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SUBMITTED TO

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Research on the Effect of the Inner Resilience Program on Teacher and Student Wellness and Classroom Climate

Executive Summary

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Abstract

This study used a randomized control trial design to examine the impact of the Inner Resilience Program on the well-being of teachers and students, as well as on the climate of their classrooms. A total of 57 teachers of Grades 3–5 from NYC public schools participated in the study, with 29 teachers (and their students) randomly assigned to the treatment group and 28 teachers and their students randomly assigned to the control group. Teachers in the treatment group participated in the Inner Resilience Program during the 2007–2008 school year. Activities were intended to reduce teacher stress and increase their concentration, attention, and job satisfaction; as well as improve relationships with their colleagues. Specifically, activities included a series of weekly yoga classes, monthly *Nurturing the Inner Life* meetings, a weekend residential retreat, and training and support in the use of a curriculum module for students. It was theorized that changes in the teachers would have a positive influence on the climate of their classrooms, which, in turn, would affect students' wellness with regard to stress and frustration levels, attention, and acting out behaviors. In addition, the program was intended to reach students directly through curriculum activities.

Teachers from the treatment and control groups completed a battery of surveys in the fall and spring of the 2007–2008 school year. Treatment teachers also completed survey questions that asked them about their perceptions of the effects of the program, and a sample of treatment teachers participated in an end-of-year focus group. Analyses examined differences between treatment and control group participants on all measured outcomes, as well as differential effects within the treatment group.

Between-group analyses indicated several interesting and statistically significant results with regard to teacher wellness, including reduced stress levels (as measured by one scale), increased levels of attention and mindfulness, and greater perceived relational trust among treatment teachers. Additionally, 3rd-grade students of treatment teachers perceived that they had significantly more autonomy and influence in their classes at the end of the school year than at the beginning, and analyses of student wellness indicated that the program had a significant, positive impact on reducing 3rd- and 4th-grade students' frustration levels.

Within-group analyses examined two separate questions: 1) did treatment teachers who perceived that the treatment had high impact in their lives actually demonstrate greater change on outcome measures than teachers who did not perceive as great an impact? and 2) did the program have greater effect on treatment teachers' students who were categorized as "high risk" based on their pre-survey scores than on students who were not categorized as such? It was found that high-impact teachers demonstrated reductions in emotion-oriented coping skills (which are emotional reactions that often only increase, rather than reduce, stress), fatigue/secondary trauma (pleasure that individuals get through their work), and emotional exhaustion and increases in mindfulness and compassion satisfaction compared to non-high-impact teachers. Also, high-impact teachers perceived that their classes had greater autonomy and influence, and students of these teachers perceived greater classroom supportiveness than students of non-high-impact teachers. Students of high-impact teachers were lower in frustration but also lower in perceptual sensitivity than non-high-impact teachers. Analyses of high-risk students indicated that 3rd- and 4th-grade high-risk students showed greater positive change than their non-high-risk peers on *each* of the student wellness outcomes, and 5th-grade high-risk students showed greater positive change on nearly all student wellness outcomes compared with the non-high-risk students. Although two statistical phenomena—"restriction of range" and "regression to the mean"—must be considered when evaluating these results, they are highly notable and merit additional research.

Additional analyses were conducted to explore possible links between the intervention and academic achievement. These analyses examined data on English language arts (ELA) and mathematics state achievement test scores as well as average daily attendance (ADA) rates, to test whether students in the original treatment and control groups differed in these areas in growth from before the intervention was implemented through the end of the intervention period. Statistically significant differences in 2008 ELA and mathematics achievement were found between treatment and control group students in 3rd-grade, with treatment students significantly outperforming control group students. These analyses do not take into account any initial differences in achievement, however, since pre-intervention data were not available for 3rd-grade students. No other statistically significant differences were found, perhaps a result of the relatively short period of time of the intervention that directly impacted students.

Executive Summary

Background

Teachers often face a variety of stresses, such as heavy workloads, relative isolation from their colleagues, time constraints, emphasis on academic achievement testing, low decision-making power, and frequent lack of support from their superiors and peers (Byrne, 1993; Murray, 2005; Winzelberg and Luskin, 1999). Given the stresses that they face and the little support that they receive to address these challenges, it is not surprising that teachers respond with common physiological, emotional, and behavioral manifestations of stress (Winzelberg and Luskin, 1999), or by leaving the profession altogether. Those who stay are at risk of developing another serious problem: teacher burnout, a multi-dimensional construct that consists of emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach, Jackson, & Leiter, 1997). Burnout occurs when teachers have attempted unsuccessfully to cope with stress over long periods of time (Kyriacou, 2001). Teacher burnout can be tremendously destructive to teacher-student relationships, classroom management, and the classroom environment, as well as on the health of individual students (Jennings and Greenberg, 2008).

Studies of stress reduction across multiple sectors have suggested that some programs can be effective in reducing participants' perceived and demonstrated stress and can break cycles, such as the "burnout cascade." Research has also shown that mindfulness is associated with more positive affect, reduced anxiety and depression, and better relationships with others (Brown & Ryan, 2003; Barnes, Brown, Krusemark, Campbell, & Rogge, 2007). Consequently, these changes in teachers' mind sets can have a positive impact on classroom climate. Indeed, Marzano and colleagues (2003) conducted a meta-analysis of more than 100 studies of classroom management and found that a teacher's "mental set" had the greatest effect on reducing student misbehavior. Teachers who were able to remain objective and calm under pressure were the best behavior managers.

The current study furthers the work begun by the studies described above and examines the effect of the Inner Resilience Program[1] on teachers and their students. This study considers mounting evidence of the need to reduce teacher stress and increase their well-being in an effort to retain good teachers and ensure optimal performance of both teachers and their students. The study considers not only the effect of the program on teachers but also on their classroom environments and on their students.

The Inner Resilience Program

The Inner Resilience Program was established in February 2002 in response to the effects of the events of September 11, 2001, on educators and students in lower Manhattan. It soon became clear that the program, which offers teachers transformative professional development designed to nurture the social, emotional, and inner lives of teachers and students, is needed by teachers throughout New York City (NYC) and beyond. In spring 2006, the Inner Resilience Program received generous funding from the Fetzer Institute to conduct rigorous research using a randomized control trial to examine the impact of the program on teachers and their students.

