

**Lives in the Balance:**  
**Children at the Intersection of Risk, Resilience, and Music**  
An Evaluation of the New Jersey Symphony Orchestra (NJSO) Pilot Program

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**EXECUTIVE SUMMARY**

The following report presents the results of an initial evaluation of the New Jersey Symphony Orchestra's (NJSO) Pilot Program. This evaluation had three goals: 1) to establish the feasibility of conducting a larger evaluation in the future; 2) to validate the measures that would be used in such an evaluation; and 3) to assess the Program's theory of change. This theory holds that the Program counteracts the deleterious effects of risk on prosocial behaviors and perseverance, thereby improving students' academic achievement.

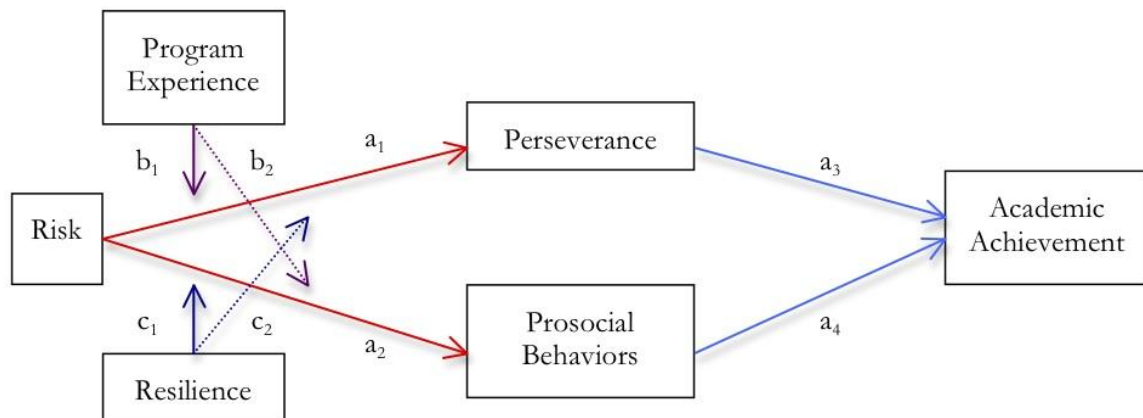
Data for the evaluation were collected from students, their parents, and their Program teachers in May and June 2013, at the end of the Program year. In July and August, school records for each student were delivered by University Heights Charter School (UHCS). Both Program and UHCS staff provided complete data for every student, and nearly three-quarters of families returned measures, despite the fact that no direct incentive was offered to them. The ability to collect complete data bodes well for future evaluation work. Also encouraging was the fact that analyses suggested the measures used in the initial evaluation could yield valid indices of the various constructs subsumed in the Program's theory of change. For example, items included in measures of perseverance were associated with one another in a logical and coherent fashion: parent responses to statements such as "my child is ambitious" correlated with responses to statements such as "my child is doggedly persistent". Moreover, parent ratings of students' perseverance were very similar to ratings made by the students themselves. These facts suggest that these measures capture students' genuine or 'true' levels of perseverance. Finally, the results of the initial evaluation suggested that the Program's theory of change is fundamentally sound. Consistent with this theory, risk was observed to negatively influence perseverance and prosocial behaviors, while these traits were in turn positively associated with academic achievement. However, the results also suggested that the theory of change may benefit from further refinement. For example, results indicated that experience in the Program might directly influence perseverance, rather than buffer risk's effects upon it.

In sum, the results of the initial evaluation suggested that the Program's theory of change was fundamentally sound, that the measures employed are adequate to assess that theory, and that collecting data on those measures is feasible. This is not to say that the larger evaluation should be a literal replication of the initial effort, but rather that the initial evaluation offers a firm foundation upon which that larger evaluation can be built. For the larger evaluation, the results obtained to date clearly indicate that the addition of a comparison group is necessary, that the battery of measures employed should be expanded and administered in a pre-/post- fashion, and that participation by families should be incentivized. With these changes in place, a larger evaluation should not only muster impressive evidence for the Program's efficacy, but has the potential to make a meaningful contribution to the broader fields of music education and child development

## INTRODUCTION

It has long been known that exposure to high levels of environmental risk – poverty and its correlates, such as poor neighborhood quality or residential instability – adversely impact children’s social, emotional, and cognitive development.<sup>1</sup> At the same time, many children who grow up in high-risk environments go on to succeed in school and life thanks to positive aspects of not only their own character, but also of their immediate environment, such as supportive parents, caring teachers, and access to high-quality in- and out-of-school educational opportunities.<sup>2</sup> This fact is at the heart of the theory of change for the New Jersey Symphony Orchestra’s (NJSO) Pilot Program (hereafter referred to as “the Program”). The theory asserts that the NJSO Pilot Program functions as a source of resilience which, together with child characteristics and other positive factors in a child’s life, can counteract the deleterious effects of risk on prosocial behaviors (self-discipline, respect, leadership, and character) and perseverance or “grit.”<sup>3</sup> This, in turn, can enhance students’ academic achievement. The figure below summarizes the model we would use to assess the validity of this premise.

Figure 1



Contained within this model are the following expectations or hypotheses:

- Children exposed to higher levels of cumulative risk will exhibit lower levels of perseverance (path  $a_1$ , in red) and prosocial behaviors (path  $a_2$ , also in red), which will predict lower levels of academic achievement (via paths  $a_3$  and  $a_4$ , in light blue).
- In contrast, we predict that the influence of risk on perseverance and prosocial behaviors, and thereby on academic achievement, will be buffered both by children’s experience in the Program (paths  $b_1$  and  $b_2$ , in purple) and their cumulative resilience (defined as a combination of positive family factors; paths  $c_1$  and  $c_2$ , in dark blue), and that...
- Children who are particularly engaged in the program and who exhibit high levels of cumulative resilience, will flourish as a result of their own resources, their families’ contributions, and the supports and opportunities offered by the Program, reducing the influence of cumulative risk on perseverance, prosocial behaviors, and academic achievement to non-significance.

