



# **An Evaluation of NJSO CHAMPS** Findings from the 2017-2018 Season

Steven J. Holochwost

Elizabeth Stuk

WolfBrown

March 15, 2019

## **Table of Contents**

---

Executive Summary.....	3
Introduction.....	7
Methods.....	8
Results.....	10
Discussion.....	17
Works Cited.....	20

## Executive Summary

---

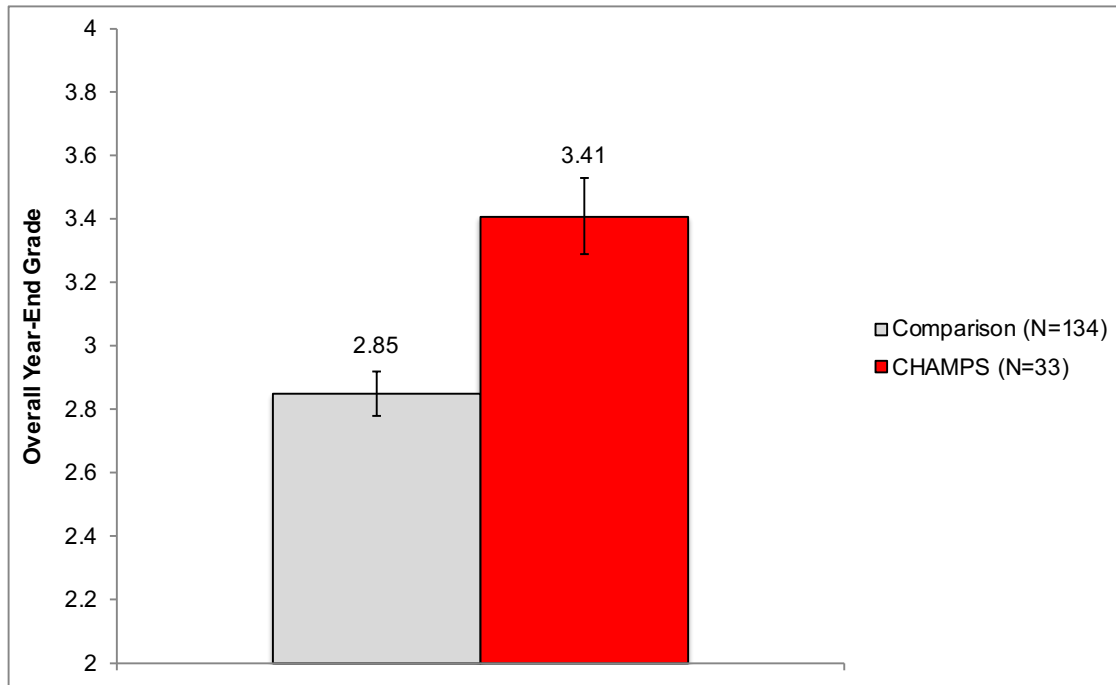
In this report we present the results of our evaluation of the 2017-18 season of the New Jersey Symphony Orchestra's Character, Achievement, and Music Project (CHAMPS). As in previous years, the evaluation was designed to address three guiding questions:

- Do students enrolled in CHAMPS exhibit higher levels of academic achievement than their peers?
- Do students in CHAMPS display improved character relative to their peers?
- Do students in CHAMPS exhibit musical growth over the course of the program year?

To address these questions data were collected from 70 students whose families provided permission for them to participate in our evaluation, 36 of whom were enrolled in CHAMPS. The partner school provided academic data for all students in grades 3 through 8, which included the 36 students enrolled in CHAMPS and 214 of their peers.

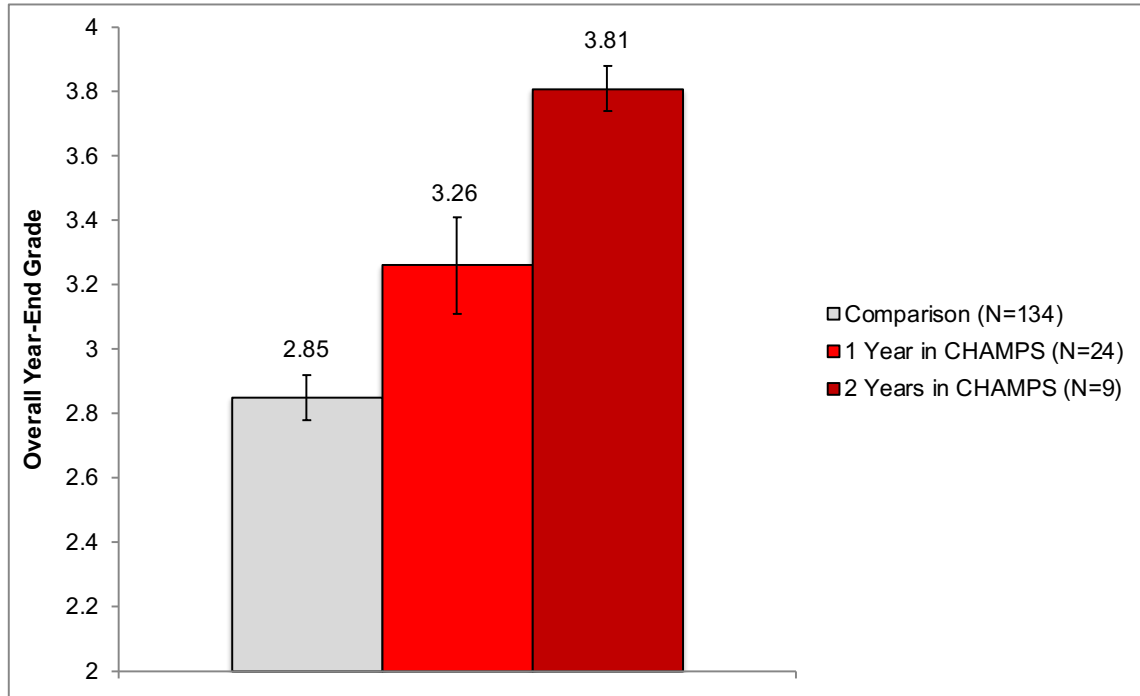
Using the data provided by the school, we found that students enrolled in CHAMPS earned significantly higher grades than their peers. On average, students in CHAMPS earned an overall year-end grade of 3.41 (half-way between an A and a B) for the 2017-18 academic year, whereas students who were not in CHAMPS earned an overall grade of 2.85 (a B-minus; see Figure S1).

