

Increases in Resilience and School Performance
Among Elementary Students in the Afterschool Program in the 2021-2022 School Year
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Executive Summary

The study and its purpose - A pre-post longitudinal study of afterschool students in four Walla Walla elementary schools was conducted in the 2021-22 school year. The purpose was to measure empirically, for the first time, whether students became more resilient, whether their resilience was due directly or indirectly to reported supports from the afterschool program, and whether the resilience attained led to higher school performance.

Study methods - A short resilience survey was administered pre and post, at students' entry into one of the three yearly sessions of the afterschool program and at their exit. The survey measured six factors each for both individual and contextual resilience. With these data, we then used correlations to measure how changes in the resilience factors affected each other. Next, we measured the role of the afterschool program on students' resilience, controlling statistically for all the other factors in a path analysis that visually depicts the various effects. Finally, indicators of school performance (iReady reading and math scores) at the beginning and end of the school calendar year were attached to the survey resilience data. Even though this was the first full year of in-person attendance after COVID, the response rate was reasonably good: 57% took the pre survey, 31% took both pre and post, providing a sample of 103 students. Most students took the pre survey within 3 days of starting the afterschool program.

We analyzed the effects of increases in resilience for 37 of the 61 students who were new to the program because returning students, the 42 students enrolled before, were maintaining the high levels of resilience that they had reached in prior sessions in previous years. Furthermore, 24 of the 61 new students, many from Berney Elementary School, a school participating for the first year, filled in the pre survey with the highest possible score that could not increase due to so-called 'ceiling effects.' The remaining sample of 37 students were found to be generally representative, having background characteristics similar to the whole sample of 103 students.

Main findings – Among the 37 new students, those that had not previously attended the afterschool program and had no ceiling effects,

1. individual and contextual resilience increased significantly:
 - increases in individual resilience factors (trust, problem solving and goals) affected each other leading to increased self-value;
 - increases in contextual resilience factors affected each other (support from the afterschool program increased support from activities, their school, and their friends);
2. as students felt increased supports from the afterschool program, activities, school and friends, their individual resilience (self-value) increased;
3. among students who had reached high levels of resilience due to high levels of afterschool supports, school performance (iReady reading and math scores) increased.

Among all the students in the afterschool program (97 of 103 with iReady data), although more likely to be low income and have limited English proficiency (LEP),

1. improvement in reading and math was similar to that of all elementary school students;
2. among the 66 students with high levels of post resilience (4 or 5 on a scale from 1-5), the increase in iReady reading scores was greater than for all students in the four elementary schools, and twice that of the 31 students with lower levels of resilience (less than 4).

Introduction

This study aims to discover whether elementary school students experienced increases in resilience while participating in out of school time (OST), or afterschool programs. Furthermore, the study seeks to learn whether social-emotional supports from the afterschool programs had a positive impact on students' individual resilience. Lastly, it tests whether students' academic performance improved, mainly among those who attained higher levels of resilience by the end of their program.

The focus on the role of resilience is due to its growing theoretical importance, its empirically proven impacts, progress in measurement and its practical promise to mitigate the ever-growing prevalence of adversities, such as family, economic, and racial-ethnic challenges.

As trauma-inducing adversities have been found to have negative neurological impacts on an individual's ability to cope and adapt, experts have studied the nature of resilience because of its promise to mitigate negative effects or protect from such neurological impacts. After many studies in the past half century, there has been growing agreement that resilience is not a personality trait, but rather a product of social-ecological interactions between individuals and their social environments. As Ann Masten wrote, it is a product of 'Ordinary Magic.'

"Resilience is common and typically arises from the operation of basic protections . . . commonplace adaptive systems . . . such as healthy brains . . . close relationships . . . committed families, effective schools and communities . . . beliefs in the self, nurtured by positive interactions with the world . . . which highlight the power of human and social capital" (Masten, 2014, p. 8).

Resilience can be supported, and it can be learned. "Supportive relationships play an enormous role in resilience across the lifespan" (Masten & Barnes, 2018, p. 2).

Recent empirical evidence of the impacts of resilience comes from large-scale population surveys, like the CDC and the foundation-funded Behavioral Risk Factor Surveillance System (BRFSS). Two studies based on individuals found protective, buffering impacts of resilience: poor physical and mental health not increasing with higher adversities among more resilient individuals (Logan-Green et al., 2014, Nurius et al., 2016). A unique study based on whole communities found mitigating impacts of higher average resilience in the population: not only on community-wide levels of physical and mental health, but also on average levels of schooling performance, for both youth and adults (Longhi et al., 2021). A comprehensive review of 118 children's studies (Yule et al., 2019) found support for the mitigating impact of contextual resilience factors, such as schooling supports.

