Social and Emotional Learning in American Youth Social Circus Programs

The American Youth Circus Organization (AYCO) is a national nonprofit organization that promotes the participation of youth in circus arts and supports circus educators. Part of AYCO's work is to support the AYCO Social Circus Network. Member organizations in this network provide circus program offerings designed to achieve a defined social change. In this case, social change entails building the social and emotional skills, and the sense of agency that comes with mastering something difficult like circus arts, with children and youth who enter the program at greater-than-average risk. Circus arts have been used as a tool for positive youth development for several decades and across the world.

AYCO commissioned the following study to highlight, and help others understand, how social circus program offerings achieve their intended effects on the children and youth who participate, and thereby achieve the social change that is at the core of the Social Circus Network mission.

We extend our thanks to:

The lead funders of this project:

CIRQUE DU SOLEIL
ENTERTAINMENT GROUP

||| Burke *Foundation*

### The leaders who represented AYCO in executing this project:

Jen Agans, Ph.D., Research Associate in the Bronfenbrenner Center for Translational Research at Cornell University and AYCO Board Member

Zoe Brookes, Executive Director of Trenton Circus Squad and Founding Chair of the AYCO Social Circus Committee

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CIRCUS
organization

AYCO is delighted to share this study free of charge. Please provide appropriate acknowledgement in any citations.

Thank you to the participants who also contributed funding:
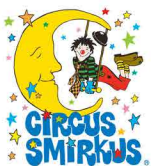
Circus Smirkus   Fern Street Circus   My Nose Turns Red   Wise Fool New Mexico   SANCA   Trenton Circus Squad

Evaluation of Program Quality and Social and Emotional Learning in American Youth Circus Organization Social Circus Programs

Submitted December, 2017

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Summary

This *Evaluation of Program Quality and Social and Emotional Learning in American Youth Circus Organization Social Circus Network (AYCO-SCN)* programs was undertaken to answer three questions: Do circus arts program offerings achieve high fidelity implementation of challenging curriculum and responsive instruction for diverse youth? Do youth social and emotional learning (SEL) behavioral skills grow during circus arts program offerings? Do the levels of curriculum challenge, responsive instruction, and skill growth compare to benchmarks for exemplary SEL programs? These questions were answered by using performance measures in AYCO-SCN programs and comparing the results to benchmarks for SEL exemplary and non-selective samples. Results of the study indicated that:

AYCO-SCN circus arts offerings were implemented with fidelity to the AYCO-SCN theory of change. The AYCO-SCN offerings delivered intensive circus arts programming to diverse youth (ethnicity, risk) and were delivered by expert staff who reflected the pattern of youth ethnic diversity. AYCO-SCN offerings also achieved high levels of curriculum challenge, responsive instruction, and youth engagement.

In AYCO-SCN circus arts program offerings, youth skills increased in accord with the AYCO-SCN theory of change. AYCO-SCN youth demonstrated positive and substantial SEL behavioral skill growth from the beginning to the end of the program offering. AYCO-SCN youth who entered the offering with higher behavioral risk had greater SEL behavioral skill gains than youth who entered the offering with low behavioral risk.

AYCO-SCN circus arts program offerings' average performance on four key indicators –curriculum challenge, responsive instruction, youth engagement, and youth SEL skill growth – compared favorably to benchmarks for a selective sample of exemplary SEL programs for adolescents. AYCO-SCN performance for these benchmarks were consistently similar to exemplary programs focused on SEL and substantially outperformed a non-selective reference sample of out-of-school time programs for adolescents.

Given this pattern of results, AYCO-SCN programs appear to be achieving their social purpose by designing and delivering a circus arts curriculum model that combines high challenge and high support; that is, best practices in the field of youth development. The Social Circus Network offerings were of exceptionally high quality and produce substantively important SEL skill change, comparing favorably to exemplary programs with long histories of SEL work and validation.
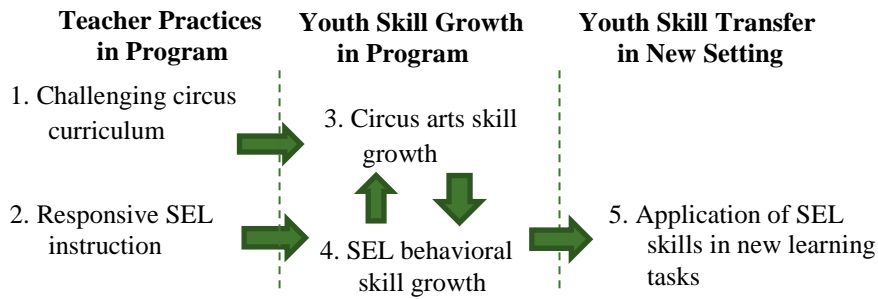
Background

The American Youth Circus Organization (AYCO) is a national nonprofit organization that promotes the participation of youth in circus arts and supports circus educators. Part of AYCO's work is to support the Social Circus Network. Member organizations in this network provide circus program offerings designed to achieve a defined social change. In this case, social change entails building social and emotional skills, and the sense of agency that comes with mastering something difficult like circus arts, with children and youth who enter the program at greater-than-average risk. Circus arts have been used as a tool for positive youth development for several decades and across the world. AYCO commissioned this study to highlight, and help others understand, how circus arts program offerings achieve their intended effects on the children and youth who participate and, thereby, achieve the social change that is at the core of the Social Circus Network mission. There were eight organizations that were part of this study all of whom are members of the Social Circus Network.

Within the eight circus arts *organizations*, eleven circus arts program offerings were studied and had important similarities: First, the program-offering design included a challenging curriculum for *circus arts skills* where expert staff led youth through intensive skill-building sequences over many sessions and hours of practice. Second, each program offering emphasized responsive instructional practices that were designed to build *social and emotional learning (SEL) skills* – to help youth be successful at their learning threshold. Sometimes learning a new skill can be frustrating, boring, or anxiety-provoking; however, in these programs, staff were trained to step in, provide reassurance, and model appropriate thinking and behavior when the going got tough (i.e., to engage in *co-regulation[1]*). Third, each program offering was based on the theoretically-informed and evidence-based idea that the combination of a challenging circus arts curriculum and responsive instruction can help students grow skills in both the circus arts and in SEL skill domains that are necessary to successfully learn circus skills in the first place. Figure 1 illustrates this model of integrated skill learning– growing mastery in the circus arts skills and growing mastery in SEL skills necessary to learn in any content area which defines social change in the Social Circus Network.

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[1] The term co-regulation refers to adult behavior designed to help children and youth successfully self-regulate; for example, to stay focused, keep moving, process emotion, and get the task at hand completed (Murray et al., 2015). Youth with atypical patterns of development due to exposure to trauma or chronic stress may need higher levels of co-regulation from adults. Co-regulation is what happens when staff uses responsive practices to keep the stress and strain of a challenging project curriculum in the optimal range.

Figure 1 – Social Circus Network Program Offering Theory of Change

Teacher Practices in Program	Youth Skill Growth in Program	Youth Skill Transfer in New Setting
1. Challenging circus curriculum	3. Circus arts skill growth	
2. Responsive SEL instruction	4. SEL behavioral skill growth	5. Application of SEL skills in new learning tasks

Research questions addressed in this study are linked to the theory of change shown in Figure 1 and focus on circus program quality and outcomes:

- Do circus arts program offerings present a challenging curriculum and responsive instruction?
- Do youth SEL behavioral skills grow during circus arts program offerings?
- How do the levels of curriculum challenge, responsive instruction, and skill growth compare to benchmarks for exemplary SEL programs?

Participants

Operating in eight cities across the United States, the eight Social Circus Network organizations involved in this study ranged widely in revenue and capacity. Annual budgets ranged from $95,000 to $498,000, with an average budget of $255,900. Staff were highly experienced and stable in their positions: Most had completed a degree or advanced degree. Tenure within the program ranged from 1 to 27 years, with an average tenure of 12 years. Staff were ethnically diverse, and this mirrored the diversity of youth in most cases. Youth were also diverse in terms of risk, with about 21% of youth demonstrating a developmental or behavioral risk indicator when the programs started.

Youth participation in the offerings was voluntary, and participation was intensive. The average total hours of participation across the Circus programs ranged between 30 and 489 contact hours over the course of the study. The study ran from September through May, with an average of 176 contact hours. Youth ranged in age from 6 to 18, and the average age was 12. Appendices A and B provide additional detail on each of the eleven organizations, their respective circus program offerings, as well as staff and youth characteristics.

Measures

Table 1 describes the ten performance measures used in the evaluation design.

Table 1. Performance Measures

System or Policy Level Practices

No system or policy-level data were collected.

Quality of Organization Practices

Vertical Communication: Manager provides feedback, is visible during the program, knows what is being accomplished, challenges staff, and makes sure program goals and priorities are clear.

Horizontal Communication: Staff co-plan program policies or activities with other staff, discuss problems, and observe or are observed by other staff.

School-Day Content: Staff are aware of school day academic content; coordinate afterschool activities with youths' homework; manage communication with parents, school day staff, and information sharing; and participate in meetings and parent-teacher conferences

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Quality of Instructional Practices

Growth and Mastery Goals (Challenging Curriculum): Youth were exposed to new experiences, participated in successive sessions with increasing task complexity, were acknowledged for achievements, and identified what they are uniquely good at.

Instructional Total Score (Responsive Instruction): Composed of ratings of staff instructional practice in three domains: A structured environment facilitated through guidance and encouragement (i.e., Supportive Environment), opportunities for leadership and collaboration (i.e., Interaction), and the capacity to promote planning and reflection (i.e., Engagement).

Youth Engagement: Youth find activities important, use skills, have to concentrate, and experience moderate challenge.

Staff Rating of Youth Behavior (SRYB)

Emotion Knowledge: Youth identifies, names, and describes a wide variety of emotions.

Behaviorally Manages Emotion: Youth behaves kindly, constructively, and non-defensively where confronted with both criticism and praise.

Social Role Mastery: Youth helps others with tasks, roles, and responsibilities; seeks helps from staff when needed; and monitors team progress.

Goal Striving Mastery: Youth evaluates options and potential solutions, creates plans, prioritizes tasks, manages time, and monitors goal progress.