**Figure S1.** Overall Year-End Grade



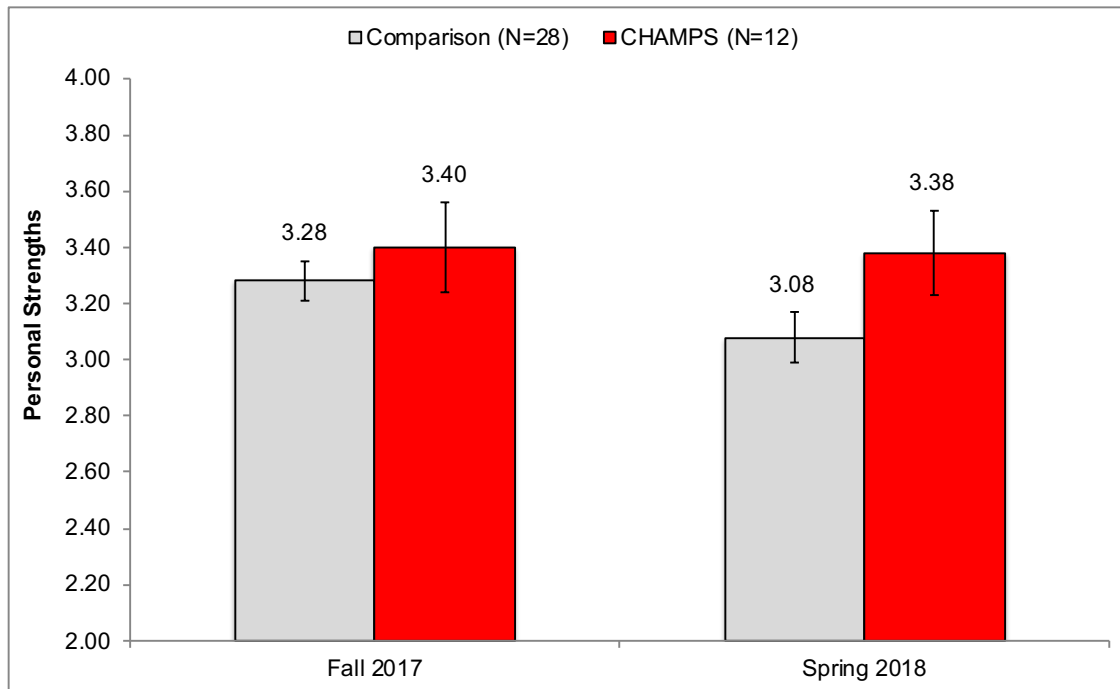
There were also significant differences in grades as a function of the number of years students were enrolled in CHAMPS. Students who were in CHAMPS for two years earned higher grades than their peers who had been in CHAMPS for one year, and students who had been in CHAMPS for one year earned higher grades than their peers who were not in the program (see Figure S2).

**Figure S2.** Overall Year-End Grades by Years of Enrollment in CHAMPS



Students in CHAMPS also exhibited higher levels of character in select domains. Both students' teachers and students themselves reported that CHAMPS participation was associated with higher levels of interpersonal skills. As can be seen in Figure S3, students in CHAMPS also displayed higher levels of personal strengths in fall 2017 and spring 2018. The difference between CHAMPS students and their peers became larger over the course of the academic year.

**Figure S3.** Fall 2017 and Spring 2018 Personal Strengths: Student Measures



Findings regarding students' musical growth were mixed. In contrast to previous years, students' overall level of proficiency did not increase over the course of the program year when proficiency was defined as the overall scores across the two excerpts. Rather, students exhibited an increase in their proficiency as assessed by one of the two excerpts used to assess musical growth, but not as assessed by the second excerpt. It is important to note that at both assessments students' scores were very high in the absolute terms of the scale (a 2.5, on average, out of a possible score of 3.0) at the first assessment, a fact that may have constrained additional improvement.

In summary, as in prior years of our evaluation, we found that students enrolled in CHAMPS exhibited higher grades and levels of character than their peers. The question we have not been able to address is whether CHAMPS *causes* these differences among students. Do students become more academically proficient through their participation in CHAMPS, or do more academically-proficient students elect to participate in the program?

The only way to rule out these explanations would be to employ procedures that would not have been feasible in our current and prior work, and that are particularly ill-suited to the Orchestra's changing programming for under-represented and under-served youth. An approach that is at once more practical and better aligned to the Orchestra's future programming would be to focus on the *process* by which the opportunity for serious musical study yields ancillary benefits to domains such as character and academic achievement.

Questions that we could address following this shift in focus include: 1) why some under-served and under-represented students persist in their studies of music, while others do not; 2) whether the opportunity to persist in serious musical study narrows the gap in musical proficiency between under-served and under-represented students and their more affluent

peers; and 3) how this opportunity changes student's perceptions of who classical music is for and whom organizations that present that music serve. The answers to these questions have implications not only for the Orchestra's program design, but also the field of community-based music education and the future of classical music as a vital art form that is relevant to a diverse population.

## **Introduction**

---

In this report we present the results of our evaluation of the 2017-18 season of the New Jersey Symphony Orchestra's Character, Achievement, and Music Project (CHAMPS). As in previous years, the evaluation was designed to address three guiding questions:

- Do students enrolled in CHAMPS exhibit higher levels of academic achievement than their peers?
- Do students in CHAMPS display improved character relative to their peers?
- Do students in CHAMPS exhibit musical growth over the course of the program year?

Findings from previous years of the evaluation have evidence that the answer to each of these questions is “yes:”

- In 2013-14 we found that students enrolled in CHAMPS exhibited higher levels of different aspects of character as rated by both their parents (prosocial behaviors) and themselves (e.g., girls enrolled in CHAMPS reported higher levels of intrapersonal skills and more positive attitudes about the future).
- In 2014-15 we demonstrated that CHAMPS students experienced more rapid growth in English Language Arts (ELA) and math grades than their peers, and that students in CHAMPS reported positive increases over time for multiple aspects of character. Moreover, we found that nearly two-thirds of CHAMPS students exhibited positive increases in musical performance over the course of the season.
- In 2015-16 we found that CHAMPS students earned higher grades in ELA and math than their peers, and exhibited more rapid growth in multiple aspects of character, including cooperation, growth mindset, and perseverance. Finally, over three-quarters of students exhibited gains in musical performance.
- Finally, in 2016-17 we found that students in CHAMPS earned higher grades in ELA than their peers and also exhibited greater gains in these grades over time. Moreover, while students in CHAMPS and their peers reported similar levels of multiple aspects of character at the beginning of the school year, by the end of CHAMPS students reported higher levels of these domains. As in previous years, students in CHAMPS also exhibited gains in their musical performance.