The 2006–2007 school year was used as a planning year to develop a logic model depicting the theory of change for the program, carefully select a battery of instruments to best capture the changes in participants, and conduct intensive recruitment of participants. More than 60 NYC public school

[1] Formerly called Project Renewal, a Project of the Tides Center.

teachers of Grades 3–5 were recruited and randomly assigned to the treatment or control group during this period. Intervention for the treatment group took place during the 2007–2008 school year and included a series of weekly yoga classes, monthly *Nurturing the Inner Life* meetings, a weekend residential retreat, and training and support in the use of a curriculum module for students. Teachers in the control group received a financial incentive for their participation in the study but received no treatment during the 2007–2008 school year. Delayed treatment was offered to teachers in the control group for the 2008–2009 school year.

Methods

A total of 57 teachers—29 in the treatment group and 28 in the control group—completed the study. The groups were fairly well matched on variables such as school location, race/ethnicity, and teaching experience, but there were more 5th-grade teachers in the treatment than in the control group and more 3rd-grade teachers in the control than in the treatment group. (A test of the equivalence of reported stress of teachers of different grades revealed no significant differences at pre- or post-test.) There was also a greater concentration of teachers age 31–40 in the treatment than the control group.

A total of 855 students completed the study, with 471 in the treatment group and 384 in the control. Although students in the groups were matched fairly well across most variables, there was a higher percentage of 5th-grade students in the treatment group than in the control group, and a higher percentage of 3rd-grade students in the control group than in the treatment group.

It was theorized that the intervention would positively impact teachers' well-being, which, in turn, would have a positive impact on the climate of their classrooms and on their students' well-being. It was further theorized that students' well-being would also be positively impacted by activities directly geared for them, such as those in the *Building Resilience from the Inside Out* curriculum module. To test these hypotheses, teachers and students from the treatment and control groups completed a battery of surveys in the fall and spring of the 2007–2008 school year. The surveys were designed to tap participants' own wellness, as well as their perceptions of the classroom climate. Wherever possible, published instruments with established reliability and validity were used in the study. Wellness surveys for teachers included measures assessing their stress levels, coping skills, attention/mindfulness levels, awareness of body sensations and processes, extent of professional satisfaction, and the quality of their professional lives and relationships with their colleagues. To assess the extent to which the classroom climate was positively influenced, treatment and control group teachers and their students completed appropriate versions of the Classroom Climate Inventory in the fall and spring. Classroom climate was examined in terms of the teacher's leadership and management style and the supportiveness of the environment. Student wellness was measured through a set of scales from the Early Adolescent Temperament Questionnaire-Revised, Short Form (EATQ-R SF). Scales from the EATQ-R SF for 5th-grade participants included those measuring aggression, attention, depressive mood, fear, frustration, pleasure sensitivity, and perceptual sensitivity. A separate, developmentally appropriate wellness survey was designed for 3rd- and 4th-grade students; it included fewer overall items and had a three-point, rather than a five-point, response scale. Items for the 3rd- and 4th-grade survey were developed by the researchers in collaboration with program personnel from six of the original EATQ-R SF scales, including: aggression, attention, depressive mood, fear, frustration, and perceptual sensitivity.

Treatment teachers also completed end-of-year surveys about the impact of the program on their personal and professional lives, their classroom environments, and on the students in their classes.

Furthermore, a sample of teachers from the treatment group participated in an end-of-year focus group to provide more detailed insights into the impact of the program.

In 2009, additional analyses were conducted to explore possible links between the intervention and academic achievement. These analyses examined data on English language arts (ELA) and mathematics state achievement test scores as well as average daily attendance (ADA) rates, to test whether students in the original treatment and control groups differed in these areas in growth from before the intervention was implemented through the end of the intervention period. The analyses compared pre-post gains across the two groups (treatment, control) where possible.

Results of Between-Group Analyses (Treatment vs. Control)

To test whether there were differences between pre- and post-survey means and between the means of treatment and control participants, repeated measures analysis of variance (ANOVA) tests were conducted. Repeated measures ANOVAs examine the equality of means across conditions and time. Specifically, three questions can be answered by these analyses: (1) Do mean responses change across time points (pre vs. post)? (2) Do mean responses differ across groups (treatment vs. control)? and (3) Does the change in mean response across time points (pre/post) depend on group (treatment, control)? In addition to testing for statistical significance, differences between the groups over time were tested for *meaningfulness*; that is, whether the differences matter on a practical level. The extent to which differences are considered meaningful is expressed through a statistic termed "effect size" (also called Cohen's d) (Cohen, 1992). Effect size is calculated by measuring the magnitude of the gains or losses, expressed in gain score standard deviation units. A gain of more than 1/3 of a standard deviation (i.e., an effect size of more than 0.33 or less than –0.33) is usually considered meaningful.

Teacher Wellness Results

Table ES1 shows the results of analyses conducted on pre- and post-surveys measuring teachers' wellness. ***Treatment teachers' mean scores changed from pre to post in the predicted direction on 13 of the 15 measured wellness qualities.***[2] **Furthermore, repeated measures analyses indicate that the program had a statistically significant and meaningful impact on reducing treatment group teachers' stress levels (as measured by one scale), increasing their levels of attention and mindfulness, and strengthening their relational trust with their colleagues.** Although not all differences between the treatment and control groups achieved statistical significance, it is notable that the great majority of changes in the treatment group are in the predicted direction. Also, several of the changes that were not statistically significant were considered meaningful (e.g., stress as measured by the Perceived Stress Scale, body awareness, emotion-oriented coping, avoidance-oriented coping *via distraction*, and burnout) as indicated by the effect size statistic. This indicates that these differences, although not statistically significant, are considered meaningful according to Cohen's *d*. It is possible that many more of the differences between the treatment and control groups would have achieved statistical significance if the study had greater power, which might be obtained by having more participants, instruments that more closely measure the construct that is affected, and/or intervention of a longer duration. It should also be noted that some differences between the treatment and control group teachers, such as age and the stressors that they had in their life before and over the course of the study, may account for the fact that treatment effects were not even stronger.

[2] One quality, Avoidance-Oriented Coping, contains both adaptive and non-adaptive qualities; therefore, no predictions were made regarding this quality.