Progress has also been made in measuring resilience with more reliability for teenage youth (Ungar, 2013) and young elementary school children (Madsen & Abell, 2010). These tools have been tested in different countries and include both individual factors (like self-value, trust, self-regulation, problem-solving, and optimism) and contextual ones (like support from family, peers, schools, and neighbors). Since what gets measured and reported often influences priorities in what gets practiced, improvements in resilience measures and research on the impacts of resilience are promising for changes in school practices.

Policy implications are clear: to stem the crisis of growing adversities, it is imperative to increase protective socio-ecological factors (Ellis & Dietz, 2017; and Center for Disease Control and Prevention, 2022). This study aims at assessing such resilience-producing factors.

Methods

A short resilience survey was administered pre and post, at students’ entry into one of the three yearly sessions of the afterschool program and at their exit. The survey reliably measured major factors of individual and contextual resilience factors so that pre-post changes in resiliency could be assessed for each student. With these data, we then measured how changes in the resilience factors affected each other, statistically with correlations among the changing factors. We also tested the significance of the roles of the school, the afterschool program, and activities, controlling statistically for all the other factors in a path analysis depicting visually the various factors in making students more resilient.

Finally, indicators of school performance (iReady reading and math scores) at the beginning and ending of the school calendar year were collected from school district archival sources and attached to the survey resilience data. The extent of improvements in school performance over the year were then related to resilience levels. The resulting data set was anonymous to comply with the requirements of the approved Institutional Review Board (IRB) procedures for this study, protecting student well-being and privacy.

Survey tool

A 27-question short-form survey was adapted from Machel Madsen’s Trauma Resilience Scale for Children (TRSC) which has 81 questions and has been tested for reliability and validity. Both the new short form and Madsen’s long form examine five factors of individual and contextual resilience.

First, in 2018, focus groups were conducted among elementary afterschool program attendees at three of the Walla Walla schools (Edison, Green Park, and Sharpstein). The focus groups tested the “face value” of questions by allowing students the opportunity to identify the survey questions that seemed most relevant to their own individual protective factors and contextual supports based on their cultural experience in Walla Walla (Longhi and Brown, 2020; see also Ungar, 2013). Based on the results of the focus groups, one factor of individual resilience (trust/safety) and one factor of contextual resilience (afterschool) were added to the tool.

Factors of individual resilience		Factors of contextual resilience	
Trust/Safety	(new)	Family	(Madsen)
Self-Regulation	(Madsen)	Friends	(Madsen)
Goals	(Madsen)	Community	(Madsen)
Problem solving	(Madsen)	School	(Madsen)
Beliefs	(Madsen)	Afterschool program	(new)
Self-Value	(Madsen)	Activities	(Madsen)

Second, in 2019, we used factor analysis and multiple regression statistical techniques to compare the short form tool to the longer survey, and we found that the short form tool was similarly reliable with Cronbach alpha scores over 80 (Longhi and Brown, 2020, p.8).

Scale Reliability – Cronbach Alpha Measures of Inter-Item Consistency			
	Long Form Spring 2019 (n=69)	Short Form Spring 2019 (n=69)	Short Form Fall 2020 (n=68)
Among 6 Individual Resilience Factors	.913	.888	.863
Among 6 Contextual Resilience Factors	.842	.839	.832
Overall -Among all 12 Resilience Factors	.926	.914	.911

The short form survey is 14 pages long. The first page asks the students to input their name, school, and grade. The following 12 pages consist of two or three statements for each factor to which the students respond using a one to five scale with one equals “never,” two “seldom,” three “sometimes,” four “often,” and five being “always.” The last page of the survey provides students with the opportunity to include anything else in an open-ended format.

Procedure

For this study, the short form survey was administered starting in the Fall of 2021, the first full year of in-person attendance after the schools had been online due to COVID. Survey proctors administered the survey in a very similar way across all elementary schools. Both parental consent and child’s assent were obtained before students took the survey. A survey proctor described the survey to groups of students that were eligible to take the survey at each school and asked them to sign and date an assent form if they agreed to participate. Students then completed surveys digitally on either iPads or Chromebooks. The survey proctor read each question aloud to the group and asked students to follow along so as to help ensure student understanding of survey verbiage. When questions arose, the survey proctor attempted to answer very similarly at each site. Students mainly had questions about the following terms: pray, meditate, comfort, community, teams and groups, and activities. The definitions below were used to answer students’ requests for definitions.

- Pray: A conversation out loud (or in your head) with God, or another spiritual being.
- Meditate: The practice of calming one's mind and body.
- Comfort: Support, makes you feel good, helps you feel better, less worried or upset.
- Community: City, neighborhood, area of town
- Teams & Groups: Teams are sports or clubs. Groups would be people you regularly hang out with or who have a shared interest.
- Activities: Things you do outside of school. It could be an afterschool program, a sport like soccer or basketball, a church group, or another hobby.