In this report we present the methods we employed to address the questions above and the results yielded by them. We conclude with an interpretation of these results and review their implications for our evaluation of the next iteration of CHAMPS.

## Methods

*Participants.* Students in grades 3 through 8 were invited to join CHAMPS at the beginning of the 2017-18 school year. The families of 36 students enrolled in CHAMPS provided permission for their child to participate in our evaluation, as did the families of 34 students who were not enrolled in CHAMPS. Moreover, the partner school provided academic data for all students in grades 3 through 8, which included the 36 students enrolled in CHAMPS and 214 of their peers.

The distribution of permitted students by grade in school is reported in Table 1. As is reported in the table, there was a difference in the group as a function of grade in school, with older students under-represented in CHAMPS. Given that older students may be graded more stringently than their younger peers, we excluded students in grades 7 and 8 from all analyses of academic achievement. With these students excluded, there was no significant difference in the distribution of students by grade in school according to group ( $X^2(3) = 3.01, p = .389$ ). Note that unlike in previous years, students' gender and race/ethnicity were not reported by the school and therefore could not be included in our analyses.

**Table 1**

Grade	Overall (N = 250)		Comparison (N = 214)		CHAMPS (N = 36)		Difference	
	N	%	N	%	N	%	X <sup>2</sup> (df)	p
- Third	42	16.8	34	15.9	8	22.2	15.7 (5)	.008
- Fourth	42	16.8	37	17.3	5	13.9		
- Fifth	41	16.4	30	14.0	11	30.6		
- Sixth	42	16.8	33	15.4	9	25.0		
- Seventh	43	17.2	42	19.6	1	2.8		
- Eighth	40	16.0	38	17.8	2	5.6		

*Procedures.* At the beginning and the end of the program year students enrolled in CHAMPS completed a set of measures designed to assess aspects of students' character (see below). Students in the comparison group completed these same measures according to the same schedule. At the end of the program year, the primary teaching artists of students in CHAMPS were asked to complete a measure rating each student's engagement in the program. Juries were also collected twice, but the first assessment occurred in late January 2018 rather than at the beginning of the program year, given that some students were new to the program.

*Measures.* Multiple sets of measures were collected for each student:

**Academic achievement** was assessed using first quarter and final grades in English Language Arts, math, science and social studies taken from students' report cards. These grades were assigned on a five-point scale, ranging from A to F (for older students) or "Does Not Meet Minimum Requirements" to "Consistently Strong" (for younger students).

**Character** was assessed through a set of measures designed specifically for students in CHAMPS. Students in CHAMPS and their peers for whom parental consent was obtained were asked to complete measures that assessed their interpersonal skills (Epstein, 2004),



future orientation (Longscan, 1998), and prosocial behavior (Goodman, 2006). In-class teachers of these students also provided information about students' interpersonal skills, as well as their empathy and ability to cooperate with their peers (Gresham & Elliott, 2008).

**Musical growth** was measured using students' jury scores. Jury scores were collected in late January and again in May at the end of the program year. During these juries each child played two short excerpts: a set of scales (excerpt 1) and a piece they were preparing as part of their study in CHAMPS (excerpt 2). Each excerpt was independently rated by two jurors using a measure adapted from the Royal Conservatory of Music's Practical Performance Assessment. Using this measure, jurors rated students' five dimensions of performance (pitch, intonation, rhythm, tone quality, and technique) on a four-point scale ranging from pre-basic to advanced.

The extent to which the two raters agreed on the scores assigned on each dimension for both excerpts in January and May of 2018 are reported in Table 2 below. The values in the table correspond to a statistic (the intraclass correlation) that ranges from 0 (no agreement between raters) to 1.0 (complete agreement).

**Table 2**

	January 2018		May 2018	
	Excerpt 1	Excerpt 2	Excerpt 1	Excerpt 2
Pitch	1.0	.71	.92	.92
Intonation	.12	.64	.77	.83
Rhythm	.74	.72	.73	.89
Tone	.62	.78	.67	.83
Technique	.76	.82	.79	.83

Consistent with the approach taken in the National Study of El Sistema-Inspired Programs, composite scores were calculated in the fall and spring as the average of the cross-rater scores for pitch, rhythm, and tone.

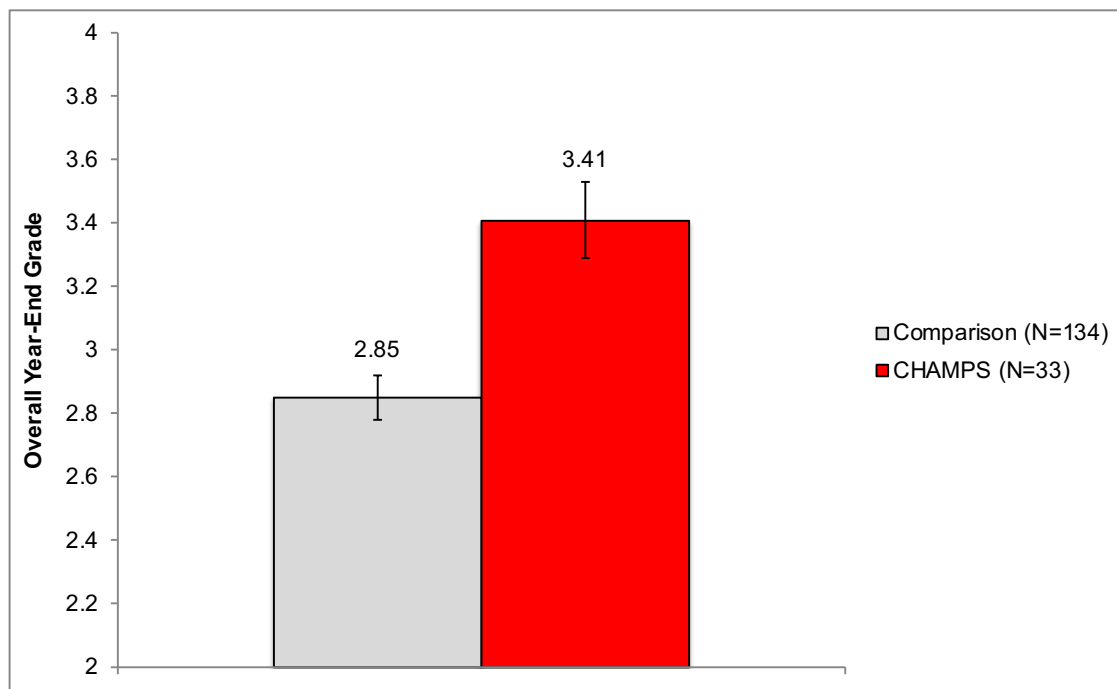
**Program engagement** was measured using a 14-item questionnaire completed by CHAMPS students' primary teaching artist near the end of the program year. Engagement measures were completed for 27 CHAMPS students. Teachers' responses on these questions were internally consistent ( $\alpha = .74$ ), and therefore a mean engagement score was calculated for each student as the mean of responses across the 14 items at each point in time.

