

BUILDING STRENGTHS, BUFFERING RISK

Evaluating the Effects of El Sistema-Inspired
Music Programs in the United States



Drs. Steven J. Holochwost, Dennie Palmer Wolf, and Judith Hill Bose, Principal Investigators

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SECTION 1: CONTEXT

The orchestras and choirs are much more than artistic studies.
They are schools of social life.
To sing and to play together is to intimately coexist.
—José Antonio Abreu

The Promise of El Sistema-inspired Music Programs

When José Antonio Abreu gathered a handful of instrumentalists to play together in a parking garage in Caracas, Venezuela in 1975 – a vision and a social movement were simultaneously born. As this original ensemble played their first performance later in that same year, Abreu told them, “You are the founding members of the Venezuelan System of Youth Orchestras. You are pioneers of a great undertaking (Booth & Tunstall, 2016).”

El Sistema-inspired programs throughout the world are a continuation of this great undertaking that began in Venezuela, and they represent a serious investment in young people and the communities to which they will contribute. Based on personal reports of successes in its home country and throughout the world (Tunstall, 2012)ⁱⁱ, and on early research findings from individual sites and programsⁱⁱⁱ, there is reason to hope that high-quality and sustained El Sistema-inspired programs can:

- Acknowledge and build on the aspirations and assets of children and families
- Buffer the effects of risks associated with poverty
- Demonstrate how engaging with musical learning fuels individual growth in other areas of development and learning

Photo courtesy of San Diego Youth Symphony Community Opus Project

Why Research the Impact of El Sistema-inspired Programs?

To keep the work alive, the field needs strong evidence that the promised musical growth and other forms of development actually occur. Program directors, teaching artists, funders, and supporters need to be able to answer questions such as, “What are the range of benefits that come from participating in an El Sistema-inspired program? When do these benefits become evident? Do all children participating in these programs realize these benefits equally? And do benefits in one area spread to other areas of children’s lives?”

In an effort to prevent the claims for El Sistema-inspired programs from outpacing the evidence for their benefits, the **Buck Family Foundation** issued a call for a collective impact study of programs across the United States. In answer to this call, **Longy School of Music of Bard College** and the arts research firm **WolfBrown** formed a partnership to conduct the first multi-year, multi-site study. Based on its interest in the vitality and diversity of American orchestras, the **Andrew W. Mellon Foundation** contributed additional funding to investigate how professional and youth orchestras were supporting El Sistema-inspired programming.

Students in El Sistema-inspired programs in the United States mainly come from less affluent communities with limited access to a “well-rounded education” that includes the arts (Every Student Succeeds Act, 2015)^v. The schools they attend are less likely to employ full-time arts educators (Parsad & Spiegelman, 2012)^v, and their families may not have the resources to pay for out-of-school arts instruction (Duncan & Murnane, 2015)^{vi}. As a result, these children run the risk of: 1) never learning the creative skills unique to an arts education; 2) missing out on developing the personal and interpersonal skills that music may foster (e.g., Eerola & Eerola, 2014; Scott, 1992)^{vii}, and therefore 3) not having the opportunity to bring these skills to other areas of their lives, including school-based learning (Zins et al., 2004)^{viii}.

Thus, studying the effects of El Sistema-inspired music programs allows us not only to understand the El Sistema field in a more accurate and nuanced light, but it also opens up the possibility of understanding how participating in making live music might play a role in addressing the inequalities that many children and families face.



SECTION 2: THE EVALUATION

Guiding Questions

Our study was designed to measure the benefits of participating in an El Sistema-inspired music program, with an emphasis on how multiple years of participation might benefit students’ development. We focused on students’ musical growth as the most immediate outcome of participation, on the grounds that effects in other aspects of learning depend on students experiencing themselves as competent learners and contributors in music. We sought to address three guiding questions in particular:

- Do young people participating in El Sistema-inspired programs exhibit growth as musicians?
- Do they exhibit higher levels of socioemotional skills in school, compared to their peers?
- Do they exhibit more rapid growth in these skills, compared to their peers?