Methods and Procedures

This study uses an evaluation design from the field of performance management to study quality and outcomes in circus program offerings in the Social Circus Network.[2] Specifically, the research questions were addressed by aligning the 10 performance measures described in Table 1 to the theory of change in Figure 1; in particular, to elements 1, 2, and 4 of Figure 1. Average performance across the eleven sites, using the same measures, was then compared to average performance in two benchmark samples: exemplary SEL and non-selective afterschool samples.

The *exemplary SEL* benchmark comes from a sample of eight exemplary SEL programs for adolescents (Smith, C., McGovern, G., Peck, S. C., Larson, R. W., Hillaker, B., & Roy, L. 2016). These exemplary SEL programs have many similarities to Social Circus offerings, particularly the emphasis on high curriculum challenge and highly responsive instruction. The *non-selective* benchmark comes from a sample of afterschool programs for adolescents that were part of the Weikart Center's continuous improvement work in recent years. This non-selective (i.e., programs were not selected because they were of exemplary quality) sample contains between 362 and 2067 sites, depending on the indicator.

The set of staff and youth surveys, staff ratings of youth behavior (SRYB), and observation-based measures described in Table 1 were administered at each offering over the course of a program cycle, running approximately from September, 2016 to June, 2017. Data were collected at three time points: fall, 2016; winter, 2017; and spring, 2017. Table 2, below, shows which data were collected and the measures used at each time point. Staff ratings of youth behavior were administered for the entire sample of youth at three time points. For those programs that only ran for 12 weeks, data were collected at two time points only – at baseline and at the end of the 12 weeks. Data collection time points were specific to each program so that they occurred as close as possible to the start and end weeks of the program. Observation data were collected by both Weikart Center consultants and participating Social Circus Network program staff who had been trained as reliable external assessors.

Table 2. Data Collection by Source, Reporter, Time Point, and Completes

Instrument	Protocol	T1	T2	T3	Completes
Program Quality Assessment	Trained raters conduct rating and upload via online portal	✓	✓	✓	32
Youth	Youth complete paper survey following PQA	✓	✓	✓	127

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[2] The comparison of AYCO-SCN youth SEL behavioral skill change to the two benchmark groups is a rudimentary quasi-experimental comparison of AYCO-SCN to a similarly treated group of youth (i.e., an exemplary sample of programs that were, like AYCO-SCN, designed to focus on SEL skills) and a no-treatment group (i.e., a non-selective sample of programs that were not specifically designed to grow SEL skills).

Engagement Survey	observation					
Staff Rating of Youth Behavior	Staff complete via online survey software	✓	✓	✓		197
Staff Survey	Staff complete via online survey software			✓		18

Results

This section presents performance results for the eleven Social Circus Network programs in the 2016-17 program cycle and with comparisons to benchmark samples. In the figures that follow, the average score for the eleven circus offerings on each performance indicator is presented alongside two benchmarks that were selected in advance as useful comparisons for Social Circus Network offering performance. Appendix D presents results for all performance measures by site.

Circus Program Quality

For this study, circus program quality is defined in terms of organizational practices and instructional practices.

Organizational Practices

Organizational practices are defined by the qualities of communication between instructional staff and their supervisors, among instructional staff, and in connection to schools. Figure 2 shows the average performance for the 11 AYCO-SCN organizations on these indicators in comparison to the exemplary and non-selective samples. In comparison to the exemplary reference group, staff in AYCO-SCN organizations reported lower performance on the vertical communication scale, slightly higher performance on the horizontal communication scale, and substantially lower performance on the school connection indicator. This pattern reflects the intentional structure of circus offerings: Expert teams deliver the offering, making horizontal communication more important than vertical communication (i.e., staff to staff communication is more prevalent than of staff to supervisor communication). School connection is not part of the AYCO-SCN approach and so is very low, as expected. A more nuanced interpretation of the performance indicators is available in the item-level data presented in Appendix B, Table B-3.

Figure 2. Organizational Culture
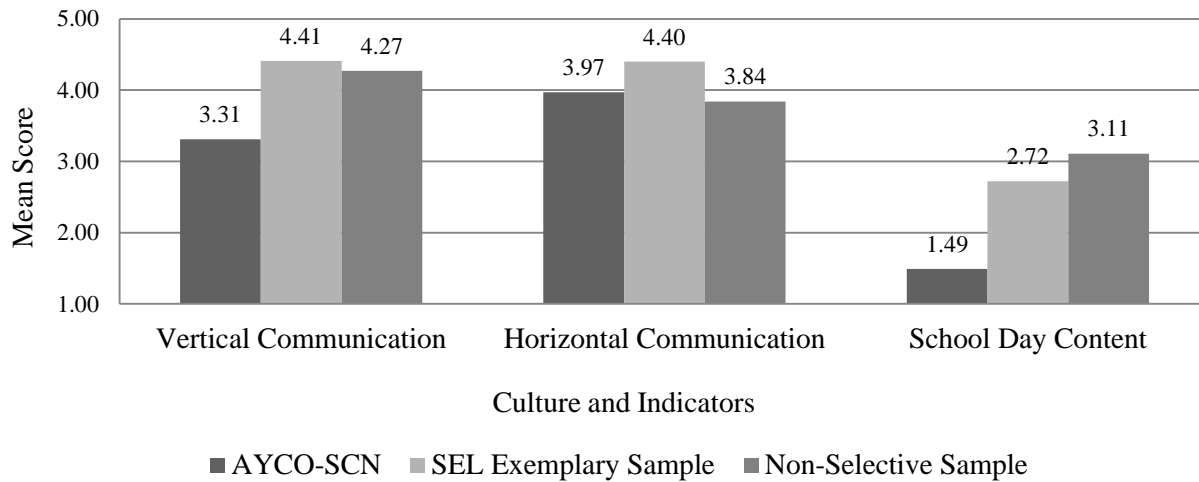
Source: Staff and Manager Survey 2017 ($n = 18$), SEL Challenge Staff Survey ($n = 27$), YPQI Fidelity and Satisfaction Survey Non-Selective Reference Sample 2017 ($n = 362$)

Instructional Practices

In keeping with the AYCO-SCN theory of change presented in Figure 1, the quality of teacher practices implemented in the point-of-service setting, where adults and youth interact, is hypothesized to cause the desired positive change in youths' circus arts SEL skills. This critical aspect of circus arts program quality is defined by a challenging curriculum, responsive instruction, and the level of youth engagement with that curriculum and instruction. Figure 3 shows the average performance for the 11 AYCO-SCN organizations on three indicators in comparison to the exemplary and non-selective samples. The Growth and Mastery scale describes the level of curriculum challenge, whereas the Instructional Total Score describes the responsiveness of instruction. Youth Engagement describes the level of challenge and responsiveness from the youth's perspective (i.e., content is interesting, challenge feels positive). In comparison to the exemplary reference group, staff in AYCO-SCN offerings performed at nearly the same level as the exemplary SEL programs, slightly exceeding exemplary performance in terms of curriculum challenge. A more nuanced interpretation of the performance indicators is available in the item-level data presented in Appendix B, Tables B-4 and B-5.

Figure 3. Point-of-Service Level indicators
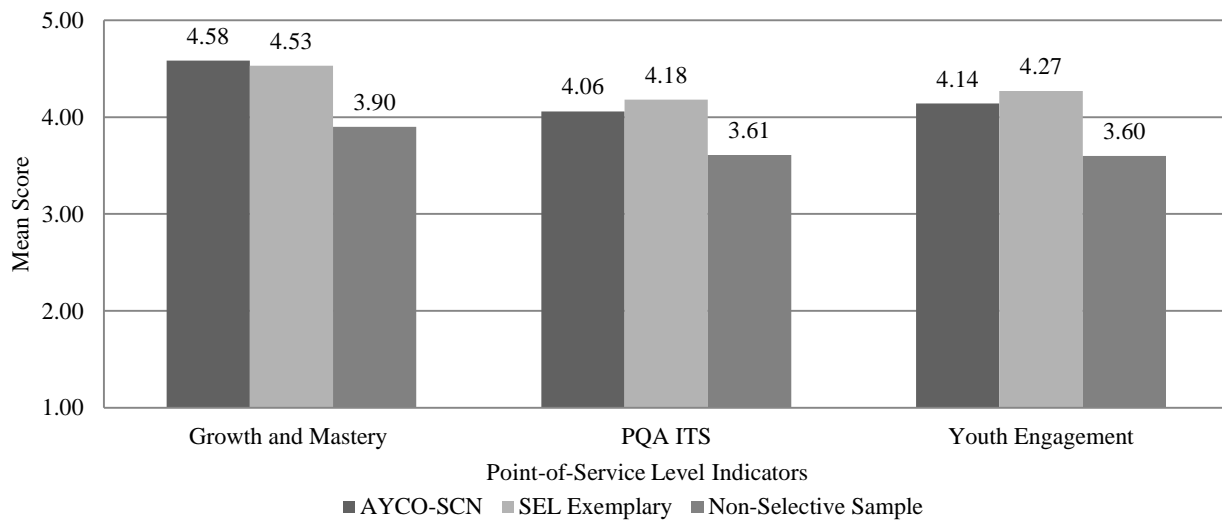
Source: Youth PQA 2016-17 (*n* = 20), School-Age PQA 2016-17 (*n* = 12), Youth PQA De-Identified Reference Sample 2016 (*n* = 1626), School-Age PQA De-Identified Reference Sample 2016 (*n* = 2067), AYCO-SCN Staff and Manger Survey 2017 (*n* = 18), SEL Challenge Staff Survey *(n* = 27), SEL Challenge Day-of-Observation Survey (*n* = 8), AYCO-SCN Day-of-Observation Survey (*n* = 11)

## Youth SEL Behavioral Skill Growth

In this section, we present evidence about change in SEL behavioral skills during the circus arts program offering. First, for the baseline and final time points, mean skill levels of AYCO-SCN youth are compared to the mean levels in the two reference samples. Next, SEL behavioral skill profiles for subgroups of students are presented as a more holistic perspective on *individual skill sets*. Finally, effect sizes describing the amount of change in youth SEL skills are presented for all youth in the AYCO-SCN sample and for AYCO-SCN youth who have higher identified risk at baseline. Additional detail for all three time points is presented in Appendix C.

