

Study 1

Efficacy of the Social Skills Improvement System – Classwide Intervention Program (SSIS – CIP) in the Primary Grades

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Abstract Body

Background

Teaching children to get along with others, care about themselves, and actively participate in learning are three of the most important outcomes of the schooling process (Gresham & Elliott, 1990; Lane, Givner, & Pierson, 2004; Wentzel, 1993). Yet children in some schools are not achieving these outcomes, and many educators have not received adequate training to create instructional environments that facilitate these outcomes. As a consequence, some schools have become places where children feel uncomfortable, unsupported, and ultimately, uninterested in learning. Under these conditions, learning is negatively affected even for some of the most able students. The importance of this problem has been acknowledged for decades in major reports such as *Nation at Risk* (1983) and federal initiatives under educational reform agendas like *Goals 2000*. The development of socially competent students also has been a top concern echoed in surveys of parents, teachers, and students as well as other educational stakeholders (e.g., Lickona, 1991).

The genesis of ineffective instructional environments and underachieving students is complex and varies across individuals and schools/communities. Consequently, the solutions to improving learning, preventing or reducing inappropriate behavior, and facilitating the prosocial development of students require multifaceted and sustained interventions. The Social Skills Improvement System (SSIS) is a comprehensive program that integrates multiple levels of assessment and intervention to improve children's social skills and engagement in classroom learning. The Classwide Intervention Program (SSIS-CIP) is the universal component of the SSIS, and it has been developed to help students learn the 10 social skills that teachers have identified as most critical to classroom success (Elliott & Gresham, 2007). This is accomplished through the implementation of a 10-week structured curriculum that includes teacher lesson plans, video vignettes, student workbook activities, progress monitoring, and parent communications. Although the SSIS-CIP is based on empirical evidence from the social skills literature and is commercially available, its efficacy in school settings has yet to be determined.

Focus of Study

The purpose of this study was to evaluate the efficacy of the SSIS-CIP using a *Multi-Site Cluster Randomized Trial (CRT)*. Specifically, we hypothesized that children in classrooms implementing SSIS-CIP would demonstrate improved social skills compared to children in non-implementing (business-as-usual) classrooms. In addition, children in SSIS-CIP classrooms were expected to demonstrate increased academic engagement during classroom instruction.

Setting

The study was conducted in two Pennsylvania school districts located in opposite ends of the state. One is a small urban district, while the other is a small rural district that is similar in size to many of the other rural districts within the state. Specifically, 6 schools (4 from the larger urban district, 2 from the smaller district) participated in the study. Collectively, the demographic characteristics of the teacher and student populations across the participating elementary schools are similar to the statewide elementary student and teacher population.

Participants

Participating classrooms ($N = 39$) enrolled 20 - 25 students, and all students were invited to participate in the project. Approximately 50% ($N = 486$) of the students received parental

permission to participate in the study. As shown in Table 1, participants from the 20 classrooms randomly assigned to the intervention condition were slightly older and had a slightly higher percentage of students who were males, of minority racial status, received special education services, and had been retained. In addition to the student participants, 39 teachers (1 per classroom) also participated in the study. All of these teachers were Caucasian, and 79% were female. Most teachers reported significant classroom experience ($M = 14.4$ years, $SD = 9$).

Intervention

The SSIS-CIP (Elliott & Gresham, 2007) is a curriculum designed to teach students 10 important social skills to support learning in the classroom. These skills are taught individually in units of three 20–25 minute lessons and include: listening to others, following directions, following classroom rules, ignoring peer distractions, asking for help, taking turns in conversations, cooperating with others, controlling anger during conflicts, acting responsibly, and showing kindness to others. Each lesson follows a 6-phase instructional model (coaching, modeling, role playing, practice/rehearsal, feedback from teachers, and generalization of skills through practice in other settings such as the lunch room or at home).

Data Collection & Measures

Child-level data were collected before and after SSIS-CIP implementation in the classrooms randomly assigned to the “treatment” condition. Specifically, two measures were used to assess key outcome variables related to students’ classroom behavior (Social Skills Improvement System Rating Scale, Cooperative Learning Observation Code for Kids). In addition, the Classroom Assessment Scoring System (CLASS, Pianta & Hamre, 2008) was used to assess the instructional environment in each participating classroom before and after treatment implementation. Finally, structured observations were used to assess fidelity of implementation of the SSIS-CIP curriculum in classrooms randomly assigned to the intervention condition.