The Design of the Collective Impact Study

Planning and site selection for the study began in 2013. In the 2014-15 school year the research team worked with participating sites and Longy Master of Arts in Teaching (MAT) candidates to pilot and refine measures of musical growth and socioemotional skills. In the 2015-16 and 2016-17 school years the research team collected two years of data from 764 third to fifth grade students, who participated in 12 programs that represented diverse geographical locations and varied program structures.

Working with this diversity of programs allows us to generalize our findings to a variety of United States El Sistema-inspired programs, while its size enhances our confidence that these findings could be replicated with other groups or programs.

To address our guiding questions we collected three streams of data:

- **Survey measures:** Two groups of students—those in an El Sistema-inspired program and a comparison group of their peers drawn from the same grades, classrooms, and schools—were asked to complete a booklet of survey measures about their socioemotional learning in the context of school. These measures were collected at the beginning and end of the 2015-16 or 2016-17 academic year, and covered multiple areas of socioemotional development, including cooperation, empathy, academic behaviors, peer relations, academic self-concept, growth mindset, school engagement, self-efficacy, and perseverance. Students in El Sistema-inspired programs also completed a second booklet that asked similar questions, but were modified to reflect socioemotional development in the context of their music program.
- **Musical assessments:** Students in a music program also participated in a juried assessment of their playing. At the beginning and end of the program year, students played two excerpts for a pair of trained jurors: one was an excerpt from their program's repertoire, and the other was an excerpt from the Royal Conservatory of Music Development Program. Students' playing was rated on three dimensions using a rubric adapted from the National Association for Music Education. Jurists were faculty members of each program's site who trained to an acceptable degree of inter-rater reliability with a series of online training videos.
- **Grades:** Researchers collected English Language Arts and mathematics grades from program students and their peers.



SECTION 3: A SUMMARY OF RESULTS

The first set of results address our first research question: **Do young people participating in El Sistema-inspired programs exhibit growth as musicians?** While much of an El Sistema student's experience is centered in ensemble learning, it is important to establish that students are also developing as individual musicians. As displayed in Figure 1, our results indicated that, on average, students exhibited a degree of musical growth that was not only statistically significant ($p < .0001$), but substantial, in terms of the effect size ($d=0.57$) which researchers commonly regard as a medium-to-large effect.

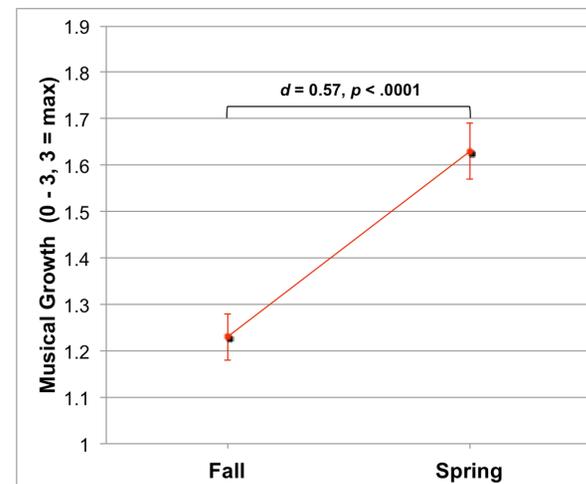


Figure 1. Students in an El Sistema-inspired program for any number of years exhibit significant musical growth.

Within this overall pattern of growth students show smaller degrees of growth as they advance in their studies. As can be seen in Figure 2, as students continued in their programs for additional years, they began each successive year from a place of greater musical accomplishment. By their third year of study, their rate of musical growth began to level out – a trend that we may well expect to see as musical progress becomes more challenging. In addition, our scale was designed to measure progress on the more fundamental aspects of music learning, such as pitch and rhythmic accuracy. A new frontier for our work, in collaboration with the field, is to develop tools that can capture progress in more advanced areas like musicianship and expression.