Table ES 1
Teacher Wellness Qualities Measured and Results

Wellness Quality Measured	Scale[3]	Treatment Group Mean *(SD)*	Control Group Mean *(SD)*	Test of Significance for Interaction *(time*group)*	Test of Meaningfulness for Interaction *(Effect Size)*
Stress	Stress Likert Scale	**Pre = 5.12 *(1.03)* Post = 4.54 *(1.36)***	**Pre = 4.61 *(1.42)* Post = 5.11 *(1.13)***	***F*=6.592, *p*=.013***	**0.71**
Stress	PSS	Pre = 22.89 *(6.17)* Post = 17.43 *(6.88)*	Pre = 22.48 *(7.07)* Post = 19.59 *(6.00)*	*F*=1.470 *p*=.231	0.33
Body Awareness	BAQ	Pre = 4.41 *(1.03)* Post = 4.92 *(1.04)*	Pre = 4.22 *(0.98)* Post = 4.37 *(1.14)*	*F*=1.649 *p*=.205	**0.35**
Task-Oriented Coping	CISS	Pre = 55.93 *(6.84)* Post = 58.21 *(7.36)*	Pre = 58.75 *(8.44)* Post = 59.18 *(7.15)*	*F*=1.142 *P*=.290	0.29
Emotion-Oriented Coping	CISS	Pre = 48.03 *(9.26)* Post = 40.68*(10.34)*	Pre = 47.86 *(9.62)* Post = 45.29 *(11.40)*	*F*=3.803 *p*=.056	**0.53**
Avoidance-Oriented Coping	CISS	Pre = 52.71 *(9.41)* Post = 52.43 *(6.69)*	Pre = 48.68 *(10.11)* Post = 49.43 *(10.57)*	*F*=0.244 *p*=.624	0.13
Avoidance Coping via Distraction	CISS	Pre = 24.93 *(5.47)* Post = 23.86 *(5.01)*	Pre = 22.39 *(5.99)* Post = 23.00 *(6.37)*	*F*=1.760 *p*=.190	**0.36**
Avoidance Coping via Social Diversion	CISS	Pre = 18.89 *(4.76)* Post = 19.64 *(2.50)*	Pre = 17.75 *(4.77)* Post = 17.93 *(5.44)*	*F*=0.279 *p*=.600	0.14
Mindfulness	MAAS	**Pre = 3.64 *(0.61)* Post = 4.20 *(0.48)***	**Pre = 3.74 *(0.82)* Post = 3.80 *(0.84)***	***F*=8.879 *p*=.004***	**0.81**
Compassion Satisfaction	ProQol	Pre = 35.93 *(6.77)* Post = 35.29 *(8.44)*	Pre = 33.70 *(7.49)* Post = 34.19 *(8.66)*	*F*=0.284 *p*=.596	0.14
Burnout	ProQol	Pre = 28.61 *(4.52)* Post = 24.21 *(5.80)*	Pre = 26.89 *(6.00)* Post = 24.74 *(5.40)*	*F*=2.147 *p*=.149	**0.40**
Fatigue/Secondary Trauma	ProQol	Pre = 18.93 *(5.44)* Post = 15.57 *(5.29)*	Pre = 16.96 *(6.62)* Post = 13.89 *(4.91)*	*F*=0.030 *p*=.864	0.06
Emotional Exhaustion	MBI-ES	Pre = 31.07 *(8.93)* Post = 24.86 *(12.18)*	Pre = 29.11 *(12.24)* Post = 25.15 *(12.27)*	*F*=0.523 *p*=.473	0.20
Personal Accomplishment	MBI-ES	Pre = 35.50 *(7.61)* Post = 37.14 *(6.29)*	Pre = 31.48 *(9.50)* Post = 34.15 *(7.97)*	*F*=0.239 *p*=.627	0.13
Depersonalization	MBI-ES	Pre = 8.11 *(6.17)* Post = 8.21 *(7.34)*	Pre = 8.67 *(6.82)* Post = 9.59 *(8.31)*	*F*=0.207 *p*=.651	0.13
Relational Trust	Bryk's Teacher-to-Teacher Trust Scale	**Pre = 1.17 *(0.86)* Post = 1.27 *(0.79)***	**Pre = 1.30 *(0.75)* Post = 1.07 *(0.75)***	***F*=4.374 *p*=.041***	**0.57**

* indicates p<.05 based on results of repeated measures ANOVA tests

Classroom Climate Results

Table ES2 displays results of classroom climate analyses. Changes in classroom climate were assessed through the perceptions of both participating teachers and their students. ***Treatment teachers' mean scores changed from pre to post in the predicted direction on both of the measured classroom climate aspects.*** **Furthermore, 3rd- and 4th-grade students of treatment teachers perceived a statistically significant and meaningfully greater increase in their levels of autonomy**

[3] PSS=Perceived Stress Scale; BAQ=Body Awareness Questionnaire; CISS=Coping Inventory for Stressful Situations; MAAS=Mindfulness Attention Awareness Scale; ProQol=Professional Quality of Life Scale; MBI-ES=Maslach Burnout Inventory-Educator Survey

and influence from pre to post than the 3rd- and 4th-grade students of control teachers. Nearly all teachers in the treatment group perceived that the program positively affected their teaching (93%) and their classroom environment (89%), and differences between treatment and control teachers' scores on the subsections of the Classroom Climate Survey were in the predicted direction. However, results regarding classroom climate changes may need further investigation. Teachers' perceptions of changes in their classrooms point to a stronger change than what was noted through the pre- and post-surveys. It may be that the surveys do not adequately assess the changes that occurred. It also may be that the duration and strength of the intervention needs to be increased for changes to be noticeable on the classroom climate inventories. Furthermore, future research designs could be strengthened by using impartial observers who visit a sample of classrooms multiple times over the course of the school year to determine whether there are changes in the climate.