<sup>1</sup> Sameroff & Seifer (1983). *Child Development*, 54, 1254-1268.

<sup>2</sup> Masten (2001). *American Psychologist*, 56, 227-238.

<sup>3</sup> Duckworth et al. (2007). *Journal of Personality and Social Psychology*, 92, 1087-1101.

For the purposes of this initial evaluation, the model depicted in figure 1 served as a conceptual model, with the hypotheses stemming from guiding our preliminary analyses. Formally testing these hypotheses is only feasible with a larger sample, and thus this was not the goal of this evaluation. Instead, this evaluation focused on achieving three objectives:

- Establish the feasibility of conducting a larger evaluation in the future.
- Validate the measures that would be used in such an evaluation.
- Assess the veracity of the theory of change outlined in figure 1, within the limits imposed by the small sample and short length of the Program.

In the following sections we describe the methods employed to accomplish these objectives, the results these methods yielded, and then discuss the implications of these results for the next phase of the Program.

## METHODS

Data were collected from the 25 students enrolled in the Program and their families. Students were enrolled in the 4<sup>th</sup> (52.0%), 5<sup>th</sup> (32.0%), and 6<sup>th</sup> (16.0%) grades at University Heights Charter School, a public charter school serving 336 students in grades K through 6. The majority (80.0%) of the students were female, and most (84.0%) were African American, while the remainder (16.0%) were Latino. Students were drawn from 6 classrooms,<sup>4</sup> and were instructed by three Teaching Artists with the Program, each of whom taught approximately the same number of students.

At the conclusion of the Program, students' parents were asked to attend a Parent Research Night. The purpose of the evaluation was explained to the parents, and then a packet of measures was distributed for completion. Representatives of the Program and WolfBrown remained to answer any questions parents might have. Students completed their measures during lessons in the final week of the Program, while Teaching Artists returned their measures within 6 six weeks of the end of the Program. At the conclusion of the school year, the Special Project Assistant at the University Heights Charter School provided report cards and additional data for the students (see below).

The packet of measures distributed to parents contained a Family Questionnaire and a measure of their child's perseverance. The Family Questionnaire contained a set of items designed to assess levels of distal risk (e.g., low education, poverty, neighborhood disorder) as well as more proximal sources of resilience such as family routines, parent-child relationships, and social support (again, see Appendix A). The measure of perseverance, or "grit", designed by Duckworth and her colleagues,<sup>5</sup> asked parents to rate how much certain statements (e.g., "My child is diligent") described their child using a 5-point scale. Students completed a parallel measure about themselves (see Appendix B). Finally, teaching Artists were asked to complete a survey for each of their students designed to assess their level of engagement in the Program (see Appendix C).

The report cards provided by the school contained grades for each of four 'core' academic subjects (math, science, English language arts, and social studies) as well as behavior or conduct grades for each of these courses. Both sets of grades were provided for each of three trimesters, ending on

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<sup>4</sup> Classrooms were named after regional and national universities, and students were distributed among these classrooms as follows: Drew ( $n = 6$ , 24.0%), Georgian Court ( $n = 2$ , 8.0%), Miami ( $n = 2$ , 8.0%), Montclair ( $n = 7$ , 28.0%), Paterson ( $n = 6$ , 24.0%), and Texas Tech ( $n = 2$ , 8.0%).

<sup>5</sup> Duckworth, Peterson, Matthews & Kelly (2007). *Journal of Personality and Social Psychology*, 92, 1087-1101.

November 17<sup>th</sup>, 2012, February 23<sup>rd</sup>, 2013, and June 14<sup>th</sup>, 2013. Academic grades were assigned on a 4-point scale (A, B, C, and F), while conduct grades were assigned on a 3-point scale (Outstanding, Satisfactory, Not Satisfactory). Report cards also reported year-end tallies of the number of absences and tardies for each student. The school also provided students' Scholar Dollars for each trimester. Scholar Dollars are funds issued to students for "commendable behavior", and deducted for "misbehavior".<sup>6</sup> As of this writing, students' standardized test scores have not been provided.

## RESULTS

### Feasibility of a Larger Evaluation

The chief limiting factor of the feasibility of any future evaluation is the ability to collect complete data from participants. In this respect, the results of the pilot study are promising. All students completed the perseverance measure, and Teaching Artists returned engagement measures for every one of their students. The school provided report cards for all students participating in the Program, and has provided Scholar Dollars for 21 (84%) of the students to date.<sup>7</sup> The only measures for which rates of missing data are a concern are those completed by the parents: 17 (72%) families completed the Family Questionnaire and the parent measure of perseverance, and in only 14 (56%) cases were these measures complete.

### Validity of Measures

Analyses of the Family Questionnaire that were available suggested that with a larger sample and complete data, our measures of risk could be reduced to a single, aggregate cumulative risk construct, a fact that would encourage us to use the same measures in a larger evaluation. Many of the individual risk factors were correlated at relatively high rates (see Appendix D), and although none of these correlations were statistically significant, this is most likely a reflection of lower power due to the small number of families providing data.<sup>8</sup> While the various aspects of resilience assessed were not associated with one another, items (or subsets thereof) assessing each individual aspect were (see Appendix D), suggesting that these aspects of resilience are valid constructs that could be extracted from a larger pool of data. Mean ratings of perseverance derived from the parent and child measures were positively correlated as well ( $r(13) = .413, p = .161$ ), again suggesting that with a larger sample and the concomitant increase in statistical power we would be justified in assembling a single aggregate measure of perseverance.