## Results

*Do students enrolled in CHAMPS exhibit higher levels of academic achievement?*

Academic grades were available for 167 students in grades 3 to 6, 33 of whom were in CHAMPS. On average, students enrolled in CHAMPS earned significantly higher grades than their peers (see Figure 1;  $t(165) = 3.51, p = .001$ ). On a five-point scale where 4 corresponds to an A and 0 to an F, students in CHAMPS earned an overall grade of 3.41 (half-way between an A and a B) for the 2017-18 academic year across math, English language arts (ELA), science and social studies. Students who were not in CHAMPS earned, on average, an overall grade of 2.85 (a B-minus) across the academic year for these same subjects.

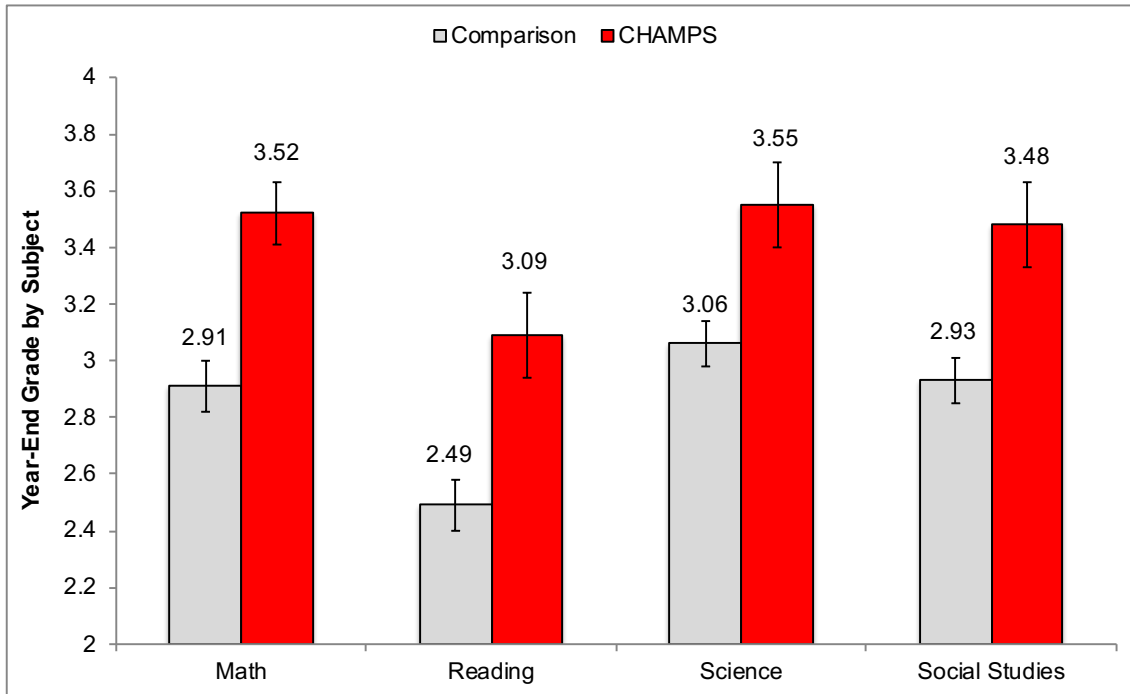
**Figure 1.** Overall Year-End Grade



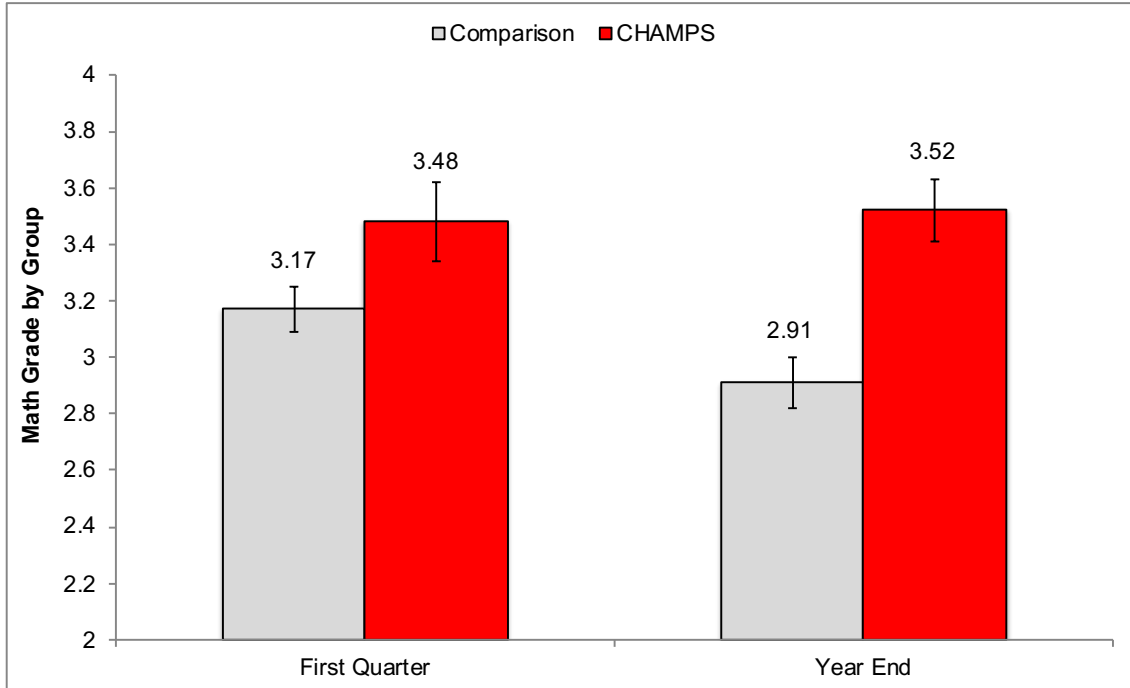
A similar pattern was observed when looking at grades for the academic year by subject. Students in CHAMPS earned significantly higher grades in each subject examined: math, ELA, science, and social studies (see Figure 2).<sup>1</sup> Although comparable differences were observed in first quarter grades for all subjects, in the case of math this difference became larger over the academic year. As can be seen in Figure 3, students in CHAMPS maintained high grades in math over the course of the year, while their peers exhibited a significant decrease in scores ( $t(131) = -3.56, p = .001$ ).