Baseline SEL Behavioral Skill

Figure 4 presents mean scores for all youth on the four domains of SEL behavioral skill (described in Table 1) for the AYCO-SCN (at the beginning of the program, or baseline), exemplary, and non-selective samples. At baseline, youth in these three adolescent samples were demonstrating similar levels of SEL behavioral skill.
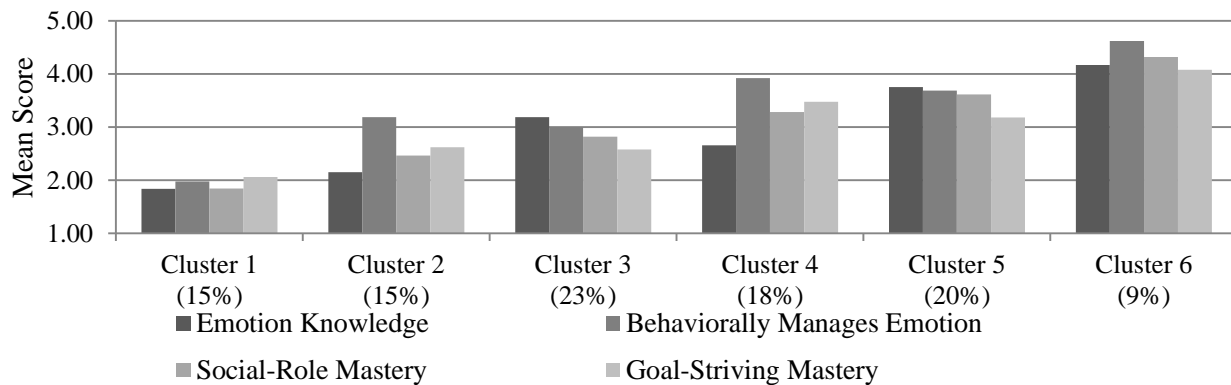
Figure 4. Baseline SEL Behavioral Skill (SRYB) Mean Scores for AYCO-SCN, Exemplary, and Non-Selective Samples
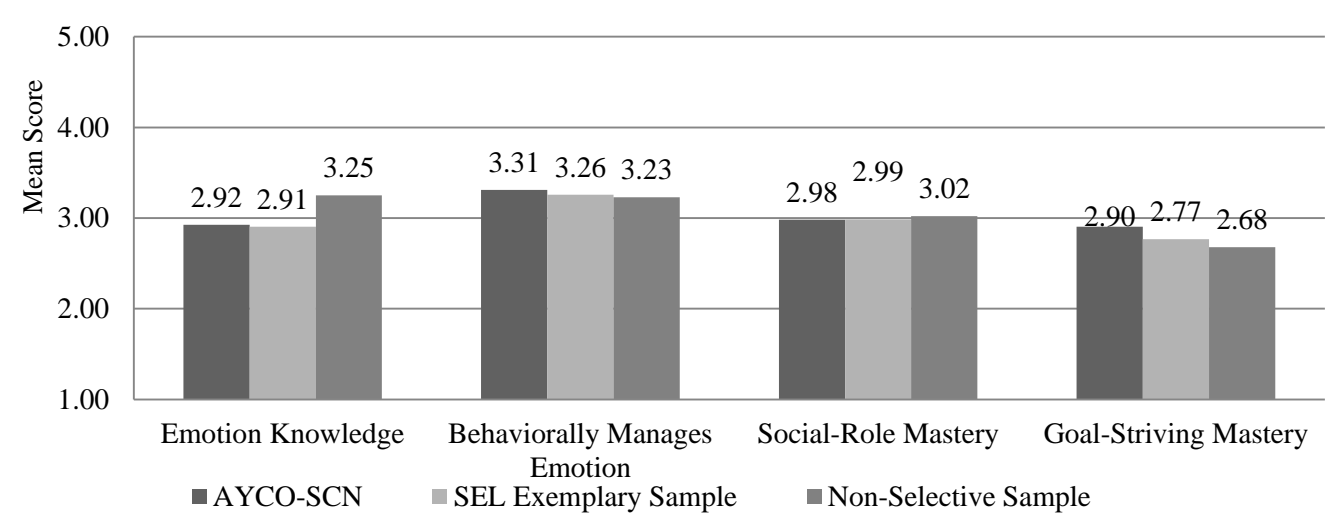
Source: AYCO-SCN Staff Rating of Youth Behavior Time 1 ($n = 163$), SEL Challenge Staff Rating of Youth Behavior Time 1 ($n = 161$)

Next, the Weikart Center conducted pattern-centered analysis (i.e., cluster analysis, involving a search for cases with similar profile patterns) on the baseline SRYB data. Figure 5 presents the baseline skill profile subgroups within the AYCO-SCN sample. Each cluster represents a group of AYCO-SCN youth who have similar profiles (i.e., skill sets) of SEL behavioral skill. The cluster analysis classifies youth with similar behavioral skill profiles together so that youth in the same cluster are characterized by similar profiles of SEL skills compared to youth in the other clusters. At baseline, 53% of AYCO-SCN youth were in the lowest subgroups (i.e., clusters 1, 2, and 3): They were struggling to demonstrate the self-regulatory skills hypothesized to promote success in the circus arts offerings. At baseline, 29% of AYCO-SCN youth demonstrated fairly well-developed self-regulatory skills (i.e., clusters 5 and 6).

Figure 5. Baseline SEL Behavioral Skill (SRYB) Profiles for AYCO-SCN Youth
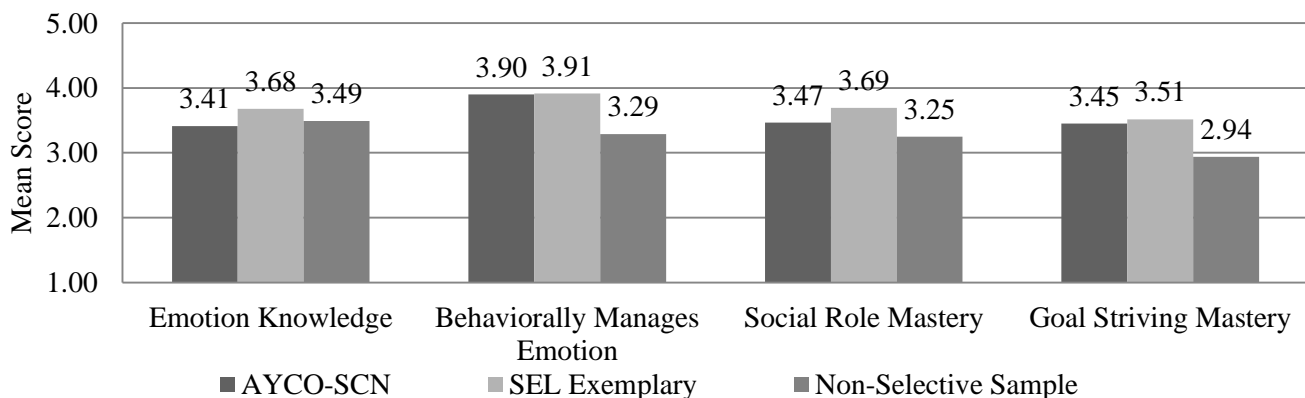

Source: AYCO-SCN Staff Rating of Youth Behavior Time 1 ($n = 163$)

End-of-Program SEL Behavioral Skills

Figure 6 presents mean scores for the four SEL behavioral domains for the AYCO-SCN at the end of the program, and for the exemplary and non-selective samples. At the end of program, both AYCO-SCN and the SEL exemplary samples showed larger gains in SEL behavioral skills compared to the non-selective sample. Youth SRYB data were again subjected to pattern-centered analysis (i.e., cluster analyzed) using end-of-program data. Figure 7 presents end-of-program behavioral skill subgroups indicating that whereas 19% of AYCO-SCN youth were struggling to demonstrate the self-regulatory skills necessary to be successful in the circus arts offerings (i.e., clusters 1 and 2), 46% of AYCO-SCN youth demonstrated fairly well-developed self-regulatory skills (i.e., clusters 4 and 5).

Figure 6. End-of-Program SEL Behavioral Skill (SRYB) Mean Scores for AYCO-SCN, Exemplary, and Non-Selective Samples

Source: AYCO-SCN Staff Rating of Youth Behavior Time 3 ($n = 138$), SEL Challenge Staff Rating of Youth Behavior Time 3 ($n=138$)

Figure 7. End-of-Program SEL Behavioral Skill (SRYB) Profiles for AYCO-SCN Youth
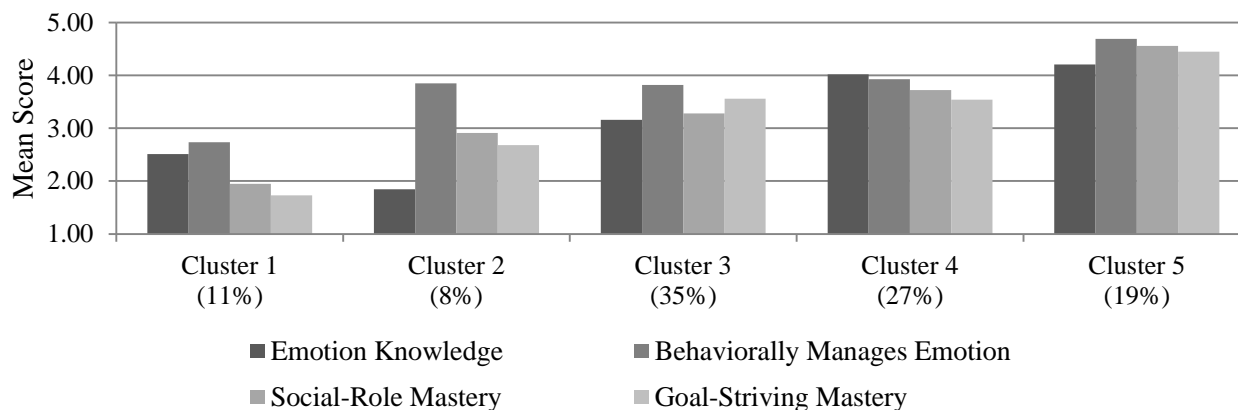
Source: AYCO-SCN Staff Rating of Youth Behavior Time 3 ($n = 138$)

Social and Emotional Behavioral Skill Growth

For the growth analyses, we separated the youth participants by age groups and conducted parallel analyses for younger (ages 6-11) and older (ages 12-18) to allow for developmental differences in youth response to the circus arts curricula. The patterns of effects were similar. AYCO-SCN youth demonstrated positive and substantial SEL behavioral skill growth from the beginning to the end of the program offering. Comparing Figures 4 and 6 (i.e., pre and post scores), there were substantial increases in all of the mean SRYB scale scores, and the largest increase was in the Behaviorally Manages Emotion scale. The distribution of SEL behavioral skill subgroups at baseline indicated that 53% of the AYCO-SCN youth were struggling to demonstrate SEL skills and 29% demonstrated fairly well-developed self-regulatory skills. At the end of the program, only 19% of AYCO-SCN youth demonstrated low SEL behavioral skill levels, and 46% demonstrated well-developed self-regulatory skills.

