSSC Item 13: Understanding and expressing feelings	0.4239*
JSSC Item 14: Relating to adults	0.4353*
JSSC Item 15: Relating to other children	0.2811
JSSC overall	0.4385*

* $p<0.05$ ** $p<0.01$ *** $p<0.001$

Table A5: Correlations between JSSC item scores and TOPEL scores (n=130)

	Print Knowledge	Definitional Vocabulary	Phonological Awareness	Early Literacy Index
JSSC Item 1	0.2101*	0.1352	0.0693	0.1587
JSSC Item 2	0.2648*	0.2016*	0.2339*	0.2856*
JSSC Item 3	0.2076*	0.2239*	0.2297*	0.2728*
JSSC Item 4	0.3581*	0.2528*	0.3617*	0.4015*
JSSC Item 5	0.0976	0.0601	0.0931	0.1037
JSSC Item 6	0.3480*	0.2542*	0.3502*	0.3914*
JSSC Item 7	0.1367	0.0839	0.1851*	0.1721
JSSC Item 8	0.1665	0.0977	0.0856	0.1361
JSSC Item 9	0.1454	0.1045	0.2163*	0.1997*
JSSC Item 10	0.1032	0.0383	0.1326	0.1168
JSSC Item 11	0.0667	0.0351	0.2164*	0.1445
JSSC Item 12	0.1156	0.1148	0.2402*	0.2049*
JSSC Item 13	0.1234	0.1210	0.2914*	0.2347*
JSSC Item 14	0.0743	0.0776	0.2003*	0.1553
JSSC Item 15	0.0854	0.0494	0.2252*	0.1620
JSSC overall	0.2173*	0.1607	0.2726**	0.2730

* $p<0.05$ ** $p<0.01$ *** $p<0.001$

Table A6. Correlations between DECA subscales and TOPEL subscales (n=70)

	Print Knowledge	Definitional Vocab	Phonological Awareness	Early Literacy Index (ELI)
DECA Initiative	-0.0191	-0.0126	0.2761*	0.1235
DECA Self-Regulation	0.1915	0.1042	0.3730**	0.2772*
DECA Attachment	-0.1082	-0.1974	0.2707*	0.0300

* $p<0.05$ ** $p<0.01$ *** $p<0.001$

Table A7. Correlations between the MEFS score and TOPEL subscales (n=16)

	Print Knowledge	Definitional Vocab	Phonological Awareness	Early Literacy Index (ELI)
MEFS Score	0.3640	0.6214*	0.3919	0.4686

* p<0.05 ** p<0.01 *** p<0.001

Table B1. Connection between Corps member activities and SEL-related outputs

Activities	Tasks	Skill/Competency
Initial Planning & Preparation:	• Early Childhood Development Understanding • Trainings on JS sessions/materials • Strategies around adult-child interactions (e.g., mirror talk)	Self-Management Growth Mindset
Session Preparation	• Review JS session material • Reading Checklist	Self-Management

Session Implementation	• Lead Jumpstart session and activities targeted towards
	  • literacy skill development and
	  • emotional intelligence development
		Growth Mindset
		Self-Management
		Cultural awareness

Session Reflection	• Pluses & Deltas, • Brainstorm solutions to conflicts seen in the classroom/child-child/child-Corps relationship	Growth Mindset Cultural Awareness
Classroom Support	• Support teachers during classroom time • Assist with materials	Self-Management

Table B2. Items in each newly administered social-emotional scale

Scale	Items
Self-Management (“1” = “Strongly Disagree” and “4” = “Strongly Agree.”)	I continuously refine my personal goals about how I will best implement instructional/classroom practices with the children I serve.
	I effectively use multiple strategies (e.g., breathing techniques) when I have a strong emotional reaction in the classroom (e.g., stress, anger) when implementing instructional practices.
	Through the effective management of my emotions (e.g., use of stress reduction techniques, I am better able to implement instructional/classroom practices and to develop a positive learning environment.
	I model behaviors (e.g., set boundaries) to help children learn to regulate emotions during instructional practices.
Growth Mindset (“1” = “Not At All True” and “5” = “Completely True.”)	Challenging myself won’t make me any smarter.
	There are some things I am not capable of learning.
	My intelligence is something that I can’t change very much.
	If I am not naturally smart in school, I will never do well in it.
Cultural Awareness (“1” = “Strongly Disagree” and “5” = “Strongly Agree.”)	I find working with a culturally diverse group of children rewarding.
	Classroom practices need to be adapted to meet the needs of a culturally diverse group of children.
	Teachers and Corps members have the responsibility to be aware of their students’ cultural backgrounds.
	When dealing with bilingual children, communication styles are often interpreted as behavioral problems.*
	As classrooms become more culturally diverse, Corps members’ and teacher’s jobs become increasingly rewarding.
	I can learn a great deal from children with culturally different backgrounds.
	To be effective in the classroom, one needs to be aware of cultural differences present in the classroom.
	Multicultural awareness training can help me work more effectively with a diverse population of children.
	Children should learn to communicate in English only.*
	I am aware of the diversity of cultural backgrounds in the classroom in which I serve.
	Regardless of the makeup of my class, it is important for children to be aware of multicultural diversity.
	Building children’s understanding about cultural diversity will only create conflict in the classroom.*

*These items have been recommended for removal

Table B3. Internal consistency coefficients (alpha) for each social-emotional scale (n=2,568)