Results obtained from the measure of student engagement completed by teachers were also promising. Responses for item 8 were uncorrelated with all other items, but of the 66 correlations among the remaining items, 51 were significant ( $r(24, 25) = [.419, .717], p = [< .001, .037]$ ). This justified taking the mean of these items as a composite measure of student engagement. Contrary to our expectations, this composite was unrelated to the number of absences in the program ( $p = .643$ ), and therefore we did not assemble an aggregate measure of engagement from the teacher measure and absences.

Conduct grades across the 4 core academic subjects were correlated within each trimester, justifying the calculation of a single, aggregate conduct grade for each trimester (see Appendix D). For both the first ( $r(21) = .551, p = .010$ ) and second ( $r(21) = .466, p = .033$ ) trimesters these aggregate conduct grades were positively-correlated with contemporaneous Scholar Dollars, though this was not the case in the third trimester ( $p = .386$ ). Again, results from a larger sample would need to be

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<sup>6</sup> University Heights Charter School. (2012). *Parent and Scholar Handbook*, pp. 7 & 8.

<sup>7</sup> As of this writing, students' scores on the have not been provided by the school, but it is not clear that they have yet been delivered to the school by the State.

<sup>8</sup> "Power" refers to limitations on our ability to employ tests of inferential statistics successfully, and, all else being equal, is proportionate the number of participants in a given sample.

obtained to determine whether collapsing conduct grades and Scholar Dollars into a single index of prosocial behavior would be justified. However, the fact that both absences and tardies over the course of the year were not correlated with either conduct grades or Scholar Dollars for any semester suggests that these measures would not be included in this index. Like conduct grades, academic grades across the 4 core academic subjects were correlated within each trimester (see Appendix D), justifying the calculation of a composite academic grade for each trimester.

#### Veracity of the Theory of Change: Preliminary Results

As noted in the introduction, the optimal method of evaluating the theory of change depicted in figure 1 would a larger sample. However, it is possible in the interim to assess the plausibility of certain aspects of our conceptual model. First, we can observe that, as depicted by path  $a_1$ , higher levels of risk are associated with lower parent ( $r(11) = -.490, p = .126$ ) and child ( $r(13) = -.431, p = .141$ ) ratings of perseverance at the trend level. Second, higher levels of risk are associated with lower conduct grades ( $r(13) = -.475, p = .101$ ) in the third trimester, as well as higher rates of school tardies ( $r(13) = .373, p = .209$ ), corresponding to the relationship depicted in path  $a_2$ .

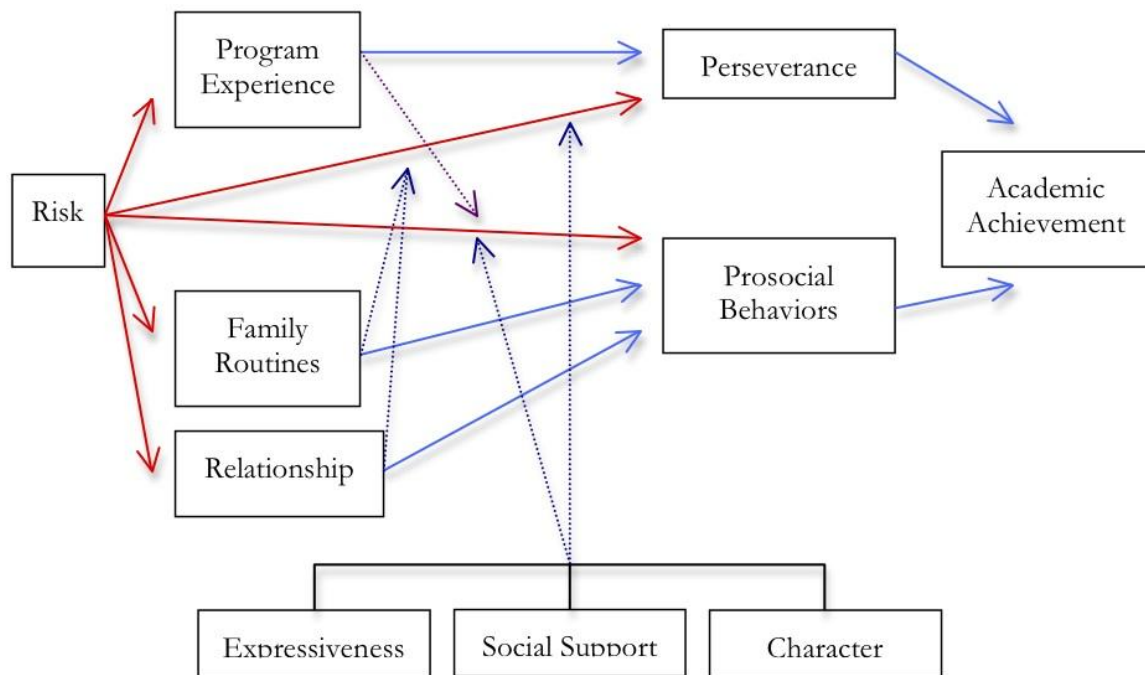
Third, and as depicted in path  $a_3$ , perseverance were associated with academic achievement, as indexed by overall grades in the third trimester, regardless of whether perseverance was reported by the child ( $r(25) = .461, p = .020$ ) or the parent ( $r(13) = .545, p = .054$ ). These relationships held after controlling for overall grades in the second trimester, prior to the start of the Program, for both child ( $F(2, 22) = 18.8, p < .001, \beta = .154, t = 1.07, p = .295$ ) and parent ( $F(2, 10) = 15.6, p = .001, \beta = .322, t = 1.96, p = .078$ ) ratings of perseverance, indicating that even when holding children's prior academic achievement constant, their end-of-year academic achievement was positively associated with perseverance. Finally, path  $a_4$ , linking prosocial behavior as indexed by overall conduct grades and academic achievement as indexed by overall course grades was partially supported: conduct and course grades were associated at the trend levels for the first ( $r(25) = .221, p = .289$ ) and second trimesters ( $r(25) = .389, p = .054$ ), but not the third ( $p = .523$ ).