Figure 8 illustrates the Cohen's d_z effect sizes[3] corresponding to the differences between the Time 1 and Time 3 SRYB scale means. On average, youth in the AYCO-SCN network experienced positive SEL skill growth during the offering. As indicated in Figure 8, effect sizes (Cohen's d_z) ranged between $d_z = 0.58$ and $d_z = 1.02$, with the average effect size for younger AYCO-SCN participants at $d_z = 0.70$ and for older AYCO-SCN participants at $d_z = 0.79$. The magnitude of these effect sizes can be interpreted as moderate to large effects (Lakens, 2013).

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[3] The point of Cohens's d_z is to understand the size of the effect from Time 1 to Time 3 using a quantitative estimate that does not depend on sample size and that can be compared across variables or study samples. Cohen's d_z can be described as the "the standardized mean difference effect size for within-subjects designs" (Lakens, 2013, p. 4). It differs from the standard Cohen's d in that it is based on the average difference score between Time 1 and Time 3 over the standard deviation of the difference values, whereas the standard Cohen's d is the difference in group means over the pooled standard deviations of the two groups. Cohen's d_z also corrects for the auto-correlation between the Time 1 and Time 2 scores.

Figure 8. Cohen's d_z Effect Sizes for Changes in AYCO-SCN and SEL Exemplary SRYB scale scores from Time 1 to Time 3

- ◆ AYCO-SCN Youth (Ages 6-11)   ▲ AYCO-SCN Youth (Ages 12-18)   ■ SEL Exemplary Sample
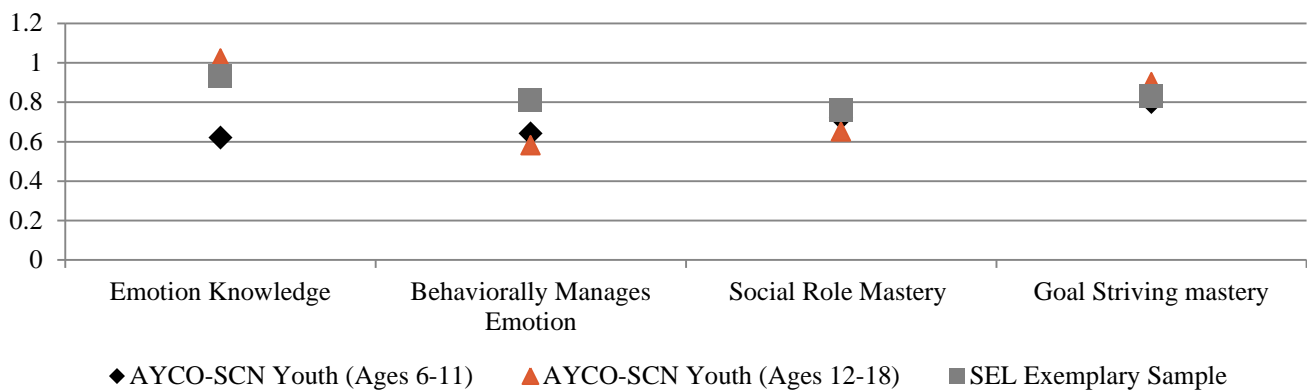
SEL Skill Gains for Youth with Behavioral or Developmental Risk

Risk was assessed at baseline, and we tested for differences in behavioral skill growth, comparing trajectories for higher-risk groups to the rest of the youth. Risk was defined in two ways: *Behavioral risk* was defined as membership in a low-skill SRYB profile group at baseline, specifically clusters1 and 2 and Figure 5. *Developmental risk* was defined in terms of self-reported attachment anxiety, attachment avoidance, social phobia, parent relationships, and learning effort. In general, youth with higher behavioral risk made greater skill gains than youth with low behavioral risk, and youth with high developmental risk made less SEL behavioral skill gains than youth with low developmental risk. Additional detail is provided in Appendix E.

Conclusions

This *Evaluation of Program Quality and Social and Emotional Learning in American Youth Circus Social Circus Network Programs* was undertaken to answer three questions: Do circus arts program offerings achieve high fidelity implementation of challenging curriculum and responsive instruction for diverse youth? Do youth social and emotional learning (SEL) behavioral skills grow during circus arts program offerings? Do the levels of curriculum challenge, responsive instruction, and skill growth compare to benchmarks for exemplary SEL programs? These questioned were answered by using performance measures in AYCO-SCN programs and comparing results to benchmarks for SEL exemplary and non-selective samples. With recognition of a few caveats[4], results of the study indicate that:

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[4] This study's design is drawn from the field of performance management, meaning that generalizability of inferences (i.e., external validity) are not the highest priority. This study is about the eleven program offerings that were its subject and which were selected on the basis of their exemplary performance. In terms of the internal validity of the research design, our conclusions about program effectiveness are "threatened" by lack of a control condition (i.e., youth without circus arts programming and/or youth in very low quality circus arts programming) and small sample size with little variation in the predictor variables (i.e., N=11 program offerings). The strengths of the study design – strong theory, measures with a validation history, replicated prior evidence about the association between quality and outcomes, and availability of benchmarks for exemplary and non-exemplary programs – are a response to these caveats.

AYCO-SCN circus arts offerings were implemented with fidelity to AYCO-SCN theory of change. The AYCO-SCN offerings were characterized by intensive circus arts programming for diverse youth (e.g., ethnicity, risk) and were delivered by expert staff who reflected the pattern of youth ethnic diversity. AYCO-SCN staff also achieved high levels of curriculum challenge, responsive instruction, and youth engagement.

In AYCO-SCN circus arts program offerings, youth skills increased in accord with the AYCO-SCN theory of change. AYCO-SCN youth demonstrated positive and substantial SEL behavioral skill growth from the beginning to the end of the program offering. This effect was further examined for youth who entered into the program with higher levels of developmental or behavioral risk. AYCO-SCN youth who entered the offering with higher behavioral risk had greater SEL behavioral skill gains than youth who entered the offering with low behavioral risk. AYCO-SCN youth who entered the offering with higher developmental risk did not gain SEL behavioral skills at the same rate as youth who entered the offering with low developmental risk.

AYCO-SCN circus arts program offerings average performance on four key indicators - curriculum challenge, responsive instruction, youth engagement, and youth SEL skill growth – compared favorably to benchmarks for a selective sample of exemplary SEL programs for adolescents. AYCO-SCN performance relative to these benchmarks was consistently similar to exemplary programs focused on SEL and substantially outperformed a non-selective reference sample of out-of-school time programs for adolescents.

Given this pattern of results, several conclusions follow. First, AYCO-SCN programs appear to be achieving their social purpose by delivering a circus arts curriculum model that combines high challenge and high support – best practices in the field of youth development – and implementing this curriculum at high levels of fidelity. Further, youth in all but one of the program offerings demonstrated positive SEL behavioral skill change over the course of the program cycle.

Second, the AYCO-SCN Social Circus Network offerings that were selected compared favorably to exemplary programs with long histories of SEL work. AYCO-SCN program offerings also outperformed program offerings in the non-selective benchmark sample. This pattern indicates that these ACYO-SYN circus arts programs are also SEL programs.

Finally, these results can be generalized to other circus arts programs in the sense that the study's evaluation design recommends: Circus arts programs that achieve similar levels of challenge and responsiveness in their curriculum are likely to see similar effects on SEL behavioral skills. This does not mean that all circus arts programs automatically achieve high quality and large effects. Although the pattern of both high fidelity and substantial skill change was true for almost all sites, it was not true in all cases. The circus arts performance benchmarks for quality and outcomes produced through this study may be of great value to other circus arts programs seeking to describe their own excellence, or aspirations.

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Appendix A. Social Circus Network Organizations and Program Offerings

Tables A-1 and A-2 describe characteristics of the eight organizations that participated in the evaluation.