<sup>1</sup> The results of the comparisons of year-end subject grades are as follows: math ( $t(165) = 3.34, p = .001$ ), ELA ( $t(165) = 3.07, p = .003$ ), science ( $t(165) = 2.77, p = .006$ ), and social studies ( $t(165) = 2.81, p = .006$ ).

**Figure 2. Year-End Grades by Subject**

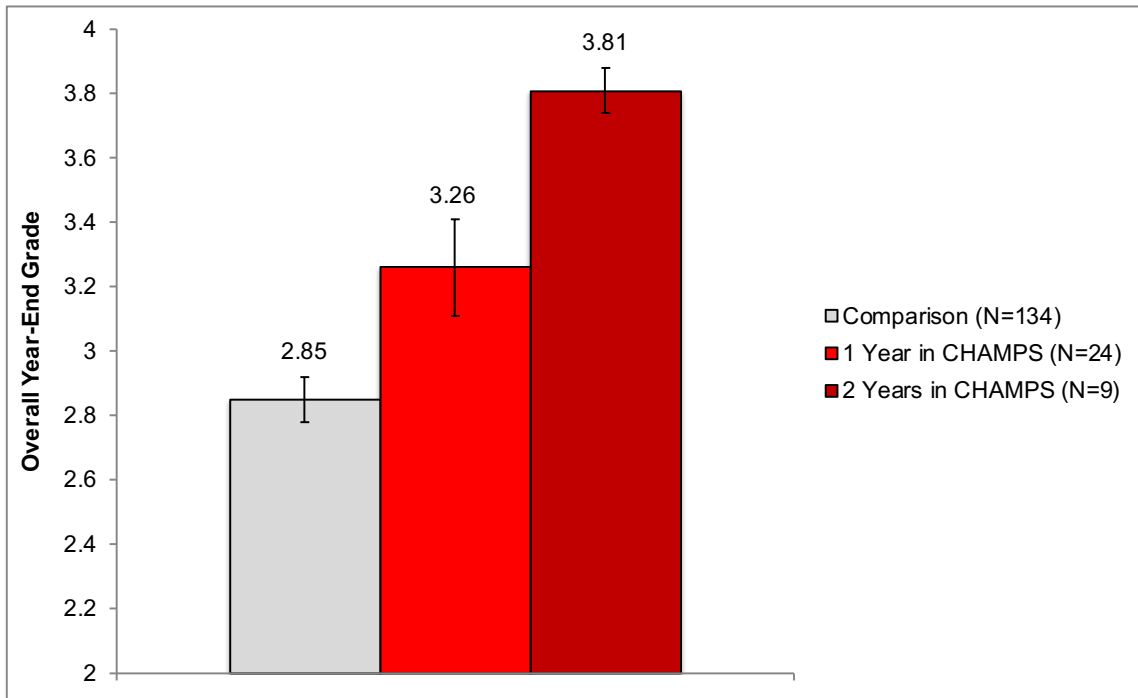


**Figure 3. First Quarter and Year-End Math Grades**



There were also significant differences in grades as a function of the number of years students were enrolled in CHAMPS ( $F(2, 247) = 9.83, p < .001$ ). Students who were in CHAMPS for two years earned higher grades than their peers who had been in CHAMPS for one year, and students who had been in CHAMPS for one year earned higher grades than their peers who were not in the program. While Figure 4 displays this pattern of results for overall year-end grades, similar patterns were observed in each subject area.

**Figure 4.** Overall Year-End Grades by Years of Enrollment in CHAMPS



*Do students in CHAMPS display improved character?*

As noted above, both students and their in-class teachers were asked to complete measures of students' character. Table 3 summarizes these measures for all permitted students.