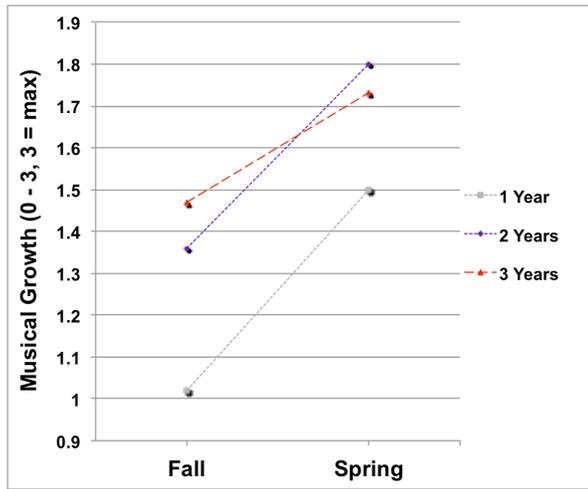


Figure 2. Students who continue in an El Sistema-inspired program for two or three years continue to exhibit significant musical growth.

There are at least two important points embedded in this finding. First, programs must think about how to keep third-year and beyond students engaged and challenged, even as their growth may be less dramatic. Second, it is important to note that within these aggregate findings of musical growth, there is variation in the rates of musical growth across programs and the degree of variation is sometimes dramatic. In Figure 3, each separate line represents a year of musical growth at a **single site**.

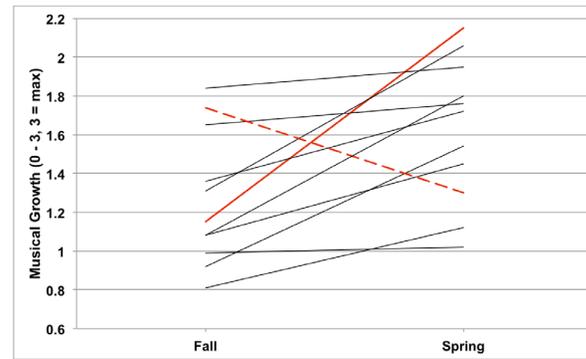


Figure 3. There is significant variability in the degree of musical growth exhibited by students enrolled in different El Sistema-inspired programs.

In addition to progressing in their ability to play their instrument, students exhibited other forms of development as musicians. For example, students enrolled in El Sistema-inspired programs reported significantly higher levels of growth mindset at the end of the program year than at its outset ($p = .004$, $d = 0.32$; see Figure 4), (Growth mindset refers to the belief that one's capacities – such as intelligence or musical ability – are due in large part to one's actions and efforts rather than to a fixed trait or talent). This result suggests that students' sense of what they can accomplish, with focused work and attention to improving their skills, blossoms over a year of instruction. This is an important finding, as there is increasing evidence that growth mindset may be a vital precursor or ingredient in both school and life success^{ix}.

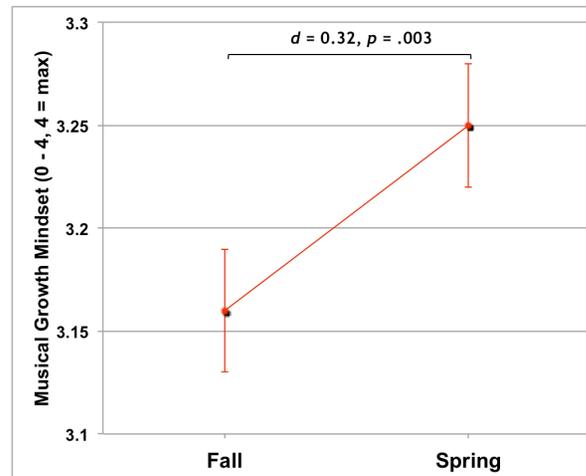


Figure 4. Students in an El Sistema-inspired program for any number of years exhibit significant gains in their musical growth mindset.

But, **do students in El Sistema-inspired programs exhibit higher levels of socioemotional skills in school, compared to their peers?** As can be seen in Figure 5, young people who participate for two or more years outdistance their peers in developing growth mindset.