Table A-1. Organization Characteristics

	Organization	Location	Annual Operating Budget
	Circus Harmony	*St. Louis, MO*	$498,000
	Circus Barn, Inc. Circus Smirkus	*Greensboro, VT*	$95,000
	Fern Street Circus	*San Diego, CA*	$244,000
	My Nose Turns Red Youth Circus	*Cincinnati, OH*	$135,000
	Prescott Circus Theatre	*Oakland, CA*	$340,000
	School of Acrobatic and New Circus Arts	*Seattle, WA*	$120,000
	Trenton Circus Squad	*Trenton, NJ*	$420,000
	Wise Fool New Mexico	*Santa Fe, NM*	$175,000

Table A-2. Target Offering Description

Organization	Content	Description of Target SEL Offering	Total contact hours
Circus Harmony	Peace Through Pyramids: Ferguson (school-age) Level 2 Class (youth)	Circus Harmony uses the teaching and performing of circus arts to motivate social change by building character in individuals and building bridges between communities. Our program helps children to defy gravity, soar with confidence and leap over social barriers all at the same time.	45 210
Circus Barn, Inc. Circus Smirkus	Circus Arts and Learning Strategies	Sharing traditional circus skills and Smirkus' own CircusSecrets curriculum, student imaginations are captured in a way that cultivates Social-Emotional Learning skills, builds confidence and grit, and fosters positive school culture.	50
Fern Street Circus		Circus education program offered free-of-charge and year-round in a municipal recreation center in, arguably, San Diego's most diverse, low income neighborhood. A partnership with the City for youth ages 6 – 17. Most determined students perform annually with Fern Street's circus, musical, and tech professionals in Neighborhood Tour. This accelerated learning complements year-round circus training.	96
My Nose Turns Red Youth Circus	Circus Youth in Action	Youth learn leadership skills through learning how to coach circus skills, plan performances, develop acts and engage audiences.	30
Prescott Circus Theatre	Circus and Theater Arts	Youth develop circus and related performing skills, develop an original production, and perform for their community.	300
School of Acrobatic and New Circus Arts	Circus Circus (youth) Mag 7 (school-age)	SANCA is an immersive, multi-year circus arts program in which youth develop circus and life skills in a safe, supportive and nurturing environment.	489
Trenton Circus Squad	Trenton Circus Squad	Trenton Circus Squad empowers low-income and at-risk teens and younger children to make a difference, in their own lives and those of others. Use circus arts as a vehicle	120-600

		to bring diverse youth together to cooperate, challenge themselves and serve their community through performing and teaching.	
Wise Fool New Mexico	Wise Fool Teen Troupe		94
	Afterschool program at El Camino Real Academy	Provides youth with training in specific circus disciplines as well as performance skills and opportunities to perform and assist with hands-on activities at community events.	72

Appendix B. Scale and Item Descriptives for All Measures at All Time Points

Tables B-1 and B-2 describe characteristics of the staff and youth who participated in the evaluation. Tables B-3 through B-5 list the item-level means and standard deviations for the AYCO-SCN. Figure B-1 illustrates the PQA subgroup profiles of AYC-SCN programs.

Table B-1. Staff Demographics

	Sample size	College degree	Advanced degree	Years of experience in current position
Program Manager/Instructor	18	28%	39%	12.35

Source: AYCO-SCN Staff and Manger Survey 2017 (n = 18)

Table B-2. Youth and Staff Demographics

	Sample size	African American/Black	Hispanic/ Latino (a)	Asian/Pacific Islander	White	American Indian	Native Hawaiian/ Pacific Islander	Other
Staff	(n=18)	11%	22%	56%	67%	0%	0%	0%
Youth	(n=112)	24%	17%	6%	52%	4%	6%	12%

Source: AYCO-SCN Staff and Manger Survey 2017 (n = 18), Youth Day of Observation Time 2 (n=127)

Program Quality

Organizational Culture

Table B-3. Organizational Culture

Vertical Communication *Please respond to the following statements by circling the number that most nearly represents how often the following practices occur in your program: 1 = "Never," 3 = "Every few months," 5 = "At least weekly"*	AYCO-SCN	SEL Exemplary
My supervisor challenges me to innovate and try new ideas.	3.59 (.73)	4.32
My supervisor makes sure that program goals and priorities are clear to me.	3.04 (1.29)	4.50
Horizontal Communication *Please respond to the following statements by circling the number that most nearly represents how often the following practices occur in your program: 1 = "Never," 3 = "Every few months," 5 = "At least weekly"*	AYCO-SCN	SEL Exemplary
I co-plan with another member of staff.	4.67 (.79)	4.77
I discuss teaching problems or practices with another staff member.	4.83 (.57)	4.89
A co-worker observes my session and offers feedback about my performance.	3.04 (1.29)	3.86
I work on plans for program policies or activities with other staff.	3.84 (.85)	4.44
I observe a co-worker's session and provide feedback about their performance.	3.47 (.95)	4.00

Source: Staff and Manager Survey 2017 (n = 18), SEL Challenge Staff Survey (n = 27)

Responsive Instruction and Challenging Curriculum

Table B-4. Point-of-Service Level Performance Indicators – Instructional Total Score

	AYCO-SCN YPQA	AYCO-SCN SAPQA	SEL Exemplary YPQA
Instructional Total Score			**3.50**
Supportive Environment	4.45 (.25)	4.57 (.13)	4.64
Interaction	3.92 (.57)	4.42 (.21)	4.02
Engagement	3.62 (.54)	3.63 (.42)	3.88

Source: Youth PQA 2016-17 (n = 20), School-Age PQA 2016-17 (n = 12), SEL Exemplary Youth PQA (n = 24)

Cluster Results

Responsive Instruction Profiles

Each program was evaluated by an external assessor at three time points. The profiles shown in Figure B-1 were derived from pattern-centered analyses (i.e., cluster analysis) of PQA data that were first averaged across all three time points. Consequently, the PQA profiles of instructional quality shown below depict program sites' average profiles of instructional quality across the duration of the program. Higher-quality instruction, as assessed by the PQA, has been associated with increased levels of youth engagement and gains in academic skills demonstrated in both OST settings and the school day (Smith, 2013). Analysis of Weikart Center data indicates that Instructional Total Score (ITS) above the "high-engagement" threshold (3.90) are strongly associated with youth reports of engagement in the form of interest, challenge, and belonging. ITS below the "low-engagement" threshold (2.90) are associated with little to no youth sense of belonging, interest, or challenge at the program (Akiva, Cortina, Eccles, & Smith, 2013). In the AYCO-SCN three profiles (i.e., clusters 3, 4, and 5), are categorized as "high-engagement" because they have an average ITS about the threshold (3.90). The remaining two profiles (i.e., clusters 1 and 2), fell between the high and low thresholds.

Figure B-1. PQA Profiles of Instructional Quality
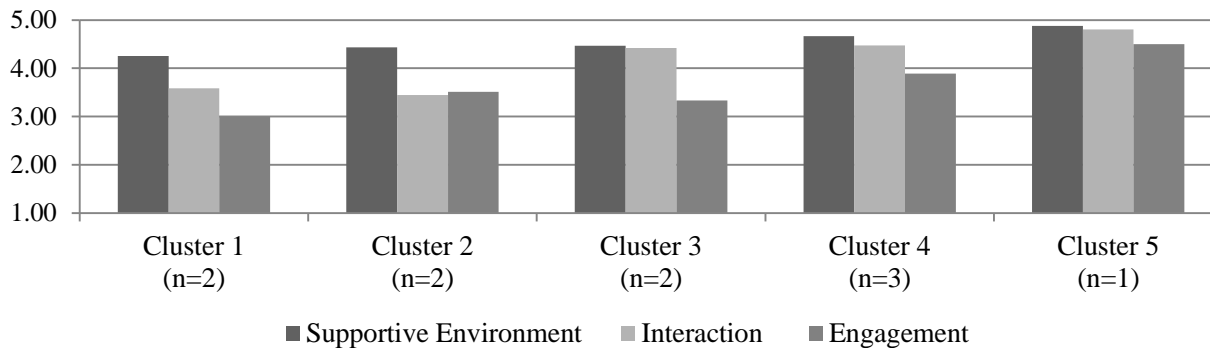
Source: Youth PQA 2016-17 (*n* = 20), School-Age PQA 2016-17 (*n* = 12)

Table B-5. Point-of-Service Level Performance Indicators – Growth and Mastery

Growth and Mastery *Please indicate the proportion of students in your program for which the following goal statements are true. 1 = "Almost none," 3 = "About half," 5 = "Almost all"*	AYCO-SCN	SEL Exemplary
We exposed students to experiences which were NEW FOR THEM.	4.38 (.77)	4.56
Students had responsibilities and privileges that INCREASE OVER TIME (e.g., older youth allowed to used advanced art equipment).	4.72 (.63)	4.33
Students worked on GROUP PROJECTS THAT TAKE MORE THAN FIVE SESSIONS to complete.	4.43 (.79)	4.52
Participating children and youth were acknowledged for achievements, contributions and responsibilities (e.g. exhibitions of work).	4.72 (.48)	4.79
At least once during a semester students participated in a SEQUENCE OF SESSIONS where TASK COMPLEXITY INCREASES to build explicit skills (e.g., Lego robotics to build computer programming skills).	4.63 (.60)	N/A
Students identified a skill/activity/pursuit that THEY FEEL they are uniquely good at.	4.67 (.53)	4.41

Source: Staff and Manager Survey 2017 (n = 18), SEL Challenge Staff Survey (n = 27)

Appendix C. Youth SEL Behavioral Skill Growth

Table C-1 lists the scale score means and standard deviations for the AYCO-SCN at each time point. The change in AYCO-SCN SRYB scale scores from Time 1 to Time 3, compared to the SEL exemplary samples for each of the SRYB scale scores, is shown in Figures C-1 through C-4. In order to get a more accurate comparison to the SEL Exemplary sample, we only included youth aged 12-18. These figures show an overall improvement for each scale indicating that, on average, behavior improved over the course of the program year. A paired-samples *t*-test was conducted to compare Time 1 to Time 3 for the total AYCO-SCN sample on the SRYB scale scores, and there was a statistically significant difference in the mean scores for each of the four scales. This indicates that, on average, youth in the AYCO-SCN programs demonstrated significant SEL behavioral skill growth across the program year.