Of course, it is the degree to which perseverance and prosocial behaviors account for, or mediate, the relationship between risk and academic achievement that is ultimately of greatest interest to us, because we hope to observe that participation in the program (as well as other resilience factors) moderates or buffers the effect of risk on the first links in each of these causal chains. However, with such a small sample, formally evaluating these mediating and moderating relationships is not possible. That said, we can assess whether engagement in the Program (and/or other resilience factors) are likely to function as moderators in the larger evaluation, or if a re-conceptualization of the model presented in figure 1 may be justified. This can be done by assessing how engagement in the Program, as well as other sources of resilience – our putative moderators – are related to the other constructs in our model. If engagement in the Program and our other sources of resilience are at least partially orthogonal (weakly correlated) in their relationships with risk, perseverance, and prosocial behaviors, it is possible that engagement and other resilience factors would function as moderators in subsequent, larger evaluations of the Program. If, however, engagement and resilience factors are correlated with risk, perseverance, and prosocial behaviors then we may have cause to reconceptualize engagement and resilience as mediators.

In our pilot data, engagement in the Program was associated with risk ( $r(12) = -.388, p = .212$ ) and perseverance (both child- ( $r(24) = .240, p = .258$ ) and parent-report ( $r(12) = .282, p = .374$ )) at the trend level, but not with prosocial behavior as indexed by composite behavior grades ( $p = .615$ ) or Scholar Dollars ( $p = .546$ ). Thus there is some suggestion that Program engagement might function as another link in the causal chain (or second-order mediators) running from risk to academic achievement (as depicted in figure 2), but we will have to wait for the larger evaluation to formally evaluate this possibility.

Three of the five different resilience factors – emotional expressiveness, social support available to the parent, and positive aspects of the child’s character – were sufficiently orthogonal to either risk and perseverance or risk and prosocial behaviors to justify their place in the logic model as potential moderators. However, family routines were negatively associated with risk ( $r(12) = -.436, p = .156$ ) and parent-reported perseverance ( $r(12) = .619, p = .032$ ), while the quality of parent-child relationships exhibited similar relationships with risk ( $r(12) = -.562, p = .057$ ) and parent-reported perseverance ( $r(12) = .891, p < .001$ ). This raises the possibility that family routines and parent-child interaction may function as second-order mediators in the relationship between risk and perseverance, as depicted in figure 2.<sup>9</sup>

Figure 2<sup>10</sup>



## DISCUSSION

As noted in the introduction, the evaluation of the Program was designed to: 1) to establish the feasibility of conducting a larger evaluation in the future; 2) to validate the measures that would be used in such an evaluation; and 3) to preliminarily assess the theory of change outlined in figure 1. The results clearly indicate that conducting an evaluation of a larger effort is within our reach. All measures distributed to teachers and students were completed; the school provided crucial information regarding prosocial behaviors and academic achievement, and, absent any incentives, nearly three-quarters of parents returned completed the measures distributed to them.

<sup>9</sup> However, this possibility would be stronger if perseverance, as reported by the child, was related to routine and parent-child interaction at a level approaching significance. Much of the observed association between both routines and perseverance and parent-child interaction and perseverance may be due to shared method variance.

<sup>10</sup> As in figure 1, red lines indicate negative pathways (in which constructs are inversely proportional to one another), blue lines indicate positive pathways (signifying directly proportional relationships), and purple lines indicate proposed moderating effects (in which the relationship depicted by the pathway to which the purple arrow projects is mitigated or buffered).

There is also reason to believe our measures offer valid assessments of the underlying constructs of interest. Many aspects of distal risk were associated with one another, justifying the calculation of a cumulative risk index based on those measures. Intercorrelations among items assessing individual aspects of resilience suggested that responses on these items to be collapsed into single variables. The same was true of measures of prosocial behavior (e.g., conduct grades), academic achievement (course grades), student engagement measure, and both parent and child ratings of perseverance.

Finally, our preliminary results indicate that our theory of change, embodied in the logic model presented in figure 1, is fundamentally sound (though it may require some adjustments). As one would expect given previous research, higher levels of risk predict lower levels of perseverance, prosocial behaviors, and academic achievement. Higher levels of perseverance and prosocial behaviors are, in turn, associated with higher academic achievement. Thus the mediation pathways depicted in figure 1 are not only supported by previous research, but appear plausible with a pilot sample that is a subset of group of individuals who would participate in any future evaluation. Moreover, the orthogonal relationship of engagement in the Program and prosocial behaviors leaves open the possibility that engagement serves to moderate the effect of risk on prosocial behavior. Program engagement may also moderate the effects of risk on perseverance, although our preliminary results suggest the possibility that engagement functions as a second-order mediator of the relationship between risk and perseverance.

These results have clear implications for the next phase of this work:

- Expand the size of the ‘treatment group’ The benefits of taking this step are clear for the children involved in the program. But expanding the size of the treatment group will also provide additional statistical power, thereby reducing the likelihood of type II error: the possibility of dismissing as spurious a finding that is, in fact, genuine.<sup>11</sup>
- Add a comparison group In addition to increasing the sample size and, thereby, statistical power, adding a comparison group comprised of students not participating in the Program would allow a range of analyses that were not possible in the initial evaluation. Most crucially, it would allow us to compare outcomes for students who were not in the Program with those who were, a contrast that we would expect to reveal the largest discrepancies and thereby demonstrate most powerfully the effects of Program participation. The inclusion of a comparison group would also guard against the possibility that most students participating in the Program are engaged in it at a fairly high level. If this is indeed the case, then examining differences in outcomes as a function of engagement among participating students becomes problematic. Finally, a larger sample size would permit the inclusion of covariates in our analyses and the use of more sophisticated analytical techniques (i.e., structural equation modeling with latent variables).
- Incentivize participation By providing modest incentives to families for their participation, we should be able to reduce the rates of missing data for the Family Questionnaire. Offering incentives becomes especially important if we do include a comparison group, as it is reasonable to expect that these families will be less invested in the evaluation.
- Include pre- and post-assessments One of the strengths of the initial evaluation was that measures of academic achievement and prosocial behavior were available at two points in