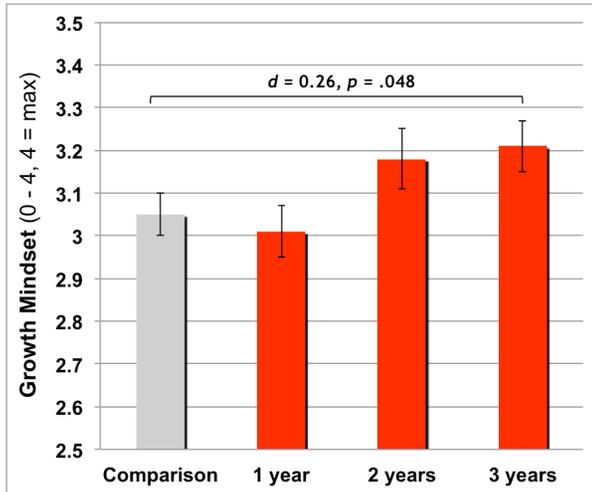


Figure 5. Students who continue in an El Sistema-inspired program for three years exhibit significantly higher levels of growth mindset than their peers.

While these findings for growth mindset were observed for both boys and girls, program participation disproportionately benefited boys in a number of other areas of socioemotional development. For example, boys in El Sistema-inspired programs for two or more years exhibited significantly higher levels of perseverance than their male peers not enrolled in making music (see Figure 6). For girls, there was no relation between program participation and perseverance.

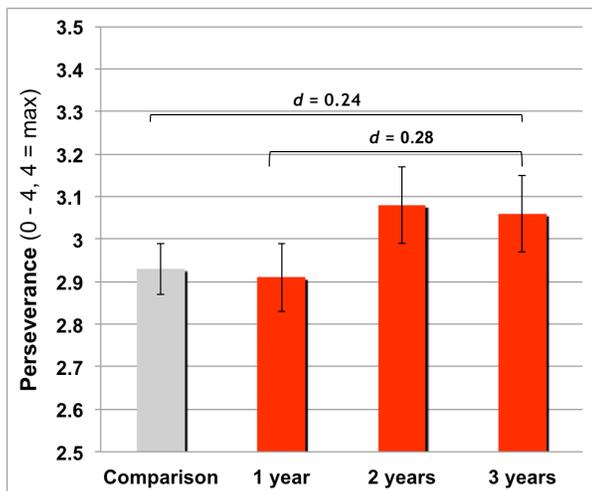


Figure 6. Boys who continue in an El Sistema-inspired program for two or three years exhibit significantly higher levels of perseverance than their peers.

While these findings about different levels of socioemotional development are promising, they motivated a third and final research question: **Do young people in El Sistema-inspired programs exhibit more rapid development in their mindset to learning outside of their music program as compared to their peers?** As can be seen in Figure 7, this was the case, though students have to participate for two or more years before this differential rate of growth occurs. Together, these findings raise the possibility that the benefits of musical instruction are conferred to the proximal domain of music after a year, but require two years to transfer to the more distal school context.

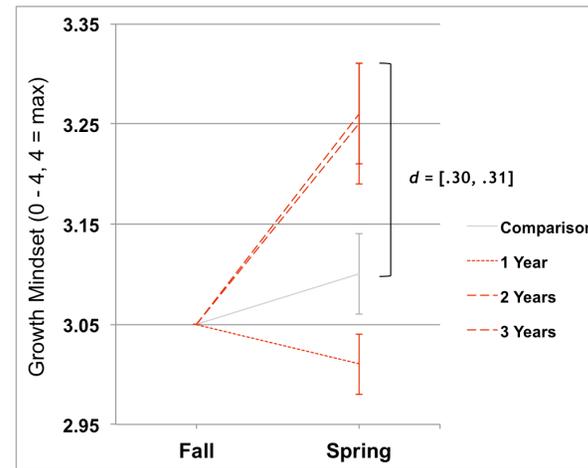


Figure 7. Students in an El Sistema-inspired program for two or three years exhibit significantly larger gains in their growth mindset.