Table C-1. AYCO-SCN SRYB Scales scores at Times 1, 2, and 3

AYCO-SCN SRYB Scales	Time 1	Time 2	Time 3
Emotion Knowledge	2.92 (.89)	3.04 (.87)	3.41 (.87)
Behaviorally Manages Emotions	3.31 (.89)	3.66 (.74)	3.90 (.70)
Social-Role Mastery	2.98 (.83)	3.06 (.88)	3.47 (.82)
Goal-Striving Mastery	2.90 (.71)	3.03 (.78)	3.45 (.87)

Source: AYCO-SCN Staff Rating of Youth Behavior (*n* = 163)

Figure C-1. Youth (Ages 12-18) AYCO-SCN and SEL Exemplary SRYB - Emotion Knowledge Scores from Time 1 to Time 3
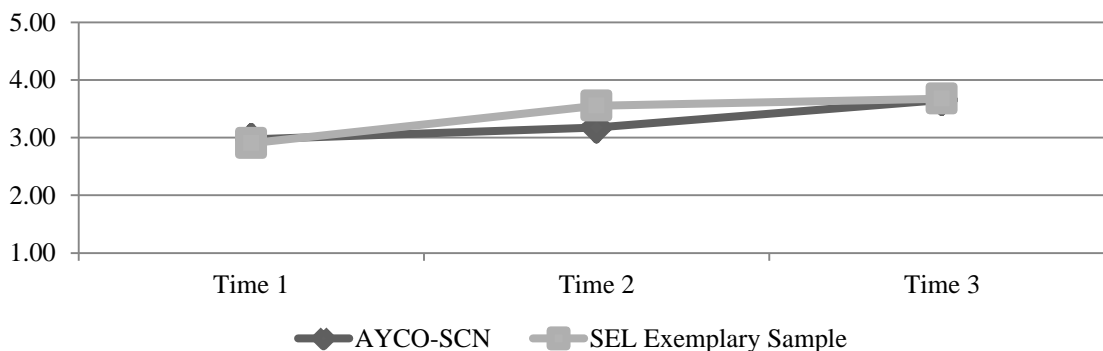
**Figure C- 2. Youth (Ages 12-18) AYCO-SCN and SEL Exemplary SRYB - Managing Emotion Scores from Time 1 to Time 3**

AYCO-SCN   SEL Exemplary Sample
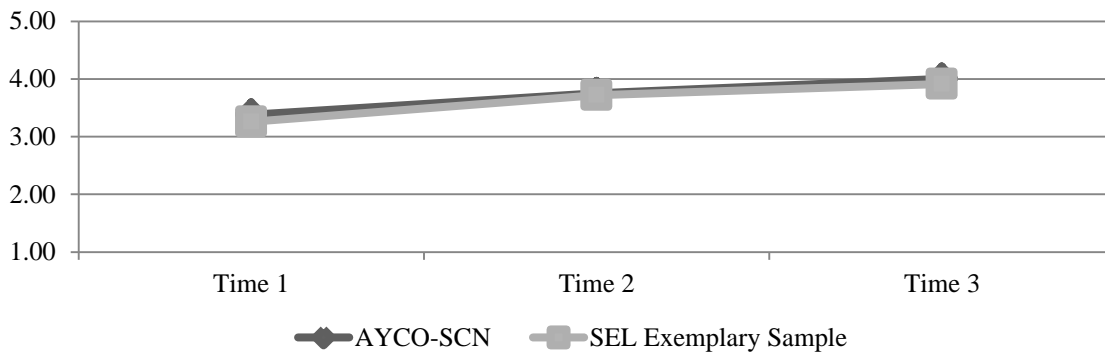
Figure C- 3. Youth (Ages 12-18) AYCO-SCN and SEL Exemplary SRYB - Social-Role Mastery Scores from Time 1 to Time 3

AYCO-SCN   SEL Exemplary Sample
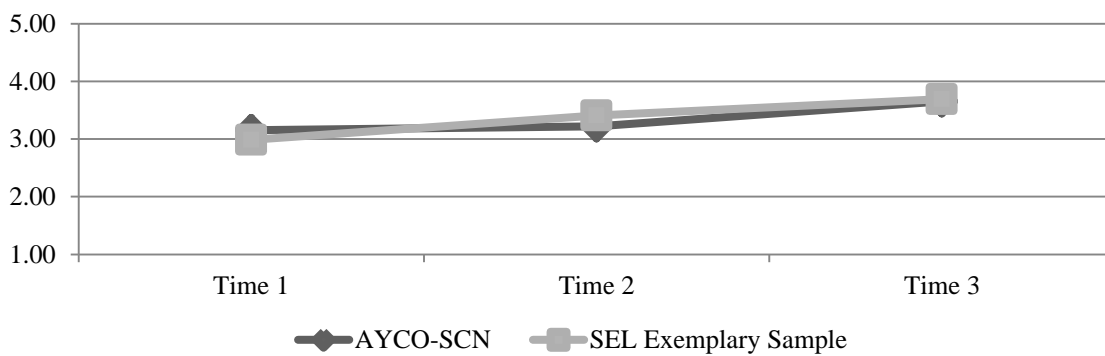
Figure C- 4. Youth (Ages 12-18) AYCO-SCN and SEL Exemplary SRYB - Goal-Striving Mastery Scores from Time 1 to Time 3

AYCO-SCN   SEL Exemplary Sample
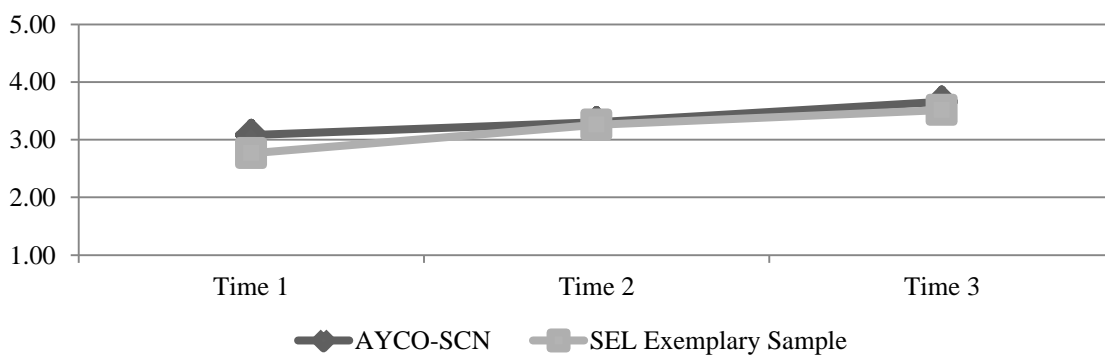
Appendix D. SEL Program Indicator Descriptives by Site

Figures D-1 through D-5 illustrate the site means for the organizational and point-of-service level indicators. Additionally, each figure includes the SEL exemplary-sample benchmark to illustrate the extent to which sites within the AYCO-SCN are scoring at or above the SEL exemplary benchmark. Figures D-6 through D-9 represent the change score for each of the SRYB scales. A change score is computed by subtracting the time 1 SRYB scale score from the time 3 SRYB scale score for each youth. A change score was computed for those youth with no time 1 data by subtracting the time 2 SRYB scale score from the time 3 SRYB scale score. A positive change score indicates an increase in SEL behavioral skill, where as a negative change score signifies a decrease in SEL behavioral skill. One program in the study sample (identified with the arbitrary number "1" in the figures below), which was in its first year of operation, faced several barriers due to issues with city after-school funds and school policies that may have limited program staff's ability to impact youth SEL skills.