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<sup>11</sup> Consider that a correlation of  $r = .3$  – the approximate size of many of the relationships observed in our initial evaluation – corresponds to a  $p$  value of .15 with a sample size (i.e., a treatment group) of 25, thereby falling well short of the (admittedly arbitrary) threshold of  $p = .05$  for statistical significance. However, with a sample size of 50, this same correlation of  $r = .3$  corresponds to a  $p$  value of .034.

time: prior to (pre-) and following (post-) the Program. This allowed us to examine whether one of our putative mediators, perseverance, was related to *change* in academic achievement over time. However, it would be even more compelling to know whether the effects of risk on change in perseverance are buffered by engagement in the Program.

- Expand and refine measures While our pilot results indicate that many of our measures should yield useful data in future evaluation work, they also highlight some of the limitations that recommend the expansion and refinement of our instruments. For example, having a second source of prosocial behavior from the parent would be valuable, as would having a short questionnaire about the frequency of specific prosocial behaviors that the child's classroom teacher could complete. The child's classroom teacher should also complete a version of the perseverance measure administered to parents and children, while additional, objective measures of students' engagement in the Program beyond attendance (e.g., jury scores, parent-completed practice diaries) would allow us to validate the subjective measure completed by the Teaching Artists. Finally, and most importantly, we must consider what other intermediate outcomes, in addition to perseverance, might mediate the relationship between risk and the distal outcome of academic achievement.

In summary, there is preliminary evidence that the Program may benefit the students who participate in it. Moreover, the competence of NJSO staff and the willingness of University Heights Charter School personnel to accommodate the demands of evaluation auger well for future evaluation efforts. By building on the foundation laid by the work presented in this report, we can design an evaluation that is worthy of the Program and the students it serves.



## Appendix A

### FAMILY QUESTIONNAIRE

1a. First Name and last initial of the child attending the NJSO Pilot Program:	
1b. What grade does your child attend?	
2. What is your current marital status?	
<input type="checkbox"/> Married/living with a partner	<input type="checkbox"/> Not married
3. What is the highest grade of school you have completed?	
<input type="checkbox"/> Grade school	<input type="checkbox"/> Associate's degree
<input type="checkbox"/> High school diploma or G.E.D.	<input type="checkbox"/> Bachelor's degree
<input type="checkbox"/> Some college	<input type="checkbox"/> Advanced degree (e.g., Ph.D., J.D., M.D.)
4. Are you presently employed at a paying job outside the home?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. If you answered "Yes" to item 4, what is your occupation?	
6. What was your family's total income before taxes last year?	
<input type="checkbox"/> Less than \$10,000	<input type="checkbox"/> Between \$60,000 and \$69,999
<input type="checkbox"/> Between \$10,000 and \$19,999	<input type="checkbox"/> Between \$70,000 and \$79,999
<input type="checkbox"/> Between \$20,000 and \$29,999	<input type="checkbox"/> Between \$80,000 and \$89,999
<input type="checkbox"/> Between \$30,000 and \$39,999	<input type="checkbox"/> Between \$90,000 and \$99,999
<input type="checkbox"/> Between \$40,000 and \$49,999	<input type="checkbox"/> Over \$100,000
<input type="checkbox"/> Between \$50,000 and \$59,999	

7a. How many adults live in your home?

7b. How many children live in your home?

8. How many times has your family moved in the last 12 months?

### FAMILY QUESTIONNAIRE (cont'd)

<b>9. How frequently do the following things occur in your neighborhood on a scale from 1 to 10?</b>										
	1 (rarely)	2	3	4	5	6	7	8	9	10 (frequently)
a. Litter or trash on the sidewalks and streets.	1	2	3	4	5	6	7	8	9	10
b. Graffiti on buildings and walls.	1	2	3	4	5	6	7	8	9	10
c. Abandoned cars.	1	2	3	4	5	6	7	8	9	10
d. Vacant, abandoned, or boarded-up buildings.	1	2	3	4	5	6	7	8	9	10
e. Drug dealers or users hanging around.	1	2	3	4	5	6	7	8	9	10
f. Drunks hanging around.	1	2	3	4	5	6	7	8	9	10
g. Unemployed adults loitering.	1	2	3	4	5	6	7	8	9	10
h. Young adults loitering.	1	2	3	4	5	6	7	8	9	10
i. Gang activity.	1	2	3	4	5	6	7	8	9	10
j. Houses and yards not kept up.	1	2	3	4	5	6	7	8	9	10
k. Absentee landlords.	1	2	3	4	5	6	7	8	9	10
l. Disorderly or misbehaving groups of young children.	1	2	3	4	5	6	7	8	9	10
m. Disorderly or misbehaving groups of teenagers.	1	2	3	4	5	6	7	8	9	10
n. Disorderly or misbehaving groups of young adults.	1	2	3	4	5	6	7	8	9	10

<b>10. The following statements concern your household financial situation. For each statement, please indicate if you strongly agree, agree, disagree, or strongly disagree.</b>				
	1 strongly agree	2 agree	3 disagree	4 strongly disagree
a. My family has enough money to afford the kind of home we need.	1	2	3	4
b. We have enough money to afford the kind of clothing we need.	1	2	3	4
c. We have enough money to afford the kind of food we need.	1	2	3	4
d. We have enough money to afford the kind of medical care we need.	1	2	3	4

<b>11. During the past 12 months, how much difficulty have you had paying your bills?</b>				
1	2	3	4	5
A great deal of difficulty	Quite a bit of difficulty	Some difficulty	A little difficulty	No difficulty at all