Social Skills Intervention System Rating Scales – Teacher Form (SSIS-RST; Gresham & Elliott, 2008). The SSIS-RST was completed by a child’s classroom teacher to assess participants’ social behavior in the classroom setting. The Social Skills scale of the SSIS-RST includes 46 items and yields seven subscales (Communication, Cooperation, Assertion, Responsibility, Empathy, Engagement, & Self-Control) in addition to the total composite. Each item is rated using a 4-point format ranging from *Never* to *Almost Always*. Psychometric evidence for scores from the SSIS-RST is strong and consistent with its intended purpose (Gresham & Elliott, 2008). Reliability estimates based on the current sample likewise is strong (Table 2).

Academic Competence Evaluation Scales (ACES; DiPerna & Elliott, 2000). The ACES measures academic skills and academic enablers. The Motivation and Engagement subscales of the ACES were used for this study. The Motivation subscale includes 11 items that intend to measure a student’s approach, persistence, and level of interest regarding academic subjects. The Engagement subscale includes 8 items that reflect attention and active participation in classroom activities. Items are rated on a 5-point format ranging from *Never* to *Almost Always*. Median internal consistency (.95) and test-retest stability (.83) are high for scores from the ACES.

Cooperative Learning Observation Code for Kids (CLOCK; Volpe & DiPerna, 2010). The CLOCK is a structured observation format that was used to facilitate independent observations of student behavior in the classroom setting. The CLOCK features three categories of student behavior relevant to the primary research questions for this study: Positive Social

Behavior, Active Engaged Time (AET), and Passive Engaged Time (PET). Positive social encompasses any appropriate social behavior that is permitted during the observation interval, and it was observed using a partial interval format with each interval lasting 15 seconds. AET and PET reflect student engagement in instruction, and momentary time sampling was used to record these behaviors. The CLOCK is based on a compilation of codes similar to other empirically supported classroom observation systems, such as the Behavioral Observation System of Young Students (BOYS; Volpe & Missal, 2007) and the Behavior Observation System for Students (BOSS; Shapiro, 1996). Each observation was 12 minutes, and one paired-observation (two raters) was completed per target student and data collection period. Agreement for these observations was high across all target behavior domains and paired observations (percentage agreement = .96 - .99, kappa = .91 - .99).

Classroom Assessment Scoring System: Kindergarten – Third Grade (CLASS K-3; Pianta & Hamre, 2008). The CLASS K-3 is a structured observation system that was developed to assess the overall quality of the classroom instructional environment in the primary grades. Specifically, the CLASS K-3 yields scores in three domains: Emotional Support, Classroom Organization, and Instructional Support. These broad domains are further differentiated across 10 dimensions (Positive Climate, Negative Climate, Teacher Sensitivity, Regard for Student Perspective, Behavior Management, Productivity, Instructional Learning Formats, Concept Development, Quality of Feedback, & Language Modeling). Each dimension is rated on a 7-point scale ranging from *Low* to *High* after an observer completes an observation “cycle” (20 minutes of observation followed by 10 minutes of assigning ratings to dimensions/domains). Psychometric evidence for the CLASS is sound (Hamre & Pianta, 2008) and provides support for its intended purpose. In the current study, each classroom was observed once (2 cycles) during the first data collection window to determine if there were significant differences in instructional environments across the participating classrooms.

Research Design & Data Analysis

This study used a *Cluster Randomized Trial (CRT)* to test the efficacy of SSIS-CIP on each of the key outcome variables. Classrooms were randomly assigned to experimental conditions (SSIS-CIP and business-as-usual control) within six schools (see Figure 1). Multilevel modeling was used to evaluate the effects of SSIS-CIP to take into account students being nested within classes. We tested initially the degree to which the classes differ with respect to each of the outcomes of this investigation. These unconditional models yielded intraclass correlation (ICC) coefficients that determined the degree to which the assumption of independence was violated due to the clustering of students in classes (Raudenbush, 1997).