As was the case for comparisons at a single point in time, boys exhibited higher rates of growth for a number of other domains of socioemotional growth. These included cooperation (Figure 8) and perseverance (Figure 9).

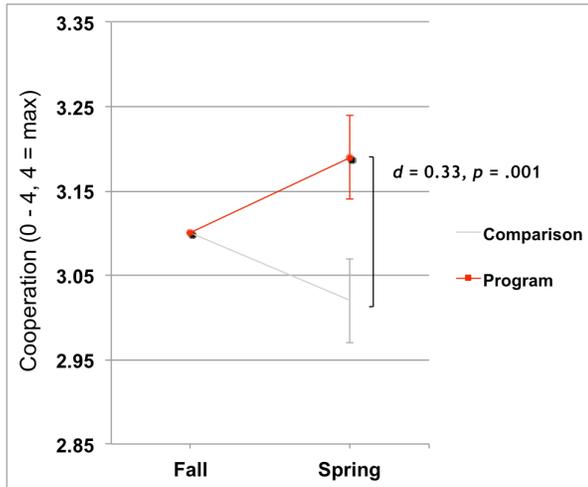
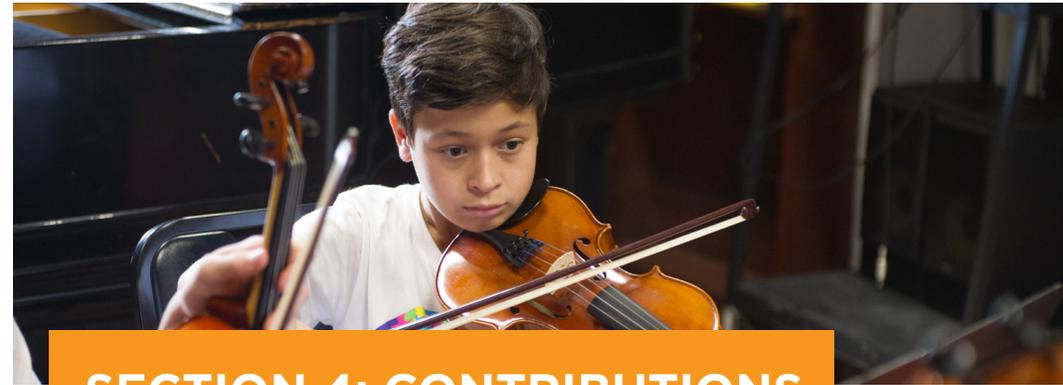


Figure 8. Boys in an El Sistema-inspired program for any number of years exhibit significantly larger growth in cooperation than their male peers.



SECTION 4: CONTRIBUTIONS TO THE WIDER FIELD

Implications for U.S. El Sistema-inspired programs

In the end, research should provoke reflection, further learning, and productive change. We, the research team, pose the following questions as a starting point for considering what these findings might mean for the students, families, and the El Sistema-inspired field of music learning and youth development.

Is there a threshold for experiencing the benefits of El Sistema-inspired learning?

Findings from our study, as well as recent varied studies of individual El Sistema-inspired sites (Habibi et al., 2016; Holochwost et al., 2017; Ilari et al., 2016)^x, mark two to three years of participating in these music programs as a significant threshold in terms of students' musical, socioemotional, and cognitive growth. What are the implications for us as practitioners and program designers? Does it change any of our thinking about program retention? About key experiences needed in the first year of student participation in a program? What other logistical and pedagogical aspects of El Sistema-inspired programs can be informed by this consistent threshold finding?

What does the variability in program findings tell us?