Figure D-1. AYCO-SCN Staff Survey – Horizontal Communication by Program
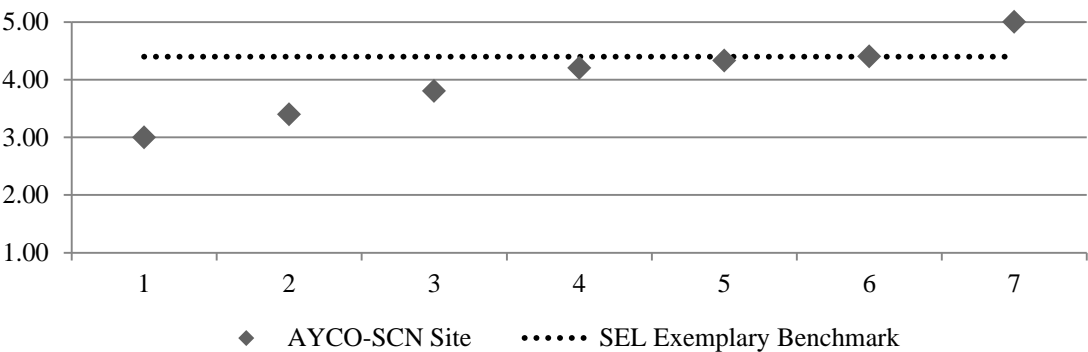
Figure D-2. AYCO-SCN Staff Survey – Vertical Communication by Program
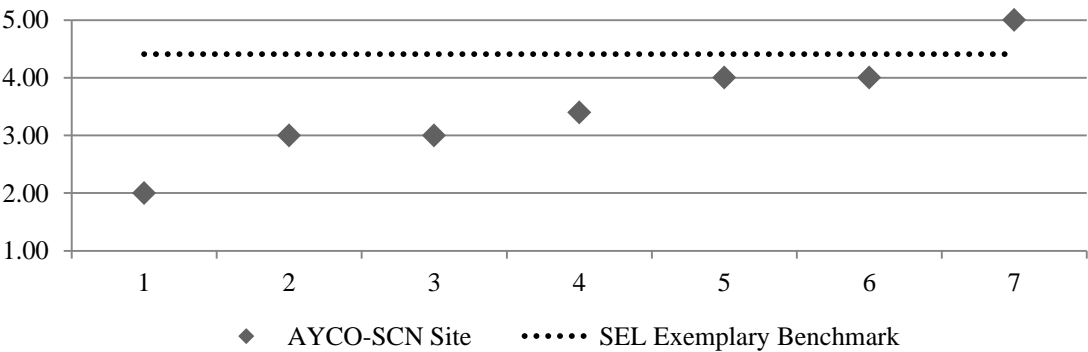
Figure D-3. AYCO-SCN Staff Survey – Growth and Mastery by Program
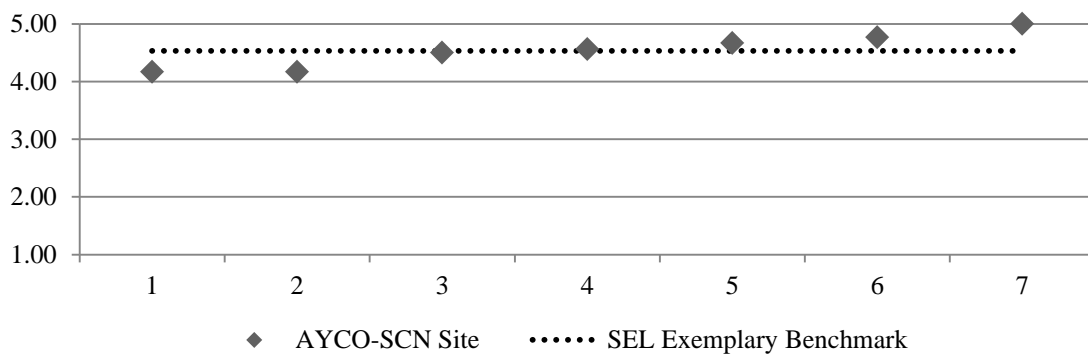
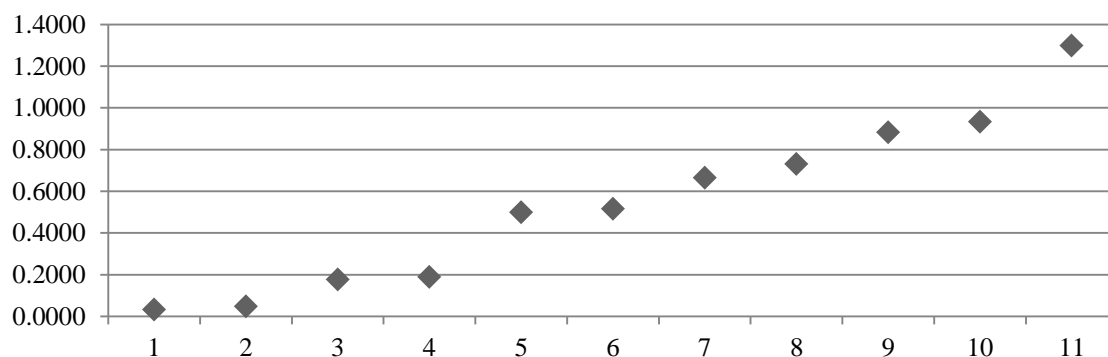**Figure D-4. AYCO-SCN Staff Survey – Instructional Total Score by Site**
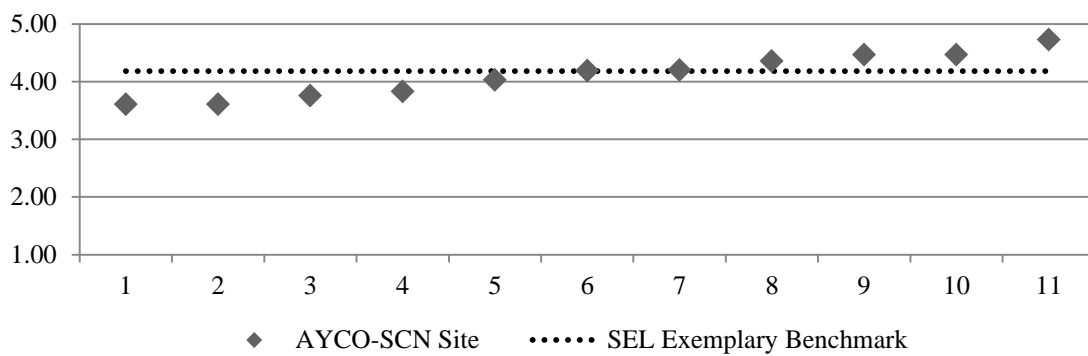
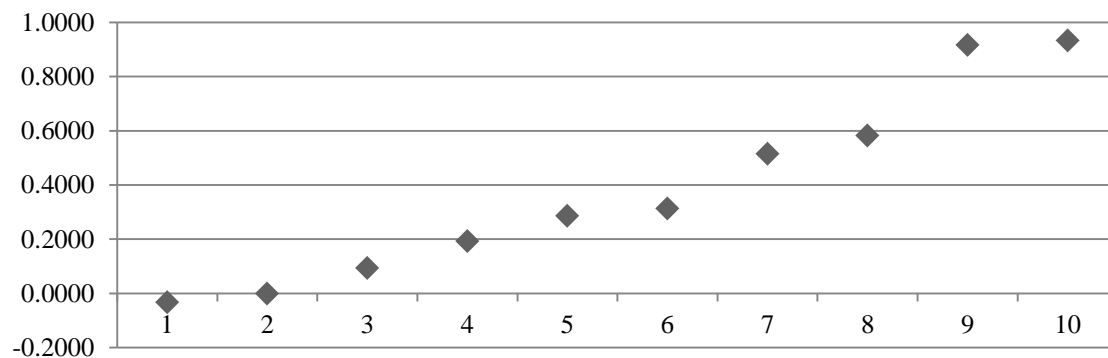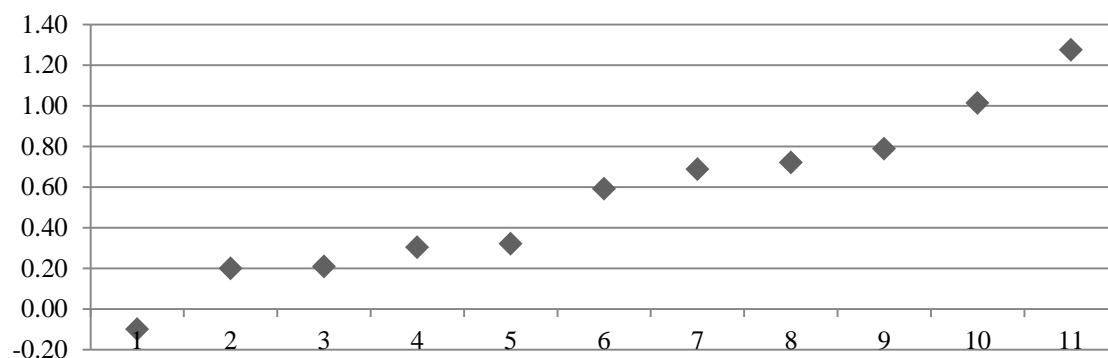**Figure D-5. AYCO-SCN Staff Survey – Youth Engagement by Site**
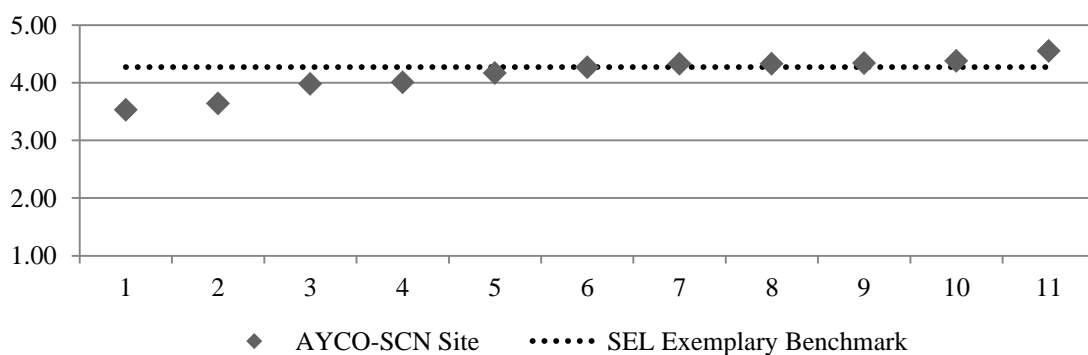
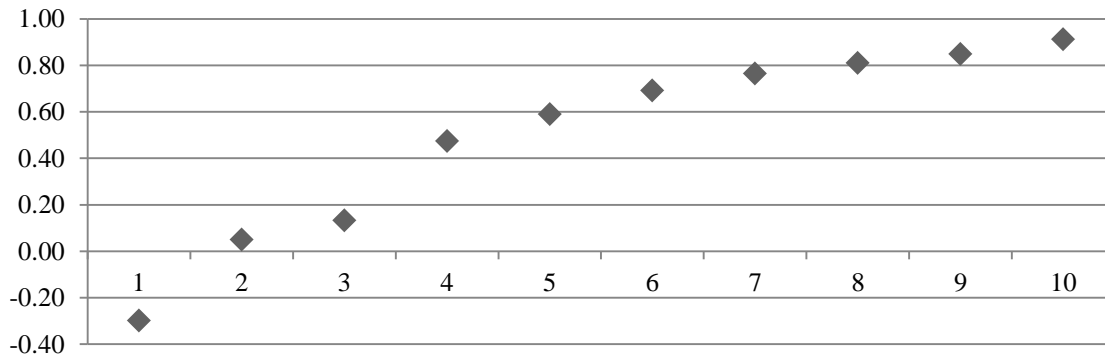**Figure D-6. AYCO-SCN SRYB - Emotion Knowledge Change Scores by Site**

Figure D-7. AYCO-SCN SRYB – Behaviorally Manages Emotion Change Scores by Site

Figure D-8. AYCO-SCN SRYB – Social-Role Mastery Change Scores by Site

Figure D-9. AYCO-SCN SRYB – Goal-Striving Mastery Change Scores by Site

Appendix E. Youth SEL Behavioral Skill Growth by Risk Status

A multiple linear regression analysis was conducted to predict SEL behavioral skill change based on youth risk. Risk was assessed at baseline, and we tested for differences in behavioral skill growth, comparing trajectories for higher-risk groups to the rest of the youth. Risk was defined in two ways: *behavioral risk* was defined as membership in a low-skill SRYB profile group at baseline, and *developmental risk* was defined in terms of self-reported attachment anxiety, attachment avoidance, social phobia, parent relationships, and learning effort.

Youth were classified as being in the high behavioral risk subgroup if they were in one of the low-skill SRYB profile groups at Time 1 (i.e., Cluster 1 as shown in Figure 4). Youth in the high behavioral risk subgroup demonstrated as much or more change over time than youth in the low behavioral risk subgroup. Please note, however, that these findings do not rule out the possibility that the more substantial improvements evidenced in the high behavioral risk subgroup were due to a phenomenon known as "regression to the mean" (i.e., the higher odds that low-scoring youth at baseline will score higher at subsequent time points due to misclassification as low at baseline).