<b>12. Think again over the past 12 months. Generally, at the end of the month did you end up with...</b>				
1	2	3	4	5
More than enough money left over	Some money left over	Just enough to make ends meet	Almost enough to make ends meet	Not enough to make ends meet

<b>13. The following questions ask about important financial and employment changes you may have experienced during the past 12 months. During the past 12 months, did you...</b>		
a. Take a cut in wage or salary?	Yes	No
b. Get laid off or fired?	Yes	No
c. Suffer a financial loss in business, investments, or property?	Yes	No
d. Lose some or all of your government benefits?	Yes	No
e. Get evicted from where you live?	Yes	No
f. Move to a worse residence or neighborhood?	Yes	No
g. Have any loan foreclosed on?	Yes	No
h. Dive heavily into family savings because of financial problems?	Yes	No
i. Take on a financial responsibility for a parent, in-law, or other family member?	Yes	No
j. Quit your own business because of financial difficulties?	Yes	No
k. Has your family postponed major household purchase(s) because of financial need?	Yes	No
l. Has your family changed residences to save money?	Yes	No
m. Has your family reduced or eliminated medical insurance because of financial reasons?	Yes	No
n. Has your family changed food shopping or eating habits to save money?	Yes	No
o. Do you have a car?	Yes	No
p. (If you answered yes to "o."), has your family reduced driving the car to save money?	Yes	No
q. Has your family reduced household utility use to save money?	Yes	No
r. Has your family postponed medical or dental care to save money?	Yes	No
s. Has your family considered taking bankruptcy?	Yes	No
t. Has your family postponed or delayed paying property tax?	Yes	No

### FAMILY QUESTIONNAIRE (cont'd)

14. How often do the following things occur in your household each week?									
	less than once each week	once or twice each week	three or four times each week	five or more times each week					
a. My family eats dinner together	< 1	1 or 2	3 or 4	5+					
b. My family performs chores or errands together	< 1	1 or 2	3 or 4	5+					
c. My family does something fun together	< 1	1 or 2	3 or 4	5+					

15. How often do the members of your family do or say the following things to or for one another?									
	1	2	3	4	5	6	7	8	9
	(very rarely)				(very frequently)				
a. Show forgiveness to someone who broke a favorite possession.	1	2	3	4	5	6	7	8	9
b. Thank each other for something they have done.	1	2	3	4	5	6	7	8	9
c. Exclaiming over a beautiful day.	1	2	3	4	5	6	7	8	9
d. Praise someone for good work.	1	2	3	4	5	6	7	8	9
e. Seek approval for an action.	1	2	3	4	5	6	7	8	9
f. Express happiness after an unexpected triumph.	1	2	3	4	5	6	7	8	9
g. Expressing excitement over future plans.	1	2	3	4	5	6	7	8	9
h. Demonstrating admiration.	1	2	3	4	5	6	7	8	9
i. Telling someone how nice they look.	1	2	3	4	5	6	7	8	9
j. Expressing sympathy for someone's troubles.	1	2	3	4	5	6	7	8	9
k. Expressing deep affection or love for someone.	1	2	3	4	5	6	7	8	9
l. Hugging a family member for no reason.	1	2	3	4	5	6	7	8	9
m. Expressing concern for the success of other family members.	1	2	3	4	5	6	7	8	9
n. Offering to do somebody a favor.	1	2	3	4	5	6	7	8	9
o. Snuggling up to a family member.	1	2	3	4	5	6	7	8	9
p. Trying to cheer someone up who is sad.	1	2	3	4	5	6	7	8	9
q. Telling family members how happy you are.	1	2	3	4	5	6	7	8	9
r. Expressing gratitude for a favor.	1	2	3	4	5	6	7	8	9
s. Surprising someone with a gift or favor.	1	2	3	4	5	6	7	8	9
t. Saying "I'm sorry" when one realizes one was wrong.	1	2	3	4	5	6	7	8	9

16. Please answer the following items using this scale:					
SA = strongly agree	A = agree	NS = not sure	D = disagree	SD = strongly disagree	
a. My child often does things for me that make me feel good.					SA    A    NS    D    SD
b. Most times I feel that my child likes me and wants to be close to me.					SA    A    NS    D    SD
c. My child smiles at me much more than I expected.					SA    A    NS    D    SD
d. When I do things for my child, I get the feeling that my efforts are appreciated very much.					SA    A    NS    D    SD
e. When playing, my child giggles and laughs often.					SA    A    NS    D    SD
f. My child seems to learn more quickly than most children.					SA    A    NS    D    SD
g. My child seems to smile more than most children.					SA    A    NS    D    SD
h. My child is able to do more than I expected.					SA    A    NS    D    SD
i. It does not take long for my child to get used to new things.					SA    A    NS    D    SD
j. I feel that I am:					1. Not very good at being a parent
					2. A person who has some trouble being a parent
					3. An average parent
					4. A better than average parent
					5. A very good parent

17. Please respond to the following items according to how you generally feel:

	1 disagree strongly	2 disagree a little	3 neither disagree nor agree	4 agree a little	5 strongly agree
a. There are people I can depend on to help me if I really need it.	1	2	3	4	5
b. There are people who can depend on me for help.	1	2	3	4	5
c. There are people who enjoy the same activities I do.	1	2	3	4	5
d. I feel personally responsible for the well-being of other people.	1	2	3	4	5
e. I feel part of a group of people who share my attitudes and beliefs.	1	2	3	4	5
f. I have close relationships that provide me with a sense of emotional security and well-being.	1	2	3	4	5
g. There is someone I could talk to about important decisions in my life.	1	2	3	4	5
h. I have relationships where my competence and skill are recognized.	1	2	3	4	5
i. There is a trustworthy person I could turn to for advice if I were having problems.	1	2	3	4	5
j. I feel a strong emotional bond with at least one other person.	1	2	3	4	5
k. There are people who admire my talents and abilities.	1	2	3	4	5
l. There are people I can count on in an emergency.	1	2	3	4	5

18. This scale contains a series of statements that are used to rate your child's behaviors and emotions in a positive way. Read each statement and mark the number that corresponds to the rating that best describes your child's status over the past 3 months. Rate each statement to the best of your knowledge of your child. Rate all the items according to the following scale.