In evaluating effects of SSIS-CIP on each of the outcome measures, we included both student- and class-level predictors to adjust for their effects. Student-level predictors included pretest scores of the respective outcome measure (group-mean centered), students' sex (1=male, 0=female), race ethnicity (1=White, 0=other), and receipt of supplementary services (1=yes, 0=no). The dummy variable predictors were grand-mean centered. Class-level predictors included grand-mean centered class average of pretest scores of the respective outcome measure. Treatment efficacy was tested using dummy codes for experimental conditions (1=SSIS-CIP, 0=control). Moreover, interaction effects between treatment and pretest scores (both class- and student-levels) as well as student demographic variables (sex, race, and receipt of supplementary services) were tested by adding product terms between SSIS-CIP and each of the variables to the model. If the product terms were statistically significant at the .05 level, the pattern of interaction

was further examined by plotting the adjusted means. Otherwise, the non-significant product terms were dropped from the final model for parsimony. We estimated multilevel models using the Mixed procedure of SAS (version 9.3) for teacher ratings of social skills. We used the Glimmix procedure for all classroom observation data. Because classroom observations consisted of frequency data that were highly skewed, we used Poisson distribution and log link for the Glimmix procedure.

In addition, we estimated effect sizes of SSIS-CIP as compared to the control (business as usual) condition. Specifically, we computed the effect size as a standardized mean difference by dividing the adjusted (for pretest scores and other student- and class-level covariates) group mean difference by the unadjusted *pooled* within-group student-level standard deviation of the pretest outcome measure. This effect size computation (i.e., using student-level standard deviation to standardize the adjusted difference for Hedges' *g*) followed the guidelines of What Works Clearinghouse for "ES computation based on results from HLM analyses in studies with cluster-level assignment" (WWC, nodate, p.45). Pooled within-group standard deviation of pretest scores was used because pretest scores were not affected by treatment.

Findings / Results

Student- and class-level means from the measures of social skills and academic engagement variables are reported in Tables 3 and 4. Parameter estimates for the final multilevel model for these variables are presented in Table 5. There was a statistically significant interaction between SSIS-CIP and class-level pretest on teacher ratings of all social skills and academic engagement/motivation measures except assertion and self-control. The adjusted differences between SSIS-CIP and control classrooms were larger for classes that had lower average pretest scores on these measures. For classes that had high average pretest scores, SSIS-CIP did not improve their average scores when holding other variables constant. Moreover, there was a statistically significant interaction between SSIS-CIP and student-level pretest on teacher ratings of academic motivation.

Effect sizes were calculated for the social skills and academic motivation/engagement measures (Table 4) at the mean of their respective pretest scores and controlling students' sex, race-ethnicity, special education, and supplementary service status. SSIS-CIP effect sizes on posttest teacher ratings ranged from .22 (self-control) to .38 (social engagement). The magnitude of these effect sizes might be considered small-medium according to Cohen's (1988) criterion; however, as noted in the previous paragraph, these effect sizes should be interpreted carefully because the effectiveness of SSIS-CIP depended on class pretest of the respective outcome.

Conclusions

The purpose of this study was to evaluate the efficacy of the SSIS-CIP using a *Multi-Site Cluster Randomized Trial (CRT)*. Based on the results of this study, the SSIS-CIP yields small-medium positive effects (increases) in prosocial behavior (overall, communication, cooperation, responsibility, empathy, social engagement, social skills intervention composite). In addition, SSIS-CIP positively impacted academic engagement and motivation, suggesting there may be academic benefits from its implementation. Across all of these variables, the effects of SSIS-CIP appear to be more specific to those children with more severe deficits in these areas prior to SSIS-CIP implementation.

Appendix A. References

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Appendix B. Tables and Figures

Table 1

Student Demographic Characteristics by Condition

	SSIS-CIP <i>N</i> = 262	Control <i>N</i> = 224
Age (in years) ^a	7.43 (.40)	7.30 (.37)
Male	45.21	43.75
White ^b	66.67	79.51
Special education consideration	5.63	6.34
Special education	11.26	6.34
Supplementary services	21.21	26.83
Retained in grade in prior year	6.49	3.90
Promoted to next grade	98.70	100.0

Note. Mean (*SD*) are reported for Age; % reported for all other variables. Race, special education, supplementary services, and retention/promotion were unavailable for approximately 10% of cases.

^a t-test result significant at .05 level;

^b chi-square result significant at .05 level.