Different programs fostered different types and rates of growth. This indicates that El Sistema-inspired programs can affect multiple areas of children's development. On the other hand, it also suggests that having a positive impact is not automatic, but requires careful program design and implementation, as well as thoughtful faculty hiring and ongoing faculty development to achieve those outcomes. How can sites share their best practices around these endeavors rather than working in

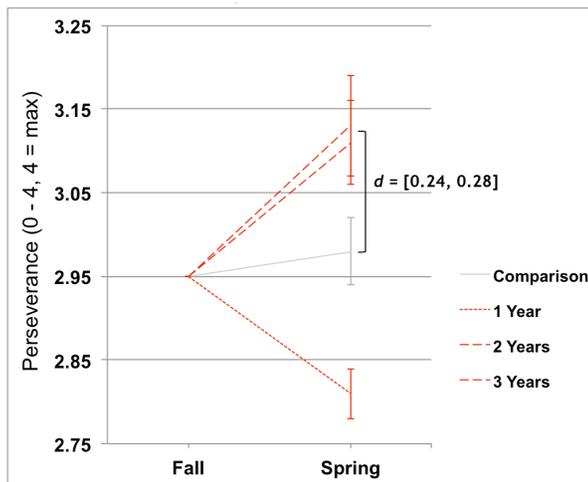


Figure 9. Boys who continue in an El Sistema-inspired program for two or three years exhibit significantly larger growth in perseverance than their male peers.

isolation?

What do our gender findings tell us about the impact of programs and new areas of research?

Our study indicates that there are strong gains for boys who participate. This correlates with findings from the recent study completed in Venezuela (Aleman et al., 2016)^{xi}. What does this imply about the power of highly embodied and performative forms of learning for young men who may struggle sitting still and silent in classrooms? What are the implications for strengthening programs so that boys persist? In earlier WolfBrown research on an El Sistema-inspired program^{xii}, girls showed measureable gains in areas like leadership. What research should the El Sistema field undertake to further understand the interaction between gender and El-Sistema programs? What are the implications for program design?

Why is a collective impact framework powerful for the future of El Sistema-inspired work?

This study involved graduate students, teaching artists, and staff from multiple sites across the county as collaborative researchers. What implications does this hold for further collaboration among El Sistema-inspired sites? What could we learn about the impact of programs on families if sites banded together to investigate? What could the field learn about sustaining teaching artists so that they persist, becoming accomplished pedagogues and a next generation of program leaders and researchers? Finally, how can this study be a catalyst for the field to continue to leverage the power of aggregated data to support our understanding of El Sistema-inspired education?



SECTION 5: APPENDIX

Music can change the world because it can change people.
—Bono, U2

Participating Sites

Conservatory Lab Charter School, Boston, MA

Incredible Children's Art Network, Santa Barbara, CA

Kalamazoo Kids in Tune, Kalamazoo, MI

Kidznotes, Durham, NC

New Jersey Symphony Orchestra CHAMPS, Newark, NJ

OrchKids, Baltimore, MD

People's Music School Youth Orchestras, Chicago, IL

Play on Philly!, Philadelphia, PA

Reno Philharmonic Association Kids, Reno, NV

San Diego Youth Symphony Opus Project, San Diego, CA

Yakima Music en Acción, Yakima, WA

Youth Orchestra of St. Luke's, New York, NY

Research Fellows - Graduates of the Longy MAT, Los Angeles, CA

Angelica Cortez

Jennifer Johnson

All measures are available for download and further use at:

www.wolfbrown.com/national-el-sistema-study

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Karen Zorn, President, Longy School of Music of Bard College

Study Sample Composition

- Data were collected from 764 students.
- 55% were female
- 26% were African American and 38% were Latino/Hispanic
- 383 students (50%) were not in a program.
- 381 students (50%) were, and had been enrolled 1 to 3 years at the end of their first year of data collection

The **School Booklet Measures** were completed by all students (program and comparison) and administered at the beginning and end of each academic year. They assessed the following domains of socioemotional development:

- Cooperation (Gresham, F., & Elliott, S. N. (2008). *Social Skills Improvement System (SSIS)*. San Antonio, TX: Pearson Assessments).
- Empathy (Gresham & Elliot, 2008).
- Academic Behaviors (Farrington, C. A. (2012). *Becoming Effective Learners - Student Survey (BEL-S)*. Chicago: University of Chicago).
- Peer relations (Marsh, H. W. (1992). *Self Description Questionnaire (SDQ) I: A theoretical and empirical basis for the measurement of multiple dimensions of preadolescent self- concept*. An interim test manual and research monograph. Macarthur, New South Wales, Australia: University of Western Sydney).
- Academic self-concept (Marsh, 1992).
- Growth mindset (Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). *Implicit theories of intelligence predict achievement across an adolescent transition*. *Child Development*, 78, 246-263).