	3 very much like my child	2 like my child	1 not much like your child	0 not at all like your child
a. Uses anger management skills.	3	2	1	0
b. Expresses remorse for behavior that hurts or upsets others.	3	2	1	0
c. Reacts to disappointments in a calm manner.	3	2	1	0
d. Considers consequences of own behavior.	3	2	1	0
e. Accepts criticism.	3	2	1	0
f. Interacts positively with others.	3	2	1	0
g. Loses a game gracefully.	3	2	1	0
h. Listens to others.	3	2	1	0
i. Admits mistakes.	3	2	1	0
j. Accepts 'no' for an answer	3	2	1	0
k. Respects the rights of others.	3	2	1	0
l. Shares with others.	3	2	1	0
m. Apologizes to others when wrong.	3	2	1	0
n. Is kind towards others.	3	2	1	0
o. Uses appropriate language.	3	2	1	0

19. In column A below, please list all of the extracurricular activities in which your child participates, such as sports, clubs, Boy Scouts or Girl Scouts, religious groups, etc. Please include any community or volunteer activities. For each activity, please indicate approximately how many hours per week your child is involved in the activity in column B, the number of years your child has been involved in the activity (in column C), and how important the activity is to your child on a scale from 1 = "not important" to 5 = "extremely important" (in column D).

A. Activity Description	B. Hours/Week	C. Years	D. Importance				
			1	2	3	4	5

## Appendix B

### PERSEVERENCE QUESTIONNAIRE – STUDENT VERSION

Please write your first name and the first initial of your last name in the box below:					
Below are 22 statements. Please read each one and the circle the number for how much the statement is about you. We will not share your answers with anyone.					
	1 Not at all like me	2 A little like me	3 Somewhat like me	4 Mostly like me	5 Very much like me
1. I aim to be the best in the world at what I do.	1	2	3	4	5
2. I often set a goal but later choose to pursue a different one.	1	2	3	4	5
3. I am diligent.	1	2	3	4	5
4. Failures double my motivation to succeed.	1	2	3	4	5
5. I am ambitious.	1	2	3	4	5
6. My interests are consistent from year to year.	1	2	3	4	5
7. I am doggedly persistent.	1	2	3	4	5
8. I become interested in new pursuits every few months.	1	2	3	4	5
9. I am not as diligent as most people.	1	2	3	4	5
10. I finish whatever I begin.	1	2	3	4	5
11. New ideas and new projects sometimes distract me from old ones.	1	2	3	4	5
12. I am a hard worker.	1	2	3	4	5
13. I have been obsessed with a certain project for a short time but later lost interest.	1	2	3	4	5
14. I have difficulty maintaining my focus on projects that take more than a few months to complete.	1	2	3	4	5
15. My interests change from year to year.	1	2	3	4	5
16. Achieving something of lasting importance is the highest goal in life.	1	2	3	4	5
17. I think achievement is overrated.	1	2	3	4	5
18. Setbacks don't discourage me.	1	2	3	4	5
19. I am driven to succeed.	1	2	3	4	5
20. I have overcome setbacks to conquer an important challenge.	1	2	3	4	5
21. I do not always finish what I begin.	1	2	3	4	5
22. I have achieved a goal that took years of work.	1	2	3	4	5

## Appendix C

The following survey asks questions about students in the NJSO pilot program. Please note that although we ask you to indicate both your name and the name of your student, we will not share your responses with anyone.

Your Name:

Students Name (first name, last initial):

How long have you worked with this student (in months)?

Using the scale below, please indicate how well do you feel you know this student?

☐ Very well      ☐ Well      ☐ Not well      ☐ Hardly at all

In this section you will be asked how strongly you agree or disagree with each statement about this student. Please answer using your impressions of this student throughout **the past program year**.

SA = strongly agree	A = agree	NS = not sure	D = disagree	SD = strongly disagree			
1. This student often forgets his or her instrument or music.			SA	A	NS	D	SD
2. This student has made real progress towards mastery of his or her instrument this year.			SA	A	NS	D	SD
3. This student is dedicated to the program.			SA	A	NS	D	SD
4. This student clearly enjoys class.			SA	A	NS	D	SD
5. This student volunteers to answer questions asked in class.			SA	A	NS	D	SD
6. This student takes care of his or her instrument.			SA	A	NS	D	SD
7. This student pays attention during class.			SA	A	NS	D	SD
8. This student is disrespectful and/disruptive during class.			SA	A	NS	D	SD
9. This student is excited about the opportunity to perform in public.			SA	A	NS	D	SD
10. This student acts like they would rather be somewhere else during class.			SA	A	NS	D	SD
11. This student accepts criticism and works to improve his or her technique based upon it.			SA	A	NS	D	SD
12. This student will help others in a constructive way during class.			SA	A	NS	D	SD
13. This student plays like a member of an ensemble during class by listening to others.			SA	A	NS	D	SD

*Thank you for taking the time to complete this survey.*

## Appendix D: Data Reduction

### Risk Factors

The family questionnaire contained items designed to assess exposure to a number of common distal risk factors, including marital status, education of the primary caregiver (i.e., the parent completing the questionnaire), current employment, income-to-needs ratio (defined as the family's income divided by the federal poverty level for a family; McLoyd, 1998), the number of children in the home, residential instability (the number of moves in the previous twelve months), neighborhood disorder (items 9a through 9n, taken from the measure of neighborhood context designed by Couton, Korbin, & Su, 1996), and perceived financial strain (items 10 through 13, taken from Cutrona's (2000) measure of chronic and acute financial problems).