The second approach to examining the implications of baseline risk was based on constructing a developmental risk index from measures of attachment-related anxiety, avoidance, social phobia, parent relationships, and learning effort. All youth with mean scores above four on the attachment avoidance, anxiety, or social phobia scales (i.e., agreeing with items such as, "I worry that this person won't care about me as much as I care about him or her" or "I am socially somewhat awkward") were scored as having the risk indicator, and all youth with mean scores below two on the parent relationship and learning effort scales (i.e., disagreeing with items such as, "My parent/guardian shows me he/she is proud of me" or "If I decide to learn something hard, I can") were scored as having the risk indicator. Next, these indicators were summed to create an index that ranged from 0 to 5. This index was dichotomized such that scores of 0 were coded as 0 (low risk), and scores greater than 0 were coded as 1 (high risk).
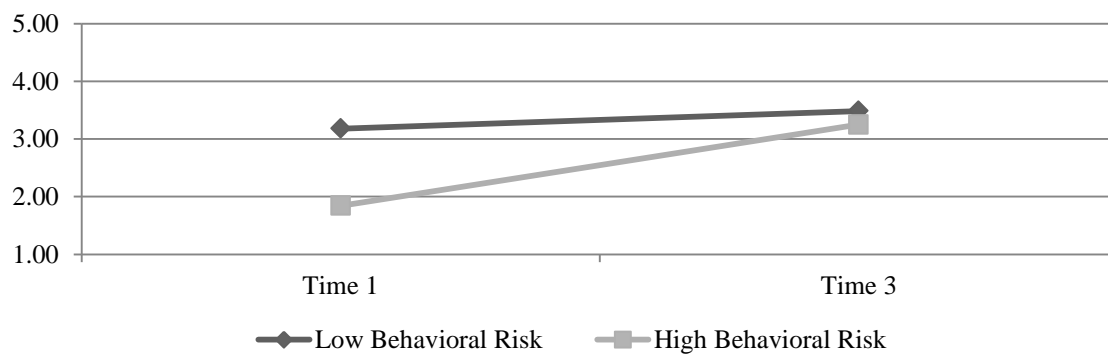
Figure E-1. Time 1-3 Differences in Behavioral Skill Growth (SRYB -Expresses Emotion Knowledge) for High and Low Behavioral Risk Youth
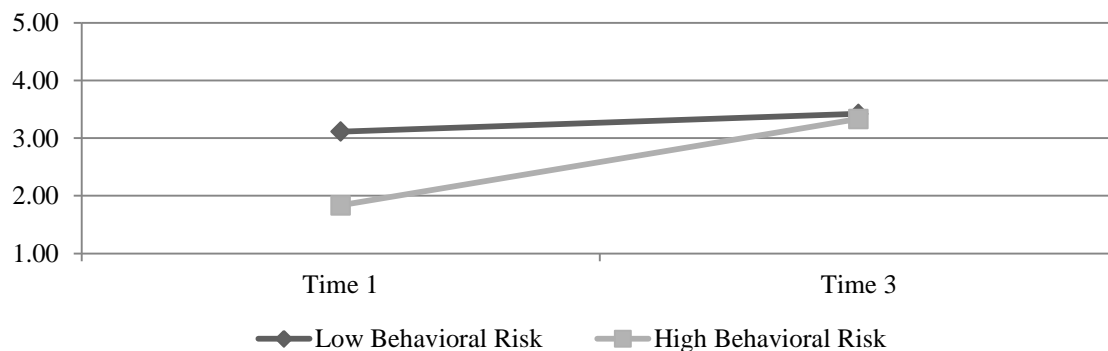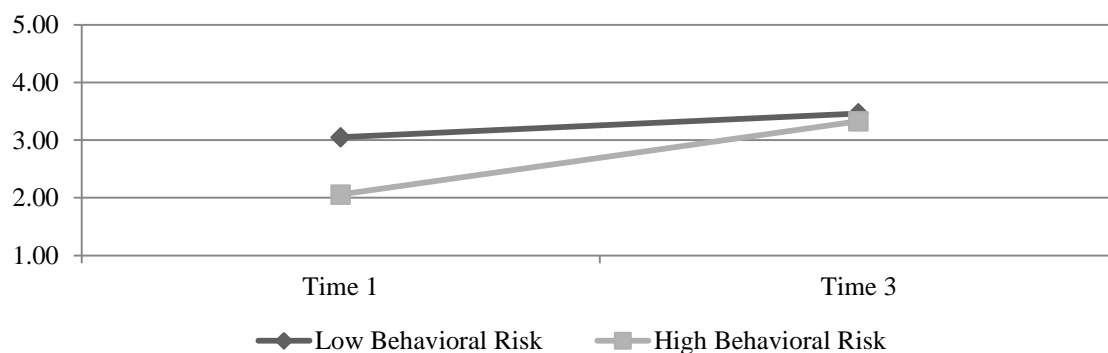

Figure E-2. Time 1-3 Differences in Behavioral Skill Growth (SRYB - Behaviorally Manages Emotion) for High and Low Behavioral Risk Youth
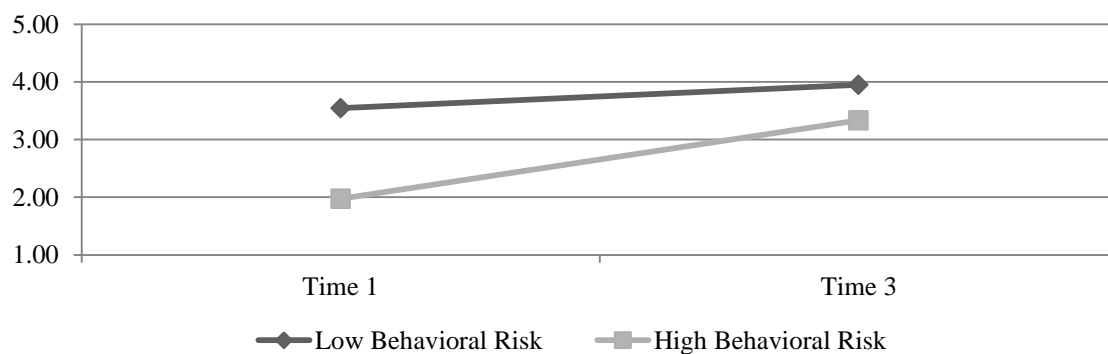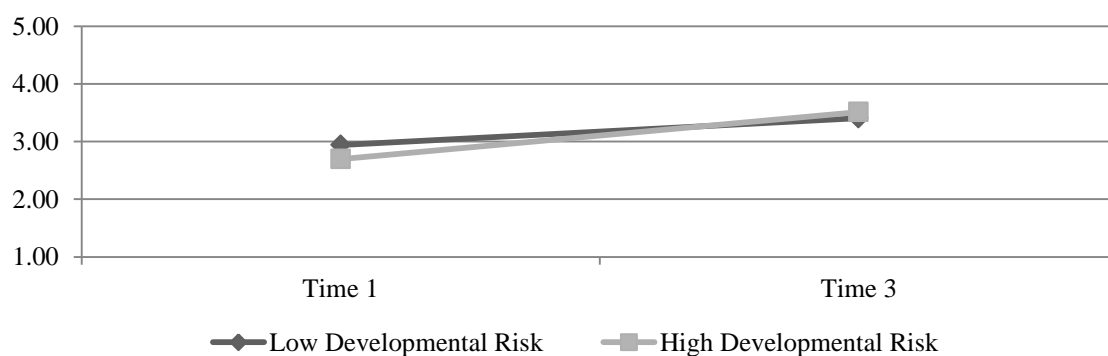

Figure E-3. Time 1-3 Differences in Behavioral Skill Growth (SRYB - Social-Role Mastery) for High and Low Behavioral Risk Youth
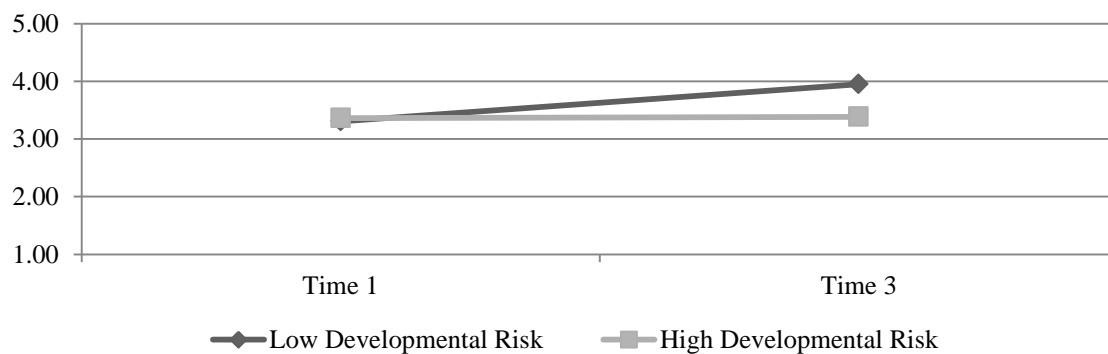
Figure E-4. Time 1-3 Differences in Behavioral Skill Growth (SRYB - Goal-Striving Mastery) for High and Low Behavioral Risk Youth
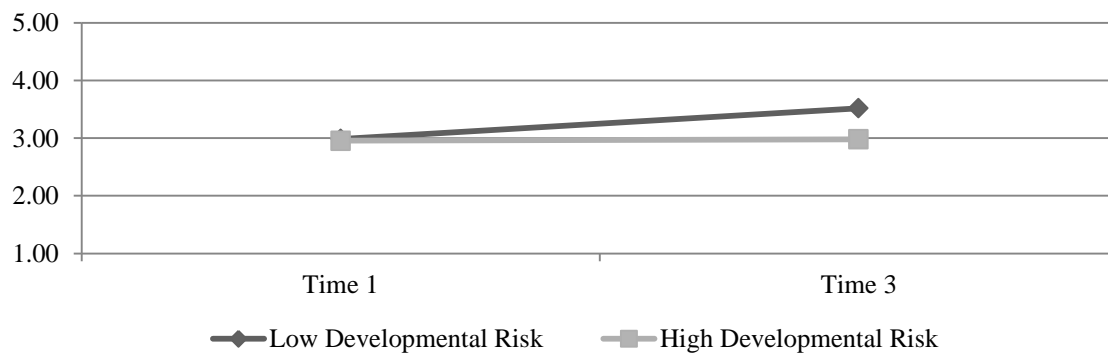

Figure E - 5. Time 1-3 Differences in Behavioral Skill Growth (SRYB -Expresses Emotion Knowledge) for High and Low Developmental Risk Youth

Figure E - 6. Time 1-3 Differences in Behavioral Skill Growth (SRYB - Behaviorally Manages Emotion) for High and Low Developmental Risk Youth

Figure E - 7. Time 1-3 Differences in Behavioral Skill Growth (SRYB - Social-Role Mastery) for High and Low Developmental Risk

Figure E - 8. Time 1-3 Differences in Behavioral Skill Growth (SRYB - Goal-Striving Mastery) for High and Low Developmental Risk