Table ES 2
Classroom Climate Qualities Measured and Results

Classroom Climate Quality Measured	**Scale**	**Treatment Group** Mean *(SD)*	**Control Group** Mean *(SD)*	**Test of Significance for Interaction *(time*group)***	**Test of Meaningfulness for Interaction *(Effect Size)***
Teachers' Perspective					
Student Autonomy and Influence	Classroom Climate Inventory (Teachers)	Pre = 2.07 *(0.33)* Post = 2.26 *(0.53)*	Pre = 1.91 *(0.40)* Post = 2.02 *(0.44)*	*F*=1.161 *p*=.286	0.29
Classroom Supportiveness	Classroom Climate Inventory (Teachers)	Pre = 2.71 *(0.47)* Post = 2.79 *(0.73)*	Pre = 2.59 *(0.59)* Post = 2.62 *(0.59)*	*F*=0.081 *p*=.776	0.09
3rd- and 4th-Grade Students' Perspective					
Student Autonomy and Influence	Classroom Climate Inventory (3rd-4th Grade)	**Pre = 1.66 *(0.37)* Post = 1.78 *(0.42)***	**Pre = 1.64 *(0.37)* Post = 1.60 *(0.37)***	***F*=24.310 *p*<.001***	**0.41**
Classroom Supportiveness	Classroom Climate Inventory (3rd-4th Grade)	Pre = 2.34 *(0.38)* Post = 2.28 *(0.40)*	Pre = 2.21 *(0.40)* Post = 2.11 *(0.41)*	*F*=1.485 *p*=.223	0.11
5th-Grade Students' Perspective					
Student Autonomy and Influence	Classroom Climate Inventory (5th Grade)	Pre = 1.51 *(0.66)* Post = 1.45 *(0.58)*	Pre = 1.88 *(0.54)* Post = 1.85 *(0.51)*	*F*=0.098 *p*=.755	<0.01
Classroom Supportiveness	Classroom Climate Inventory (5th Grade)	Pre = 2.16 *(0.72)* Post = 1.94 *(0.79)*	Pre = 2.92 *(0.65)* Post = 2.63 *(0.78)*	*F*=0.419 *p*=.518	0.09

* indicates p<.05 based on results of repeated measures ANOVA tests

Student Wellness Results

Table ES3 displays results of student wellness analyses. ***The mean scores of 3rd- and 4th-grade students of treatment teachers changed from pre to post in the predicted direction on three of the six measured wellness aspects, and mean scores of 5th-grade students of treatment teachers changed in the predicted direction on four of the seven measured wellness aspects.*** **Furthermore, 3rd- and 4th-grade students of treatment teachers experienced significant reductions in their frustration levels from pre to post compared to the 3rd- and 4th-grade students of control teachers, though this difference was not considered meaningful.**

When considering results from analyses of student wellness, it is interesting to note that the 5th-grade students in the treatment group were higher in aggression, depressive mood, and frustration, and lower in attention and pleasure sensitivity than the control group students at both pre- and post-survey. The fact that there was a considerably higher percentage of 5th-grade students in the treatment group than in the control group, and that they were different across multiple dimensions, may account for the fact that treatment effects were not stronger. Additionally, it should be considered that the duration and strength of treatment may need to be increased to see certain changes in student wellness across all grades. That is, treatment may need to be introduced at the beginning of the school year rather than mid-year, and it may take more time for changes in teachers' wellness to reach the classroom and impact individual students.

Table ES 3
Student Wellness Qualities Measured and Results

Wellness Quality Measured	**Scale[4]**	**Treatment Group** Mean *(SD)*	**Control Group** Mean *(SD)*	**Test of Significance for Interaction *(time*group)***	**Test of Meaningfulness for Interaction *(Effect Size)***
3rd- and 4th-Grade Students					
Aggression	EATQ-R SF	Pre = 1.40 *(0.42)* Post = 1.44 *(0.43)*	Pre = 1.56 *(0.53)* Post = 1.60 *(0.52)*	*F*=0.004 *p*=.949	<0.01
Attention	EATQ-R SF	Pre = 1.77 *(0.26)* Post = 1.76 *(0.26)*	Pre = 1.73 *(0.33)* Post = 1.75 *(0.30)*	*F*=0.362 *p*=.547	0.06
Depressive Mood	EATQ-R SF	Pre = 1.68 *(0.48)* Post = 1.68 *(0.49)*	Pre = 1.75 *(0.53)* Post = 1.71 *(0.53)*	*F*=1.142 *p*=.286	0.09
Fear	EATQ-R SF	Pre = 2.22 *(0.45)* Post = 2.15 *(0.51)*	Pre = 2.22 *(0.51)* Post = 2.14 *(0.50)*	*F*=0.054 *p*=.817	<0.01
Frustration	EATQ-R SF	**Pre = 2.05 *(0.47)*** **Post = 1.99 *(0.47)***	**Pre = 2.12 *(0.47)*** **Post = 2.15 *(0.50)***	***F*=4.854** ***p*=.028***	0.18
Perceptual Sensitivity	EATQ-R SF	Pre = 2.31 *(0.57)* Post = 2.36 *(0.58)*	Pre = 2.27 *(0.59)* Post = 2.37 *(0.57)*	*F*=0.680 *p*=.410	0.06
5th-Grade Students					
Aggression	EATQ-R SF	Pre = 1.45 *(0.84)* Post = 1.36 *(0.80)*	Pre = 0.91 *(0.71)* Post = 0.78 *(0.63)*	*F*=0.242 *p*=.623	0.06
Attention	EATQ-R SF	Pre = 3.06 *(0.49)* Post = 3.02 *(0.52)*	Pre = 3.28 *(0.54)* Post = 3.35 *(0.48)*	*F*=1.861 *p*=.174	0.19
Depressive Mood	EATQ-R SF	Pre = 2.06 *(0.72)* Post = 1.94 *(0.74)*	Pre = 1.81 *(0.64)* Post = 1.79 *(0.56)*	*F*=1.073 *p*=.301	0.14
Fear	EATQ-R SF	Pre = 1.92 *(0.78)* Post = 1.62 *(0.87)*	Pre = 1.97 *(0.81)* Post = 1.61 *(0.74)*	*F*=0.308 *p*=.579	0.06
Frustration	EATQ-R SF	Pre = 2.42 *(0.72)* Post = 2.28 *(.74)*	Pre = 2.15 *(0.74)* Post = 1.99 *(0.80)*	*F*=0.062 *p*=.803	<0.01
Perceptual Sensitivity	EATQ-R SF	Pre = 2.67 *(0.70)* Post = 2.52 *(0.76)*	Pre = 2.55 *(0.59)* Post = 2.58 *(0.77)*	*F*=2.307 *p*=.130	0.21
Pleasure Sensitivity	EATQ-R SF	Pre = 1.84 *(1.07)* Post = 1.69 *(1.01)*	Pre = 2.38 *(1.01)* Post = 2.24 *(1.12)*	*F*=0.011 *p*=.916	<0.01