Scale	Alpha Coefficient
Growth Mindset	0.75
Self-Management	0.80
Cultural Awareness	0.79

Table B4. Item-level reliability of cultural awareness (ca) items (n=2,568)

Item	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
I find working with a culturally diverse group of children rewarding.	0.67	0.61	0.16	0.76
Classroom practices need to be adapted to meet the needs of a culturally diverse group of children.	0.68	0.60	0.16	0.76
Teachers and Corps members have the responsibility to be aware of their students' cultural backgrounds.	0.71	0.64	0.16	0.75
When dealing with bilingual children, communication styles are often interpreted as behavioral problems.*	0.40	0.20	0.17	0.80
As classrooms become more culturally diverse, Corps members' and teacher's jobs become increasingly rewarding.	0.65	0.56	0.16	0.76
I can learn a great deal from children with culturally different backgrounds.	0.73	0.67	0.16	0.75
To be effective in the classroom, one needs to be aware of cultural differences present in the classroom.	0.74	0.68	0.15	0.75
Multicultural awareness training can help me work more effectively with a diverse population of children.	0.68	0.60	0.16	0.76
Children should learn to communicate in English only.*	0.39	0.21	0.17	0.80
I am aware of the diversity of cultural backgrounds in the classroom in which I serve.	0.54	0.43	0.17	0.77
Regardless of the makeup of my class, it is important for children to be aware of multicultural diversity.	0.66	0.57	0.16	0.76
Building children's understanding about cultural diversity will only create conflict in the classroom.*	0.37	0.13	0.18	0.82
Test scale			**0.16**	**0.79**

* Items 4, 9 and 12 demonstrate lower item-level reliability based on the item-test correlation (i.e., how highly correlated each item is with the overall scale) and the item-rest correlation (i.e., the correlation of the item with the scale excluding that particular item).

Table B5. Means, standard deviations and ranges of Corps member social-emotional scale scores (n=2,568)

	Mean	SD	Min	Max
Growth Mindset	4.67	0.59	1	5
Self-Management	3.40	0.48	1	4
Cultural Awareness	4.43	0.46	1	5

Table B6. Relationship between select items on the Corps member survey and the social-emotional scales (n=2,568)

	Corps member items	Scale	Correlation
Growth Mindset	Improvising in unexpected situations (item letter g)	GM Scale	0.0540**
Self-Management	Time management (item letter f)	SM scale	0.220***
Cultural Awareness	Working with a diverse group of team members (item letter k)	Teacher Multicultural Attitude Survey	0.206***

* p<0.05 ** p<0.01 *** p<0.001

We chose the specific Corps member survey items based on the following hypotheses: (1) Growth Mindset: individuals with a growth mindset are more likely to be able to improvise in unexpected situations because they are not encumbered by the fear of making mistakes and because they are more likely to see challenges as opportunities to grow and become a better version of themselves; (2) Self-Managemet: One aspect of self-management is being able to manage one's actions, which includes showing up on time; (3) Cultural Awareness: If an individual can work with a diverse group of team members, it is an indicator that he or she genuinely respects the perspectives of people that carry different perspectives and lived experiences than his or her own (i.e., cultural awareness).

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[45] In fact, when we control for preschoolers' TOPEL scores, correlations between the DECA and JSSC increase to the range found in the Meyers et al. study. This suggests that in samples that are less representative of the entire population in terms of early literacy skills, correlations may be inflated.
[46] When we control for the other DECA scales in a regression-based framework, self-regulation remains slightly predictive of TOPEL sub-scales of print knowledge and definitional vocab, as well as the combined ELI score.
[47] These results align with findings from the Meyers study (see note 12) based on analyses of the relationships between scores from academic and social-emotional measures the Meyers et al. study looks at the relationship between social-emotional skills and early literacy skills, but uses a different measure than the TOPEL to assess early literacy skills.
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controls his/her anger, shows patience, accepts another choice when his/her first choice is not available, cooperates with others, shares with other children, etc. One measure should not be used as a substitute for the other since they are theoretically measuring very different overall constructs. As such, theory would suggest that while a measure of self-regulation will be correlated with executive function, there shouldn't be a perfect correlation. In fact, in the Jumpstart sample, the correlation between MEFS scores and DECA self-regulation scores is 0.40.

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[55] Both cultural awareness and cultural competence are important skills for workforce readiness. Cultural awareness is defined as being cognizant, observant, and conscious of similarities and differences among and between cultural groups (Goode, 2001, revised 2006). Cultural competence goes beyond cultural awareness to require that individuals work effectively in cross-cultural situations by not only self-assessing one's cultural awareness, but also having the capacity to value diversity, manage different dynamics in effective ways, institutionalize cultural knowledge and adapt to diversity and cultural contexts in the communities being served (Cross et al., 1989). Cultural competence requires that individuals adjust their work to take into account the cultural diversity. Corps members can be expected to develop cultural awareness through their experience with Jumpstart, they have little direct control over classroom practices or the curriculum they are implementing. For this reason, we prioritized cultural awareness over cultural competence as a key competency for Corps members

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[59] We would recommend administering the "before" questions on the Jumpstart Corps Member Survey in the fall instead of the spring, since administering before and after questions at the same time-point (i.e., spring) may artificially inflate the difference in scores. To test this hypothesis, Jumpstart could randomly choose a set of Corps members who will receive a fall and spring survey, and randomly choose a set of Corps members who receive just the post survey with "before" and "after" questions, and compare differences in results controlling for background characteristics.