- School engagement (Voelkl, K. E. (1996). *Measuring students' identification with school*. *Educational and Psychological Measurement*, 56, 760-770).
- Self efficacy (Midgley, C., et al. (2000). *Manual for the Patterns of Adaptive Learning Scales*. Ann Arbor: University of Michigan).
- Perseverance (Duckworth, A. L., & Quinn, P. D. (2009). *Development and validation of the Short Grit Scale (Grit-S)*. *Journal of Personality Assessment*, 91, 166-174).

The **Music Booklet Measures** were completed by program students only and administered at the beginning and end of each program year. The same domains were assessed, but items referenced the El Sistema-inspired music program specifically.

The **Music Performance (Jury) Assessment** consisted of two excerpts: one excerpt, leveled by number of years playing an instrument, from the Royal Conservatory of Music Development Program (required) and one from the site's repertoire (chosen by staff at each site). Two raters evaluated each student's individual playing using a rubric adapted from the National Association for Music Education (NAfME) and the following dimensions were assessed:

- Pitch
- Rhythm
- Tone

Raters were trained to an acceptable level of inter-rater reliability ($\Phi > .70$) using on line videos and these levels were maintained across excerpts (mean ICC $> .60$).

To support understanding of **Academic Growth**, grades were collected from both comparison and program students. Classroom teachers filled out surveys that reported on behaviors seen in school, and music program staff completed surveys on behaviors observed within musical contexts.



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^{iv}The Every Student Succeeds Act (ESSA) was signed by President Obama on December 10, 2015. This bipartisan measure reauthorizes the 50-year-old Elementary and Secondary Education Act (ESEA), the nation's national education law and longstanding commitment to equal opportunity for all students.

^vParsad, B., and Spiegelman, M. (2012). *Arts Education in Public Elementary and Secondary Schools: 1999–2000 and 2009–10* (NCES 2012–014). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

^{vi}Duncan, G. J., & Murnane, R. J. (2015). *Restoring opportunity: The crisis*

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^{vii}Eerola, P., & Eerola, T. (2014). Extended music education enhances the quality of school life. *Music Education Research*, 16, 88-104.; Scott, L. (1992). Attention and perseverance behaviors of preschool children enrolled in Suzuki violin lessons and other activities. *Journal of Research in Music Education*, 40, 225-235.

^{viii}Zins, J. E., Weissberg, R. P., Wang, M. C., & Walberg, H. J. (2004). *Building academic success on social and emotional learning. What does the research say?* New York: Teachers' College Press.

^{ix}For more about growth mindset and what it predicts, see Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York: Random House Inc.

^xHabibi, A., Cahn, B. R., Damasio, A., & Damasio, H. (2016). Neural correlates of accelerated auditory processing in children engaged in music training. *Developmental Cognitive Neuroscience*, 21, 1-14; 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, 147-166; Ilari, B. S., Keller, P., Damasio, H., & Habibi, A. (2016). The development of musical skills of underprivileged children over the course of 1 year: A study in the context of an El Sistema-inspired program. *Frontiers in Psychology*, 7.

^{xi}Alemán, X., Duryea, S., Gurerra, N. G., McEwan, P. J., Muñoz, R., Stampini, M., Williamson, A. A. (2016). The effects of musical training on child development: A randomized trial of El Sistema in Venezuela. *Prevention Science*, 18, 865-878.

^{xii}Holochwost, S. J. (2015). *An Evaluation of NJSO Champs: Findings from the 2014-2015 Season*. (Available from WolfBrown, 8A Francis Avenue, Cambridge, MA 02138).