**Table 3**

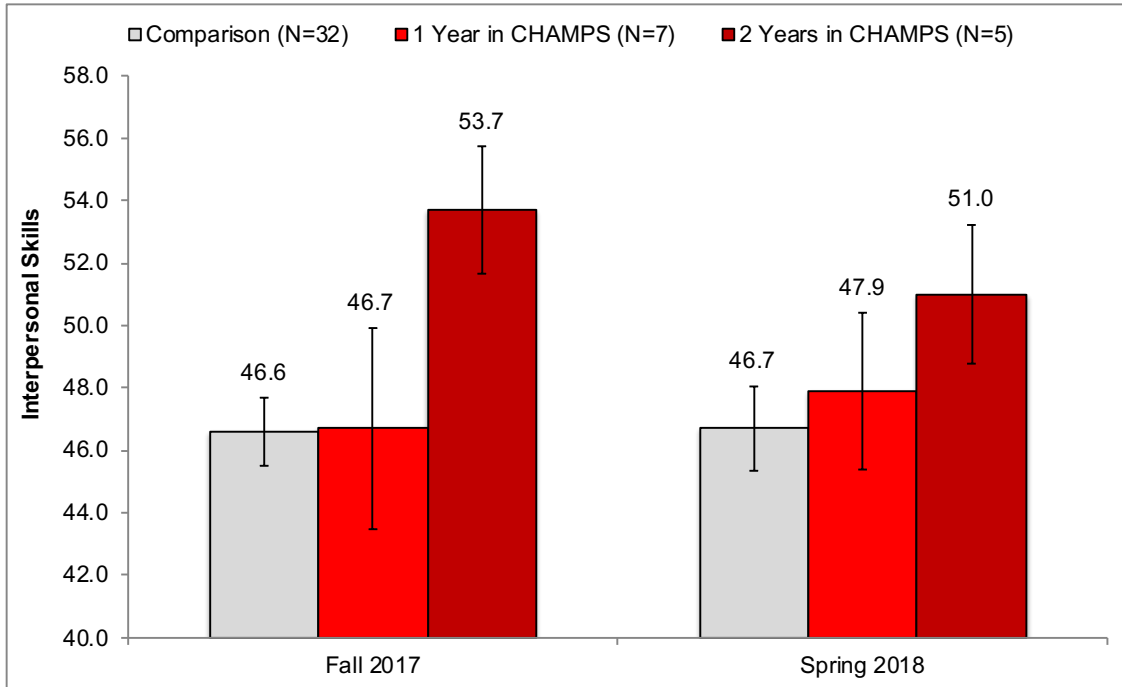
Child Measures								
Domain	Time	N	M	SD	Range		Skew	
					Min.	Max	G <sub>1</sub>	SE
Interpersonal Skills	Fall '17	60 (85.7%)	48.1	7.48	25.0	60.0	-0.52	0.31
	Spring '18	47 (67.1%)	47.3	7.03	32.0	60.0	-0.42	0.35
Future Orientation	Fall '17	63 (90.0%)	3.37	0.34	2.57	4.00	-0.32	0.30
	Spring '18	47 (67.1%)	3.43	0.36	2.43	4.00	-0.82	0.35
Personal Strengths	Fall '17	62 (88.6%)	3.30	0.45	2.10	3.95	-0.56	0.30
	Spring '18	44 (62.9%)	3.20	0.48	2.20	3.90	-0.39	0.36
Teacher Measures								
Domain	Time	N	M	SD	Range		Skew	
					Min.	Max	G <sub>1</sub>	SE
Interpersonal Skills	Fall '17	65 (92.9%)	3.28	0.74	1.73	4.00	-0.56	0.30
	Spring '18	51 (72.9%)	3.28	0.70	1.73	4.00	-0.63	0.33
Cooperation	Fall '17	65 (92.9%)	3.17	0.77	1.67	4.00	-0.33	0.30
	Spring '18	52 (74.3%)	3.18	0.79	1.67	4.00	-0.34	0.33
Empathy	Fall '17	65 (92.9%)	3.18	0.91	1.00	4.00	-0.74	0.30
	Spring '18	52 (74.3%)	3.24	0.74	1.50	4.00	-0.66	0.33

As the data in Table 3 make clear, fewer completed measures were returned in the spring of 2018 than in the fall of 2017. Unfortunately, measures were missing at a disproportionate rate among students in CHAMPS. As such, we limited our analyses to students who had measures for both fall 2017 and spring 2018.

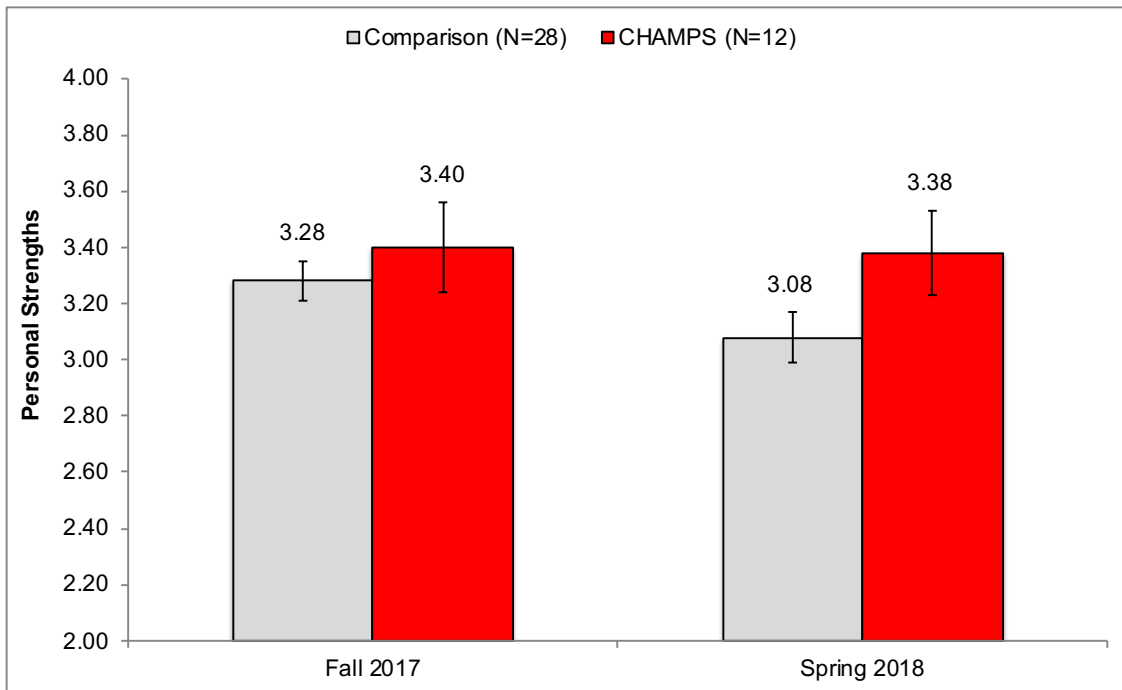
While no differences were observed between CHAMPS students and their peers in future orientation as indexed by the child measure, differences were observed for interpersonal skills and personal strengths. Students in CHAMPS exhibited higher levels of interpersonal skills in fall 2017 and spring 2018. However, as can be seen in Figure 5, this difference was attributable almost entirely to differences between students who had been in CHAMPS for two years and their peers. Students in CHAMPS also displayed higher levels of personal strengths in fall 2017 and spring 2018 (see Figure 6). However, in this case the difference

between groups grew from the beginning to the end of the year and was not attributable to either subset of CHAMPS students.