Table 2

Reliability and Intra-Class Correlation for Social Skills and Academic Engagement Measures

	<u>Reliability Index</u>		<u>ICC</u>	
	Pretest	Posttest	Pretest	Posttest
Social Skills				
Teacher Rating^a				
Social Skills Composite	.98	.98	.28	.26
Communication	.91	.92	.33	.32
Cooperation	.92	.93	.13	.16
Assertion	.85	.87	.37	.31
Responsibility	.92	.92	.20	.18
Empathy	.94	.94	.21	.17
Social Engagement	.93	.94	.30	.26
Self-Control	.93	.95	.22	.22
Classroom Observation^b				
Positive Social	.89	--	.34	.34
Academic Engagement				
Teacher Rating^a				
Motivation	.98	.98	.13	.11
Academic Engagement	.96	.96	.17	.20
Classroom Observation^b				
Active engaged time	.93	--	.23	.24
Passive engaged time	.90	--	.34	.26

Note. ICC= Intra-Class Correlation

^a Cronbach's alpha

^b Kappa agreement index

Table 3

Student-Level Means for Pretest and Posttest Social Skills and Academic Engagement by Treatment Condition

	<u>Pretest</u>		<u>Posttest</u>	
	SSIS	Control	SSIS	Control
Social Skills				
Teaching Ratings	N=255	N=224	N=258	N=221
Social Skills Composite	2.227 (.483)	2.166 (.561)	2.400 (.472)	2.175 (.578)
Communication	2.354 (.529)	2.295 (.614)	2.522 (.489)	2.305 (.613)
Cooperation	2.125 (.642)	2.060 (.673)	2.287 (.621)	2.066 (.706)
Assertion	1.993 (.548)	1.984 (.628)	2.245 (.551)	2.072 (.612)
Responsibility	2.322 (.572)	2.255 (.644)	2.457 (.550)	2.233 (.642)
Empathy	2.220 (.559)	2.243 (.655)	2.382 (.552)	2.195 (.674)
Social Engagement	2.329 (.557)	2.204 (.618)	2.510 (.517)	2.202 (.652)
Self-Control	2.242 (.563)	2.128 (.696)	2.386 (.585)	2.151 (.675)
Social Skills Intervention Composite	2.203 (.504)	2.136 (.580)	2.372 (.506)	2.129 (.610)
Classroom Observation	N=119	N=113	N=120	N=112
Positive Social	.496 (.636)	.350 (.448)	.370 (.573)	.254 (.431)
Academic Engagement/Motivation				
Teacher Ratings	N=255	N=224	N=258	N=221
Motivation	3.545 (1.038)	3.381 (1.070)	3.777 (.966)	3.383 (1.125)
Academic Engagement	3.878 (.931)	3.580 (.995)	4.162 (.850)	3.679 (1.030)
Classroom Observation	N=119	N=113	N=120	N=112
Active Engaged Time	.397 (.130)	.368 (.139)	.384 (.139)	.364 (.149)
Passive Engaged Time	.340 (.123)	.363 (.145)	.355 (.141)	.363 (.140)

Table 4
*Class-Level Means (SDs) for Pretest and Posttest Measures of Social Skills and Academic Engagement/Motivation
 by Treatment Conditions*

Measures	Pretest		Posttest		Adjusted Standardized differences ^a
	SSIS (N=20)	Control (N=19)	SSIS (N=20)	Control (N=19)	
Social Skills					
Teaching Ratings					
Social Skills Composite	2.239 (.248)	2.179 (.363)	2.392 (.216)	2.182 (.348)	.36
Communication	2.380 (.279)	2.309 (.428)	2.520 (.246)	2.314 (.413)	.32
Cooperation	2.129 (.259)	2.053 (.326)	2.280 (.249)	2.053 (.351)	.29
Assertion	2.009 (.397)	1.998 (.393)	2.242 (.362)	2.084 (.355)	.26
Responsibility	2.330 (.296)	2.268 (.341)	2.450 (.239)	2.244 (.336)	.30
Empathy	2.229 (.232)	2.267 (.391)	2.369 (.205)	2.208 (.367)	.35
Social Engagement	2.351 (.291)	2.214 (.407)	2.502 (.249)	2.206 (.373)	.38
Self-Control	2.243 (.282)	2.150 (.401)	2.372 (.285)	2.156 (.368)	.22
Social Skills Intervention Composite	2.209 (.234)	2.148 (.338)	2.361 (.235)	2.134 (.348)	.36
Classroom Observation					
Positive Social	.492 (.451)	.351 (.268)	.370 (.405)	.252 (.259)	0
Academic Engagement/Motivation					
Teacher Ratings					
Academic Motivation	3.564 (.428)	3.351 (.497)	3.797 (.320)	3.364 (.454)	.34
Academic Engagement	3.901 (.444)	3.589 (.481)	4.148 (.350)	3.674 (.529)	.29
Classroom Observation					
Active Engaged Time	.396 (.072)	.369 (.090)	.384 (.080)	.364 (.096)	-.03
Passive Engaged Time	.340 (.075)	.363 (.104)	.355 (.085)	.364 (.091)	.10

Note. -- = not available.