* indicates p<.05 based on results of repeated measures ANOVA tests

[4] EATQ-R SF=Early Adolescent Temperament Questionnaire-Revised Short Form

Students' Academic Outcomes

To test whether there were differences between treatment and control group participants' pre-post gains in ELA and mathematics achievement and attendance rates, independent samples t-tests and repeated measures analyses of variance (ANOVA) were conducted. Statistically significant differences in 2008 ELA and mathematics achievement were found between treatment and control group students in 3rd-grade, with treatment students significantly outperforming control group students. These analyses do not take into account any initial differences in achievement, however, since pre-intervention data were not available for 3rd-grade students.[5] No other statistically significant differences were found, perhaps a result of the relatively short period of time of the intervention that directly impacted students.

Results of Within-Group Analyses (Treatment Only)

Teachers' Perceptions of Program Impact

Focus group and survey findings revealed that treatment teachers attributed positive impacts on themselves and their students to the Inner Resilience Program. Treatment teachers who participated in the end-of-year focus group reported that the program allowed them time and permission to take care of themselves and feel "more balanced." Several teachers in the treatment group described the residential retreat as "life changing" and were particularly positive about the opportunities they had to bond with other teachers who shared similar experiences. Likewise, many teachers reported feeling less stressed at work and more satisfied with their jobs than they had in recent years. Teachers also described how their classroom climate was more relaxed after they implemented the curriculum and Inner Resilience components, such as peace corners and quiet times, and one teacher noted that she is now more aware of how her emotions can directly impact the behavior of students in her classroom in either a positive or negative way. Most teachers were strongly positive about the changes in their classrooms, but wished that they had more time to implement the curriculum and more in-class support from program personnel to ensure that they were implementing it appropriately. Many treatment teachers also reported that students were more aware of their own emotions and trigger points and had a better understanding of how to relax. Several teachers talked about the power of this work in children's lives, shared stories of how students asked to extend the Inner Resilience curriculum work that they practiced in class, and frequently used the practices on their own when they were feeling anxious or frustrated. Results of the surveys support these focus group findings and showed that treatment teachers' perceptions of changes in their own wellness, stress levels, and relationships, as well as those in their students' wellness and on the classroom environment, as a result of the program were extremely positive.

Differential Effects for "High Impact" and "Non-High Impact" Teachers

To examine whether the intervention actually had a greater impact for treatment teachers who self-reported greater impacts, a set of indicator variables was created to identify which teachers responded on the post-survey that they thought the treatment had a great impact on each of the following: Teacher Stress, Teacher Well-Being, Teacher Professional Relationships, Classroom Environment, and Student Well-Being. An additional series of repeated measures ANOVAs were conducted to examine the equality of means in all related measures across impact groups and time. Specifically, three questions can be answered by these analyses: (1) Do mean responses for treatment teachers (and their students) change across time points (pre vs. post)? (2) Do mean responses for treatment teachers (and their students) differ

[5] NYC students do not begin achievement testing until 3rd grade.

across impact groups (perceivers of high impact vs. others)? and (3) Does the change in mean response across time points depend on impact group? Differences were again tested for both statistical significance and for *meaningfulness* via effect size calculation.

Table ES4 shows the results of analyses conducted on pre- and post-surveys measuring teachers' wellness, teachers' and students' perceptions of classroom climate, and students' wellness. ***The mean scores of treatment teachers who reported perceptions of great program impact changed from pre to post in the predicted direction on all 15 wellness qualities tested. Furthermore, repeated measures analyses indicate that the mean scores of the "high-impact" group indeed changed more positively from pre to post than did their non-high-impact counterparts on 6 of 15 wellness qualities measured. Mixed results were found with regard to classroom climate.*** Mean scores for teachers who reported perceptions of great impact on classroom environment changed in the predicted direction from pre to post on both climate measures and at a greater rate than for those teachers who perceived less of an impact or no impact at all. This difference in rates of change was found to be statistically significant for one climate factor only: Student Autonomy and Influence. Interestingly, however, student responses show a different pattern. For both grade groups (3rd- and 4th-grade students and 5th-grade students), students of teachers who reported perceptions of high impact on classroom environment showed greater pre to post change only on the second climate factor: Classroom Supportiveness. ***Pre to post changes in mean wellness scores of students whose teachers reported perceptions of great impact on their students' well-being did not differ from those of the rest of the treatment students on most wellness measures.***