**Figure 5.** Fall 2017 and Spring 2018 Interpersonal Skills: Student Measures

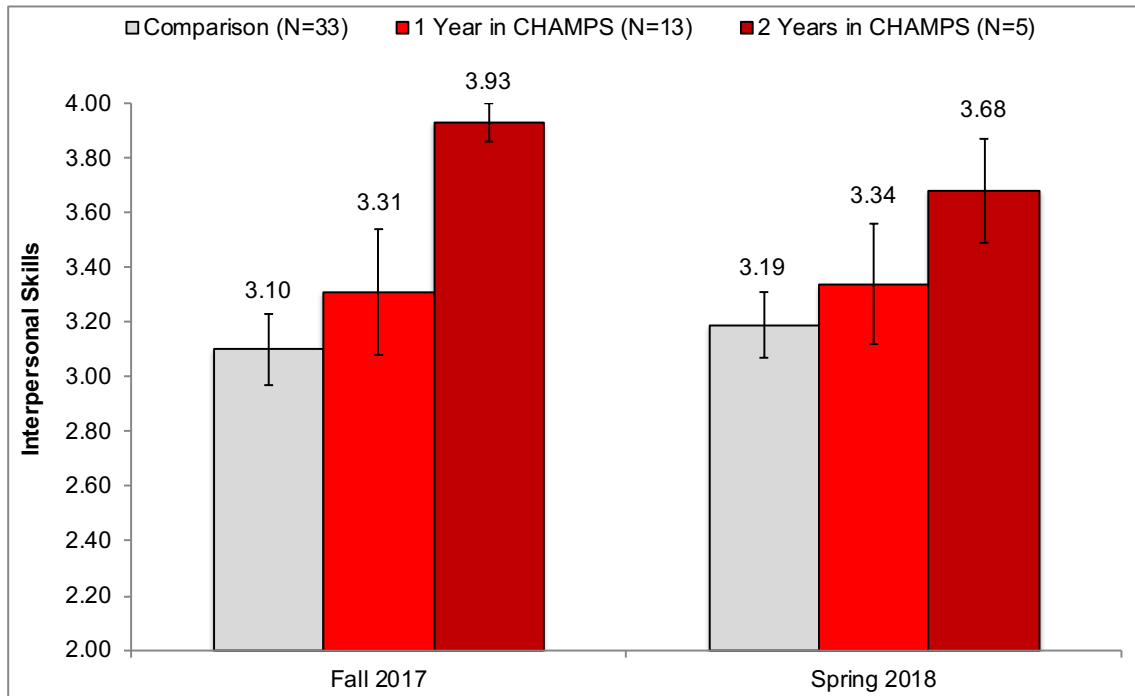


**Figure 6.** Fall 2017 and Spring 2018 Personal Strengths: Student Measures



Students' in-class teachers also rated students in CHAMPS as exhibiting higher levels of interpersonal skills in both fall 2017 and spring 2018. Although there was a more pronounced difference between students in CHAMPS for one year and their peers than in the case of student-reported interpersonal skills, the largest difference was again observed between students in CHAMPS for two years and their peers (see Figure 7). Similar patterns of results were observed for teacher ratings of empathy and cooperation, though in the case of empathy the difference between students in CHAMPS and their peers decreased slightly over time, while for cooperation it became somewhat larger.

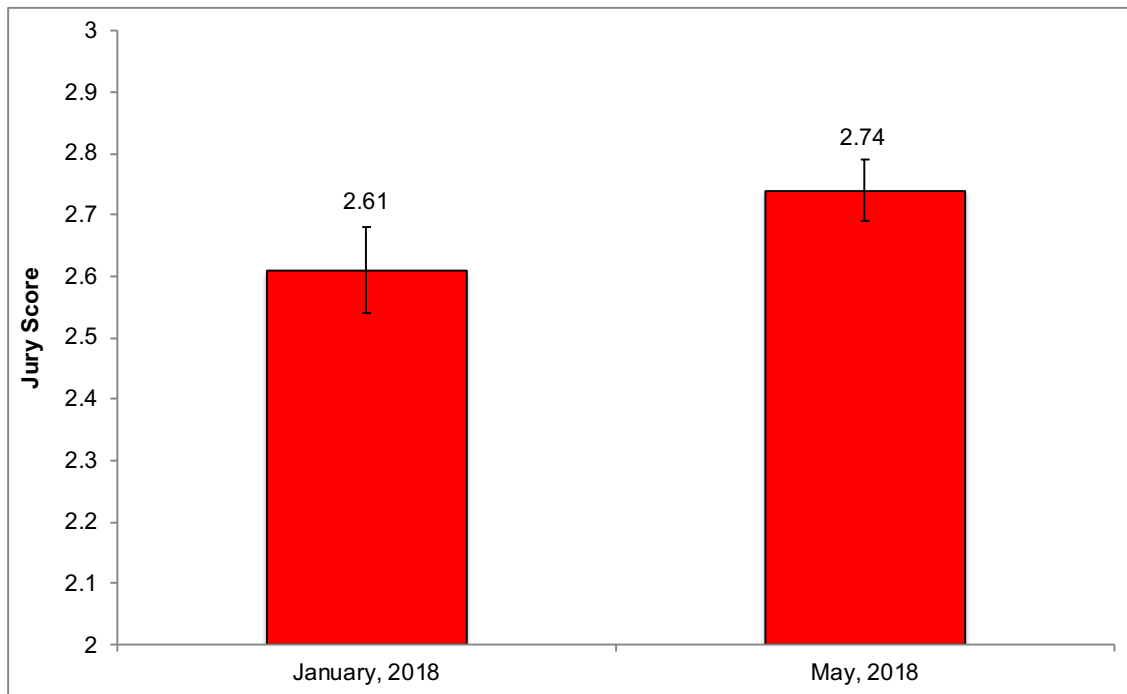
**Figure 7.** Fall 2017 and Spring 2018 Interpersonal Skills: Teacher Measures



*Do students in CHAMPS exhibit musical growth over the course of the program year?*

Students' musical growth was assessed through juried assessments of their playing in fall 2017 and spring 2018. Thirty students completed both juries; of these, 25 were rated on the first excerpt in the fall of 2017 and the spring of 2018. Twenty-five students were also rated on the second excerpt two times. In contrast to previous years, students' overall level of proficiency did not increase over the course of the program year when proficiency was defined as the overall scores across the two excerpts. Rather, students exhibited an increase in their proficiency as assessed by the first excerpt that approached statistical significance (see Figure 8), but not as assessed by excerpt 2.