^a Adjust for pretest scores and other student- and class-level covariates.

Table 5

Mixed Model Estimates (Standard Errors) for Social Skills and Academic Engagement/Motivation Measures

	Intercept	Pretest (student)	Pretest (class)	Condition	Student pretest * Condition	Class pretest * Condition	Male	White	Special Education	Supp. Services	Intercept variance	Residual variance
Social Skills												
Teacher Ratings (N=434)												
Social Skills Composite	2.202** (.043)	.747** (.036)	.886** (.127)	.171** (.061)	NA	-.677** (.221)	-0.055 (.030)	-0.020 (.038)	-0.045 (.055)	-0.106** (.039)	.026** (.008)	.085** (.006)
Communication	2.333** (.048)	.633** (.038)	.880** (.118)	.161* (.068)	NA	-.675** (.214)	-.053 (.034)	-.027 (.043)	-.076 (.064)	-.126** (.045)	.032** (.010)	.113** (.008)
Cooperation	2.093** (.052)	.728** (.035)	.995** (.167)	.174* (.072)	NA	-.684* (.263)	-0.061 (.041)	0.061 (.050)	-0.069 (.074)	-0.150** (.052)	.032** (.012)	.157** (.011)
Assertion	2.072** (.058)	.648** (.040)	.638** (.108)	.153 (.081)	NA	NA	-0.119** (.036)	-0.061 (.046)	-0.026 (.067)	-0.103* (.047)	.049** (.014)	.127** (.009)
Responsibility	2.271** (.047)	.721** (.034)	.915** (.146)	.163* (.065)	NA	-.691** (.223)	-0.062 (.036)	-0.041 (.044)	-0.116 (.065)	-0.127** (.046)	.027** (.009)	.120** (.009)
Empathy	2.183** (.045)	.650** (.040)	.869** (.121)	.192** (.063)	NA	-.767** (.231)	-0.111** (.042)	-0.008 (.050)	0.045 (.075)	-0.097 (.052)	.021** (.009)	.162** (.012)
Social Engagement	2.255** (.049)	.715** (.039)	.799** (.127)	.206** (.069)	NA	-.482* (.217)	-0.025 (.036)	-0.050 (.046)	-0.132 (.068)	-0.130** (.047)	.030** (.010)	.128** (.009)
Self-Control	2.186** (.052)	.731** (.034)	.744** (.111)	.140 (.073)	NA	NA	-0.039 (.037)	-0.007 (.047)	-0.064 (.069)	-0.088 (.048)	.035** (.012)	.136** (.010)
Social Skills Intervention Composite	2.160** (.047)	.734** (.036)	.944** (.147)	.180** (.066)	NA	-.637* (.255)	-0.054 (.033)	-0.009 (.042)	-0.022 (.061)	-0.123** (.043)	.030** (.010)	.105** (.007)
Classroom Observations (N=202)												
Ln(Positive social)	-1.378** (.215)	.097 (1.23)	1.226** (.298)	.052 (.296)	NA	NA	-.371 (.258)	.061 (.326)	-.123 (.644)	-.039 (.356)	.070 (.131)	--

Academic Engagement/Motivation

Teacher Ratings (N=434)

Academic Motivation	3.443** (.065)	.869** (.048)	.810** (.124)	.333** (.090)	-.179** (.060)	-.577** (.196)	0.045 (.060)	0.202** (.073)	-0.047 (.111)	-0.182* (.080)	.040** (.017)	.341** (.024)
Academic Engagement	3.809** (.063)	.698** (.036)	.969** (.125)	.267** (.087)	NA	-.490* (.184)	-0.038 (.057)	0.005 (.070)	-0.003 (.107)	-0.188* (.075)	.033* (.015)	.317** (.023)

Classroom Observations (N=202)

Ln(Active engaged time)	-1.006** (.169)	-.002 (1.122)	1.927 (1.461)	-.012 (.236)	NA	NA	-.107 (.242)	-.031 (.270)	-.198 (.527)	-.024 (.297)	0	--
Ln(Passive engaged time)	-1.041** (.172)	-.003 (1.250)	1.707 (1.429)	.037 (.241)	NA	NA	-.051 (.240)	-.028 (.277)	-.006 (.486)	.047 (.300)	0	--

Note. NA=not included in the model because it was not a statistically significant predictor at the .05 level. * $p < .05$; ** $p < .01$.

Figure 1. SSIS Classroom-Randomized Trial Student-Level Participant Flow Chart