Table ES 4
Summary Table for High Impact Analyses

Quality Measured	Scale[6]	High-Impact Group Mean *(SD)*	Non-High Impact Group Mean *(SD)*	Test of Significance for Interaction ***(time*group)***	Test of Meaningfulness for Interaction ***(Effect Size)***
Teacher Stress					
Stress	Stress Likert Scale	Pre = 5.17 *(0.94)* Post = 4.17 *(1.34)*	Pre = 5.07 *(1.14)* Post = 4.86 *(1.35)*	*F*=1.699 *p*=.205	**0.53**
Stress	PSS	**Pre = 24.63 *(6.95)* Post = 13.77 *(6.93)***	**Pre = 21.40 *(5.18)* Post = 20.60 *(5.19)***	***F*=10.686 *p*=.003***	**0.41**
Teacher Well-Being					
Body Awareness	BAQ	Pre = 4.56 *(0.79)* Post = 4.93 *(0.92)*	Pre = 4.27 *(1.25)* Post = 4.91 *(0.92)*	*F*=0.193 *p*=.664	0.17
Task-Oriented Coping	CISS	Pre = 54.64 *(6.75)* Post = 58.64*(6.86)*	Pre = 57.21 *(6.92)* Post = 57.79 *(8.06.)*	*F*=1.915 *p*=.178	**0.54**
Emotion-Oriented Coping	CISS	**Pre = 50.07 *(10.00)* Post = 37.71 *(9.14)***	**Pre = 46.00 *(8.31)* Post = 43.64 *(10.93)***	***F*=8.757 *p*=.006***	**1.16**
Avoidance-Oriented Coping	CISS	Pre = 52.21 *(10.22)* Post = 54.93 *(5.41)*	Pre = 50.21 *(8.12)* Post = 49.93 *(7.08)*	*F*<0.001 *p*=1.000	<0.01
Avoidance Coping via Distraction	CISS	Pre = 26.71 *(5.01)* Post = 25.64 *(2.65)*	Pre = 23.14 *(5.46)* Post = 22.07 *(6.18)*	*F* <0.001 *p*=1.000	<0.01
Avoidance Coping via Social Diversion	CISS	Pre = 18.93 *(4.91)* Post = 19.36 *(1.95)*	Pre = 18.86 *(4.79)* Post = 19.93 *(3.00)*	*F*=0.149 *p*=.703	0.16
Mindfulness	MAAS	**Pre = 3.44 *(0.55)* Post = 4.24 *(0.50)***	**Pre = 3.84 *(0.62)* Post = 4.16 *(0.48)***	***F*=4.771 *p*=.038***	**0.86**
Compassion Satisfaction	ProQOL	**Pre = 38.71 *(8.57)* Post = 42.00 *(7.19)***	**Pre = 35.00 *(8.99)* Post = 30.71 *(10.71)***	***F*=5.498 *p*=.027***	**0.92**
Burnout	ProQOL	Pre = 27.57 *(5.53)* Post = 20.50 *(6.81)*	Pre = 29.36*(5.94)* Post = 27.50 *(7.08)*	*F*=3.950 *p*=.057	**0.78**
Fatigue/Secondary Trauma	ProQOL	**Pre = 20.29 *(4.41)* Post = 14.07*(4.05)***	**Pre = 17.57*(6.16)* Post = 17.07 *(6.07)***	***F*=7.543 *p*=.011***	**1.08**
Emotional Exhaustion	MBI-ES	**Pre = 30.64 *(7.89)* Post = 19.50*(10.58)***	**Pre = 31.50*(10.14)* Post = 30.21*(11.58)***	***F*=4.501 *p*=.044***	**0.75**
Personal Accomplishment	MBI-ES	Pre = 35.00 *(8.62)* Post = 38.79*(5.00)*	Pre = 36.00*(6.74)* Post = 35.50*(7.18)*	*F*=2.160 *p*=.154	0.20
Depersonalization	MBI-ES	Pre = 6.57 *(4.41)* Post = 4.79*(3.72)*	Pre = 9.64*(7.38))* Post = 11.64*(8.52)*	*F*=2.210 *p*=.149	**0.58**
Teacher Professional Relationships					
Relational Trust	Bryk's Teacher-to-Teacher Trust Scale	Pre = 0.20 *(0.72)* Post = 0.63 *(1.18)*	Pre = 1.38*(0.74)* Post = 1.41 *(0.63)*	*F*=1.558 *p*=.223	**1.17**
Classroom Environment					
Teachers' Perspective					
Student Autonomy and Influence	Classroom Climate Inventory (Teachers)	**Pre = 2.25 *(0.25)* Post = 2.66 *(0.32)***	**Pre = 1.98*(0.33)* Post = 2.08 *(0.51)***	***F*=4.629 *p*=.041***	**0.83**
Classroom Supportiveness	Classroom Climate Inventory (Teachers)	Pre = 2.86 *(0.56)* Post = 3.27 *(0.54)*	Pre = 2.64*(0.43)* Post = 2.57*(0.70)*	*F*=3.238 *p*=.083	**0.69**

[6] PSS=Perceived Stress Scale; BAQ=Body Awareness Questionnaire; CISS=Coping Inventory for Stressful Situations; MAAS=Mindfulness Attention Awareness Scale; ProQOL=Professional Quality of Life Scale; MBI-ES=Maslach Burnout Inventory-Educator Survey; EATQ-R SF=Early Adolescent Temperament Questionnaire-Revised Short Form

Quality Measured	Scale[6]	High-Impact Group Mean *(SD)*	Non-High Impact Group Mean *(SD)*	Test of Significance for Interaction ***(time*group)***	Test of Meaningfulness for Interaction ***(Effect Size)***
3rd- and 4th-Grade Students' Perspective					
Student Autonomy and Influence	Classroom Climate Inventory (3rd-4th Grade)	Pre = 1.81 *(0.41)* Post = 1.87 *(0.48)*	Pre = 1.59*(0.34)* Post = 1.74*(0.38)*	*F*=2.780 *p*=.096	0.19
Classroom Supportiveness	Classroom Climate Inventory (3rd-4th Grade)	**Pre = 2.44 *(0.38)* Post = 2.46 *(0.37)***	**Pre = 2.29*(0.37)* Post = 2.20 *(0.39)***	***F*=5.413 *p*=.021***	**0.26**
5th-Grade Students' Perspective					
Student Autonomy and Influence	Classroom Climate Inventory (5th Grade)	Pre = 1.78 *(0.64)* Post = 1.58 *(0.59)*	Pre = 1.40*(0.65)* Post = 1.39 *(0.57)*	*F*=2.423 *p*=.122	0.27
Classroom Supportiveness	Classroom Climate Inventory (5th Grade)	**Pre = 2.13 *(0.79)* Post = 2.16 *(0.73)***	**Pre = 2.16*(0.70)* Post = 1.86 *(0.79)***	***F*=5.457 *p*=.021***	**0.40**
Student Well-Being					
3rd- and 4th-Grade Students					
Aggression	EATQ-R SF	Pre = 1.46 *(0.41)* Post = 1.46 *(0.43)*	Pre = 1.39 *(0.42)* Post = 1.44 *(0.42)*	*F*=1.080 *p*=.299	0.11
Attention	EATQ-R SF	Pre = 1.77 *(0.29)* Post = 1.78 *(0.23)*	Pre = 1.77 *(0.26)* Post = 1.76 *(0.27)*	*F*=0.040 *p*=.841	<0.01
Depressive Mood	EATQ-R SF	Pre = 1.75 *(0.54)* Post = 1.75 *(0.51)*	Pre = 1.65 *(0.45)* Post = 1.66 *(0.49)*	*F*=0.009 *p*=.924	<0.01
Fear	EATQ-R SF	Pre = 2.30 *(0.45)* Post = 2.27 *(0.44)*	Pre = 2.19 *(0.45)* Post = 2.11 *(0.53)*	*F*=0.721 *p*=.397	0.09
Frustration	EATQ-R SF	**Pre = 2.17 *(0.44)* Post = 1.96 *(0.48)***	**Pre = 2.02 *(0.47)* Post = 1.99 *(0.47)***	***F*=8.774 *p*=.003***	0.33
Perceptual Sensitivity	EATQ-R SF	**Pre = 2.38 *(0.52)* Post = 2.31 *(0.57)***	**Pre = 2.29 *(0.59)* Post = 2.38 *(0.59)***	***F*=3.889 *p*=.049***	0.22
5th-Grade Students					
Aggression	EATQ-R SF	Pre = 1.30 *(0.79)* Post = 1.31 *(0.84)*	Pre = 1.51 *(0.85)* Post = 1.38 *(0.78)*	*F*=1.605 *p*=.207	0.21
Attention	EATQ-R SF	Pre = 3.10 *(0.33)* Post = 3.03 *(0.40)*	Pre = 3.04 *(0.54)* Post = 3.01 *(0.57)*	*F*=0.159 *p*=.690	0.06
Depressive Mood	EATQ-R SF	Pre = 2.23 *(0.70)* Post = 2.09 *(0.72)*	Pre = 1.99 *(0.72)* Post = 1.87 *(0.74)*	*F*=0.040 *p*=.841	<0.01
Fear	EATQ-R SF	Pre = 2.13 *(0.79)* Post = 1.79 *(0.93)*	Pre = 1.82 *(0.75)* Post = 1.54 *(0.84)*	*F*=0.222 *p*=.639	0.09
Frustration	EATQ-R SF	Pre = 2.34 *(0.63)* Post =2.32 *(0.72)*	Pre = 2.45 *(0.76)* Post = 2.27 *(0.75)*	*F*=1.471 *p*=.227	0.20
Perceptual Sensitivity	EATQ-R SF	Pre = 2.46 *(0.68)* Post =2.43 *(0.85)*	Pre = 2.77 *(0.70)* Post = 2.56 *(0.72)*	*F*=1.281 *p*=.260	0.19
Pleasure Sensitivity	EATQ-R SF	Pre = 2.09 *(1.00)* Post =1.69 *(1.04)*	Pre = 1.73 *(1.09)* Post = 1.69 *(1.00)*	*F*=3.708 *p*=.056	0.33