**Figure 8.** Change in Jury Scores over Time for Excerpt 1



Examining patterns of change by the number of years students had been in CHAMPS revealed that while students who had been in the program for one or two years exhibited growth on excerpt 1, minimal growth on excerpt 2 was observed for students who had been in the program for one year, and students who had been in the program for two years exhibited a modest decline in scores.



## Discussion

---

Our report was designed to answer three questions. Here we restate each question and discuss what our results revealed about each:

*Do students enrolled in CHAMPS exhibit higher levels of academic achievement?*

Students in CHAMPS exhibited significantly higher overall year-end grades than their peers (overall grades were calculated as the average of grades in math, English language arts (ELA), science, and social studies). On average, students in CHAMPS ended the year with an overall grade halfway between an A and a B, whereas their peers ended the year with a B-minus. This pattern of higher grades was also observed for year-end grades in each subject. Just as important, students in CHAMPS maintained their high levels of performance in math over the course of the year, whereas their peers exhibited significant losses in their math grades.

Not only did students who were enrolled in CHAMPS for one year earned significantly higher year-end grades than their peers who were not enrolled, but students who were enrolled in the program for two years earned significantly higher grades than their peers who were enrolled for one year. As noted above, students who were not in CHAMPS ended the academic year with an overall grade that approximated a B-minus. Students who were in CHAMPS for two years ended the year with an overall grade of 3.81 on a scale where a value of 4.0 corresponds to “straight A’s.”

*Do students in CHAMPS display improved character?*

Students enrolled in CHAMPS reported higher levels of interpersonal skills and personal strengths than their peers. Students’ in-class teachers also rated students in CHAMPS as exhibiting higher levels of interpersonal skills. However, the difference in interpersonal skills between CHAMPS students and their peers, whether rated by students or their teachers, was attributable to the difference between students who had been enrolled in CHAMPS for two years and their peers.

In 2016-17 we also observed that students in CHAMPS reported higher levels of interpersonal skills than their peers. Here we have replicated those results, but expanded them to include teacher ratings of students’ interpersonal skills as well. Moreover, as in 2015-16 and 2016-17, we have revealed a relation between students’ depth of engagement in the program (as indexed by years enrolled) and their interpersonal skills, such that students enrolled in the program for additional years exhibit higher skill levels.

*Do students in CHAMPS exhibit musical growth over the course of the program year?*

Musical growth was defined as growth in students’ performance as rated by their juried assessments. Although students’ overall level of proficiency did not increase (as it had in previous years), students did demonstrate improvement in one of the two excerpts, which corresponded to scales, but not in the second excerpt, which was a piece on which students

were working as part of the program. The degree of improvement on the first excerpt approached but did not achieve statistical significance.

It is important to note that at the end of the program year when the second jury was administered students' overall scores was approximately 2.5 on a three-point scale with a maximum value of 3 (where 3 = "proficient"). Students' scores when the first jury was administered were similar, which underscores two points: first, at both assessments students' scores were very high in the absolute terms of the scale; second, the fact that scores were as high as they were at the first assessment may have constrained additional improvement.

### *Implications and Future Directions*

In every year of our evaluation, including the current one, we have found that students enrolled in CHAMPS exhibited higher academic grades than their peers. We have also found that students in CHAMPS exhibit larger increases in grades than their peers, and that students who have been in CHAMPS for longer periods of time exhibit higher grades than students enrolled for shorter periods. Similar results have been found when examining different dimensions of students' character.

The question these results raise is whether CHAMPS *causes* these differences among students. In other words, do students become more academically proficient through their participation in CHAMPS, or do more academically-proficient students elect to participate in the program? The fact that CHAMPS students exhibit larger increases in grades over time, or that students in CHAMPS for additional years exhibit higher grades than their peers constitutes more compelling evidence of the program's impact than simply comparing grades across groups at a single point in time. And yet even these findings cannot rule out alternative explanations for these findings, namely, that more diligent students choose to join and continue in CHAMPS.

The only way to rule out these explanations would be to employ a randomized-control design (RCD), which would involve assigning interested students to participate in CHAMPS at random or to delay participation for some period of time. A combination of under-enrollment and shifting school administrations has prevented us from pursuing this strategy. But to whatever extent this strategy would have been feasible to implement in the prior years, the impending change in the Orchestra's programming for under-represented and under-served youth preclude adopting an RCD approach in the future.

An approach that is at once more practical and better aligned to the Orchestra's future programming would be to accept, *a priori*, that the opportunity to seriously study music is of benefit to children's development across a host of domains. This removes from us the burden of having to demonstrate what others have already found to be the case (e.g., that the serious study of music causes higher levels of academic achievement; Holochwost et al., 2017) and allows us to re-allocate our resources to focus on the *process* by which that occurs among under-represented and under-served students. This catalyzes a range of new questions that include:

- Why do some under-served and under-represented students persist in their studies of music, while others do not?
- What can the Orchestra do to support persistence among under-served and under-represented students?
- Does the opportunity to persist in serious musical study narrow the gap in musical proficiency between under-served and under-represented students and their more affluent peers?
- How does this opportunity change how students see themselves as musicians and as agentic individuals with prospects for the future?
- How does this opportunity change student's perceptions of who classical music is for and whom organizations that present that music serve?

The answers to these questions have implications not only for the Orchestra's program design, but also the field of community-based music education and the future of classical music as a vital art form that is relevant to a diverse population.

## Works Cited

---

- Epstein, M. H. (2004). *BERS-2: Behavioral and Emotional Rating Scale*. Austin, TX: Pro-Ed.
- Goodman, R. (2006). *The Strengths and Difficulties Questionnaire*. Available online at: [www.sdqinfo.com](http://www.sdqinfo.com).
- Gresham, F., & Elliott, S. N. (2008). *Social Skills Improvement System (SSIS)*. San Antonio, TX: Pearson Assessments.
- Holochwost, S. J., Propper, C. B., Wolf, D. P., Willoughby, M. T., Fisher, K. R., Kolacz, J., Volpe, V. V., & Jaffee, S. R. (2017). Music education, academic achievement, and executive functions. *Psychology of Aesthetics, Creativity, and the Arts, 11*, 146-166.
- Longscan. (1998). *Future Events Questionnaire*. Chapel Hill, NC: The Longitudinal Studies of Child Abuse and Neglect.