A number of these risk factors were correlated with one another at relatively high levels. Single marital status was correlated with lower education ( $r(17) = .278$ ), a larger number of moves in the last twelve months ( $r(17) = .381$ ), and increased levels of neighborhood disorder ( $r(14) = .306$ ). Lower income-to-needs ratios were associated with a higher number of moves ( $r(14) = .246$ ) and increased reports of financial strain ( $r(15) = .352$ ).

Based on these correlations, scores on the risk factors were dichotomized and summed. Where possible, scores were dichotomized according to their 'real-world' implications. Therefore marital status was recoded 0 = "married/living with a partner" and 1 = "not married", so that 0 = indicates absence of risk, and 1 = its presence. Education less than a high school diploma or G.E.D. was considered evidence of risk, as was unemployment, an income-to-needs ratio of less than 1.50 (indicating a family at or below 150% of the federal poverty level), and 2 or more moves in the previous 12 months. Other risk factors were recoded according to their distributional properties, such that between 25 and 33% of the sample were considered at risk. These factors included the number of children in the household (more than 4 was indicative of risk), the degree of neighborhood disorder (score exceeding 6.0), and perceived financial strain (score exceeding 21). Dichotomized scores (with the exception of residential instability, for which there was insufficient variability) were summed to yield an index of cumulative environmental risk.

### Resilience Factors

There is far less consensus in the extant literature on what constitutes a resilience factor than on what constitutes a risk factor. Possible resilience factors included in the initial evaluation included family routines (items 14a through 14c of the family questionnaire, taken from the National Longitudinal Survey of Youth-1997), family expressiveness (items 15a through 15t, corresponding to the 20 items from Halberstadt's (1986) Family Expressiveness Questionnaire that loaded on the positive-dominant and positive-submissive factors in Cassidy et al., 1992), the quality of the parent-child relationship (items 16a through 16j, corresponding to the first ten items of Abidin's (1983) Parenting-Child Dysfunctional Interaction Subscale of the Parenting Stress Index, reworded so to capture positive aspects of the parent-child relationship), social support of the primary caregiver (items 17a through 17l, taken from Cutrona and Russel's (1987) Social Provisions Scale), and the character of the child (items 18a through 18o, taken from the Parent Rating Scale of the Behavioral and Emotional Rating Scale 2<sup>nd</sup> Edition (BERS-2; Epstein, 2004).

Patterns of intercorrelations among items within each of these domains of resilience justified taking a summary or composite score for each. Scores on the family routines items were positively correlated ( $r(16) = [.205, .512]$ , with the correlation between items 14b and 14c reaching statistical significance). Of the 190 intercorrelations among these 20 items of the family expressiveness measure, 75 were significant, with  $r(16, 17) = [.483, .941]$ ,  $p = [< .001, .049]$ . An additional 31 exceeded  $r = .3$ , but

were not significant due to power restrictions. Two-thirds of the correlations among the first 9 items assessing the quality of the parent-child relationship were significant, with  $r(16, 17) = [.486, .927]$ ,  $p = [< .001, .048]$ . All intercorrelations among items 17g – 17k of the social provisions scale were significant ( $r(15, 16) = [.624, .966]$ ,  $p = [< .001, .010]$ ), while 55 of the 78 intercorrelations among items taken from the BERS-2 (items 18c through 18o) were significant ( $r(14, 16) = [.519, 1.0]$ ,  $p = [< .001, .048]$ ).

Composite scores were therefore calculated for: 1) family routines as the sum of the scores for each item; 2) family expressiveness as the sum of the endorsed items divided by the theoretical maximum score for those items (to accommodate the 3 families providing incomplete data); 3) the sum of scores for the first 9 items of the measure of the quality of parent-child interaction; 4) the sum of items 17g through 17k of the social provisions scale; and 5) the sum of endorsed items divided by the theoretical maximum for the BERS-2 items (to accommodate the 4 families provided data for all but one item).

Although the family routines and BERS-2 composites were correlated ( $r(11) = .622$ ,  $p = .041$ ), as were the PSI and BERS-2 ( $r(11) = .689$ ,  $p = .019$ ), the literature offers no basis for the calculation of a cumulative resilience composite.

### Prosocial Behavior

For the first trimester, math and science behavior grades were significantly correlated ( $r(25) = .656$ ,  $p < .001$ ). Math and science behavior grades were again correlated in the second trimester ( $r(25) = 1.0$ ,  $p < .001$ ), but math behavior grades were also correlated with ELA behavior grades ( $r(25) = .400$ ,  $p = .047$ ), while science grades were correlated with social studies grades ( $r(25) = .468$ ,  $p = .018$ ). For the third trimester, all behavior grades were significantly correlated ( $r(19, 25) = [.509, .866]$ ,  $p = [< .001, .009]$ ). A composite behavior grade was therefore calculated as the mean of conduct grades across subjects for each trimester. For the 6 students missing conduct grades in science for the third trimester, calculations were based on three available grades.

### Academic Achievement

Math and science grades were correlated for the first trimester ( $r(25) = .665$ ,  $p < .001$ ), as were science and ELA ( $r(25) = .416$ ,  $p = .038$ ) and ELA and social studies ( $r(25) = .455$ ,  $p = .022$ ). For the second trimester, math and science were again correlated ( $r(25) = .424$ ,  $p = .035$ ), as were ELA and social studies ( $r(25) = .762$ ,  $p < .001$ ). However, science and ELA were not correlated ( $p = .311$ ). For the third trimester, math and science were significantly correlated ( $r(25) = .529$ ,  $p = .007$ ), as were math and ELA ( $r(25) = .566$ ,  $p = .003$ ). As in the first trimester, science and ELA were correlated ( $r(25) = .529$ ,  $p < .007$ ), as were ELA and social studies ( $r(25) = .645$ ,  $p < .001$ ). An overall academic grade was calculated as the average across subjects for each semester.