* indicates p<.05 based on results of repeated measures ANOVA tests

Differential Effects for "High-Risk" and "Non-High-Risk" Students

To examine whether the intervention had a differential impact for "high-risk" students vs. the rest of the treatment sample, students were first categorized into "high risk" and "not high risk" groups for each wellness factor.[7] An additional series of repeated measures ANOVAs were conducted to examine the equality of means across high-risk status groups and time. Again, these analyses were designed to answer three specific questions: (1) Do mean responses for treatment students change across time points (pre vs. post)? (2) Do mean responses for treatment students differ across high-risk status groups (high-risk vs. not high-risk)? and (3) Does the change in mean response across time points depend on high-risk status group? Differences were again tested for both statistical significance and for *meaningfulness* via effect size calculation.

Table ES5 shows the results of analyses conducted on pre- and post-surveys measuring students' wellness. ***For all student wellness outcomes, mean scores for students identified as "high risk" (on that particular factor) changed from pre to post in the predicted direction. As well, for all outcomes, high-risk students showed greater positive impact than their non-high-risk counterparts. This difference in pattern was found to be statistically significant for all 3rd- and 4th-grade student wellness outcomes and for five of six 5th-grade student wellness outcomes.*** That is, in almost all cases, significantly greater treatment effects were seen for the high-risk group than for the non-high-risk group.

[7] For all negative wellness factors (e.g., aggression, frustration, depression), a cutoff score of one standard deviation above the mean pre-test score was established. All treatment students with pre-test scores above this cutoff were identified as "high risk" on that particular factor. For all positive wellness factors (e.g., attention, perceptual sensitivity), a cutoff score of one standard deviation below the mean pre-survey score was established. All treatment students with pre-test scores below this cutoff were identified as "high risk" on that particular factor.

Table ES 5
Summary Table for High Risk Analyses

Student Wellness Quality Measured	Scale[8]	High-Risk Group Mean *(SD)*	Non-High Risk Group Mean *(SD)*	Test of Significance for Interaction *(time*group)*	Test of Meaningfulness for Interaction *(Effect Size)*
3rd- and 4th-Grade Students					
Aggression	EATQ-R SF	**Pre = 2.23 *(0.31)* Post = 1.93 *(0.53)***	**Pre = 1.27 *(0.26)* Post = 1.37 *(0.35)***	***F*=44.969 *p*<.001***	**0.75**
Attention	EATQ-R SF	**Pre = 1.33 *(0.13)* Post = 1.67 *(0.27)***	**Pre = 1.85 *(0.19)* Post = 1.78 *(0.25)***	***F*=84.431 *p* <.001***	**1.03**
Depressive Mood	EATQ-R SF	**Pre = 2.47 *(0.21)* Post = 2.02 *(0.54)***	**Pre = 1.53 *(0.35)* Post = 1.62 *(0.46)***	***F*= 52.786 *p*<.001***	**0.81**
Fear	EATQ-R SF	**Pre = 3.00 *(0.00)* Post = 2.55 *(0.35)***	**Pre = 2.13 *(0.39)* Post = 2.10 *(0.51)***	***F*=23.946 *p*<.001***	**0.55**
Frustration	EATQ-R SF	**Pre = 2.74 *(0.16)* Post = 2.31 *(0.43)***	**Pre = 1.91 *(0.37)* Post = 1.92 *(0.45)***	***F*=45.947 *p*<.001***	**1.41**
Perceptual Sensitivity	EATQ-R SF	**Pre = 1.38*(0.22)* Post = 2.00 *(0.61)***	**Pre = 2.51 *(0.40)* Post = 2.44 *(0.55)***	***F*=67.554 *p*<.001***	**1.59**
5th-Grade Students					
Aggression	EATQ-R SF	**Pre = 2.59 *(0.37)* Post = 1.95 *(0.73)***	**Pre = 1.10 *(0.59)* Post = 1.18 *(0.73)***	***F*=36.186 *p*<0.001***	**1.68**
Attention	EATQ-R SF	**Pre = 2.34 *(0.24)* Post = 2.77 *(0.43)***	**Pre = 3.26 *(0.42)* Post = 3.19 *(0.52)***	***F*=24.171 *p*<.001***	**0.67**
Depressive Mood	EATQ-R SF	**Pre = 3.11 *(0.35)* Post = 2.69 *(0.62)***	**Pre = 1.84 *(0.56)* Post = 1.78 *(0.66)***	***F*=6.027 *p*=.015***	**0.42**
Fear	EATQ-R SF	Pre = 3.10 *(0.30)* Post = 2.56 *(0.64)*	Pre = 1.71 *(0.63)* Post = 1.46 *(0.80)*	*F*=2.994 *p*=0.086	0.29
Frustration	EATQ-R SF	**Pre = 3.35 *(0.20)* Post = 2.82 *(0.74)***	**Pre = 2.18 *(0.59)* Post = 2.14 *(0.68)***	***F*=10.287 *p*=.002***	**0.54**
Perceptual Sensitivity	EATQ-R SF	**Pre = 1.47 *(0.28)* Post = 2.30 *(0.85)***	**Pre = 2.85 *(0.56)* Post = 2.55 *(0.75)***	***F*=30.606 *p*<.001***	**0.94**
Pleasure Sensitivity	EATQ-R SF	**Pre = 0.29 *(0.32)* Post = 0.94 *(0.91)***	**Pre = 2.19 *(0.85)* Post = 1.86 *(0.96)***	***F*=20.039 *p*<.001***	**0.76**

* indicates p<.05 based on results of repeated measures ANOVA tests

[8] EATQ-R SF=Early Adolescent Temperament Questionnaire-Revised Short Form

Discussion

Overall, this study provides important findings for the educational community. The results indicate that the Inner Resilience Program had the intended effect of helping teachers to focus on their inner selves and to improve their own wellness. These results are extremely important considering the research on teacher stress and burnout. It is now well documented that teachers have highly stressful jobs and are at risk of leaving the teaching profession or—equally problematic—staying and burning out. The results produced by the Inner Resilience Program, including stress reduction, increased mindfulness, and improved relationships with colleagues, have the potential to break the negative cycle whereby teacher and student actions play off of each other, leading to increased teacher stress, poor classroom climate, and continued student misbehaviors (Marzano, Marzano, & Pickering, 2003; Jennings & Greenberg, in press). This study also found that the Inner Resilience Program can improve teachers' perceptions of relational trust with their colleagues. These results are particularly important considering the work of Bryk and Schneider (2002), who contend that schools that are high in relational trust are more likely to make improvements in student achievement. Specifically, according to Murray (2005), the ability of new teachers to foster positive relationships with their students and their colleagues can "make or break" their teaching careers, and the most important factor for schools to consider with regard to retention is the quality of the relationships between new teachers and their colleagues.

The present study also examined the path of changes in teachers to the climate of the classrooms and to the wellness of their students. There is evidence that changes in the wellness of teachers can create classroom contexts where students are viewed more as individuals and have more student autonomy and influence. There may also be a greater feeling of community in treated teachers' classrooms. Furthermore, changes in the teachers, along with direct intervention through the use of the curriculum, can reduce students' levels of frustration. Although these results are interesting and important to note, the brief nature of the intervention may have impacted the strength of the results. Impact on the classrooms and on the students' wellness decreased in strength as the intervention became more removed. Increasing the strength and, importantly, the duration of the intervention would likely increase the impact that the program would have on teachers' classroom climates and their students' wellness.

The within-treatment analyses also provide useful results. It is evident that teachers who perceived that treatment had a greater effect on them did in fact show more improvement across a number of areas, including reductions in stress and two components of burnout (fatigue/secondary trauma and emotional exhaustion), as well as increases in mindfulness. The amount that these differences extended to these "high-impact" teachers' classrooms and their students varied, however, and did not provide clear evidence of powerful differences. On the other hand, analyses of "high-risk" students did provide remarkable results, suggesting that the most vulnerable students may see the greatest benefit from the program. These results are important considering the needs of these students and the potential benefits of breaking negative cycles and treating such problems before they escalate.

Results of analyses of academic outcome data were not able to support a link between the intervention and academic gains. No statistically significant differences were found between groups on pre-post gains in ELA or math achievement test scores or in attendance rates. With such a short intervention period, especially for program activities directly aimed at students, academic impacts were not expected to be large. In general, however, it remains to be seen what the relationship may be between social emotional outcomes and academic outcomes.

Limitations

Notwithstanding the multiple important findings, this study had a number of methodological limitations. For instance, the study had limited statistical power due to the sample size. Also, despite random assignment of teachers to treatment condition, some initial differences existed between the treatment and control group teachers and their students. It is also necessary to note three possible limitations of the instrumentation: (1) the teacher pre-survey was retrospective (i.e., the effect of asking teachers to think back to how they were feeling in the previous June when they completed the pre-survey), (2) all instruments were self-perception (i.e., self-report) surveys, and (3) the student survey used in this study was comprised of select sections of a published survey (that were altered in the 3rd- and 4th-grade version), rather than a complete battery. Finally, it should be considered that the duration and strength of treatment may need to be increased to see certain changes in student wellness across all grades. That is, treatment may need to be introduced at the beginning of the school year rather than mid-year, and it may take more time for changes in teachers' wellness to reach the classroom and affect individual students.

Suggestions for Further Research

Further research is needed to examine whether increased strength and duration of treatment would demonstrate greater impact; explore whether these results can be generalized to other groups of teachers, including those outside of the NYC area; and determine whether changes in the research design might lead to greater strength in results. Specific suggestions for additional research include the following:

- Include a larger sample of participants to add greater power to the analyses and reduce the error caused by initial differences between the groups;
- Start in the previous school year so that change might be measured from June to June, rather than from September to June, thus eliminating the error caused by asking teachers to "think back" to the previous spring;
- Include classroom observations in which impartial observers visit classrooms multiple times over the course of a school year and, using a published, structured protocol, assess the classroom climate;
- Include objective, biological measures of participants' stress and anxiety levels;
- Allow for an intervention of longer duration, with a full year of curriculum implementation in the classroom;
- Revisit the instruments used and ensure that they are appropriate for the population being assessed and well aligned with the changes that are expected from the program intervention; and
- Examine relationships between social emotional and academic outcomes for students.