In addition, most students were unsure of the meaning of the word “seldom” which was defined by the proctor as meaning “rarely or not very often.”

Participants

Participants in this study include first through fifth grade students attending afterschool programs from four Walla Walla elementary schools (Berney, Edison, Green Park, and Sharpstein). Of the 336 afterschool program attendees during the 2021-2022 school year, 103 completed the survey with no missing data when they joined their afterschool program and again before they exited the program (response rate of 31%). One hundred ninety-one students took the pre survey (57% response rate) but did not take the post survey. Edison Elementary School, where all students receive instruction in both English and Spanish, had the most students complete the pre and post surveys (35), while Berney Elementary had the least (17). Twenty-five students from Green Park and 26 from Sharpstein also completed both the pre and post surveys. Most students took the pre survey within three days of entering the afterschool program.

Most study participants (81%) received free or reduced-price school meals during the 2021-2022 school year. Most participants (80%) were students of color. Of those, 74% were Hispanic and/or Latino/a. In addition, six students (6%) were non-white, non-Hispanic/ Latino/a, including one American Indian student, one Asian, one Native Hawaiian, and three Black/African American students. Nine students (9%) identified as multiracial, including being ethnically Hispanic/Latino/a. Just over half of participating students were female (54%), while 46% were male. Nine students received special education supports (9%), and 46 (45%) of the 103 students were designated as having Limited English Proficiency (LEP).

The students surveyed differ from Walla Walla Public Schools students as a whole. Walla Walla Public Schools reports that its 5,512 students were 52% white, 42% Hispanic, and 3.5% multi-racial during the 2021-2022 school year. Fifty-five percent of district students received free or reduced-cost meals and only 14 percent had Limited English Proficiency that year.

	Free or Reduced Lunch	Students of color	Hispanic, Latino/a	Limited English Proficiency (LEP)
Study Sample N=103	81%	80%	59%	45%
School District N=5512	55%	48%	42%	14%

We divided the sample of 103 students into two groups, 42 students who had attended an afterschool program in a prior year, and 61 students who were new to the afterschool program (never participating or only briefly, less than 10 days, in prior years). Of the 61 new students, 24 had ceiling effects at entry on the pre survey for both self-value (a measure of individual resilience) and activities (a measure of contextual resilience) meaning that those students marked both self-value and activities with a score of 5, the highest possible score. Therefore, our analysis of changes in resilience is focused on the 37 (61 minus 24) new students without ceiling effects on both individual and contextual resilience.

	New students with pre and post resilience	New students with ceiling effects	Returning students	Total students surveyed
Berney	7	10	0	17
Edison	11	7	17	35
Green Park	7	2	16	25
Sharpstein	12	5	9	26
Total	37	24	42	103

Results

Means, correlations, and path analyses of resilience for new students with no ceiling effects (N=37)

Average measures of resilience in the pre and post surveys –

In the pre survey, the factors of resilience that students marked highest were support from family and support from the afterschool program among the measures of contextual resilience, with average scores of 4.03 and 4.17, respectively. In the post survey, while students still marked support from family and the afterschool program highly, 4.08 and 4.22, they also marked the individual resilience factors of goals and self-value highly, with goals being marked the highest of any factor with an average score of 4.27. The average score for self-value was 4.04. The lowest-scored factor of resilience on both pre and post surveys was support from neighbors and community, with an average score of 2.55 on the pre survey and 2.82 on the post survey (see Tables 1 and 2).

Did resilience increase?

The results of the survey show increases in resilience for afterschool students with pre and post survey results who had not attended previous afterschool programs. Pre survey results indicated that students who had attended OST programming during the summer and/or during previous school years had very high resilience and thus could not increase further. However, students that were new to the OST program showed increases in both individual and contextual resilience. Of the 37 students who had not attended afterschool programming before, overall resilience (individual and contextual combined), individual resilience, and contextual resilience all increased significantly, by .27, .33, and .22 respectively (See Tables 1 and 2).

Within individual resilience, all but one of the six factors increased, with highly significant increases for goals and self-value. Goals increased the most with a difference of .66. Self-value also had a large increase of .53. Problem solving and self-regulation increased by .32 and .30 respectively, and trust increased by .17. Beliefs was the only factor that decreased -.11, but not significantly (See Table 1).

All factors of individual resilience were positively correlated with each other. Changes in self-value were significantly correlated with changes in goals, problem solving and self-regulation, and slightly less correlated (trend) with changes in trust. Changes in goals were related to changes in trust and problem-solving (See Table 3).

How increases in individual resilience factors affected each other is displayed visually in Figure 1, as direct and indirect paths (produced by the statistical path analysis of individual resilience factors). Increases in self-value are directly affected by increases in self-regulation and goals and indirectly by increases in trust and problem solving. Goal increases seem to play a central role, since trust and problem solving increases have an effect on increasing self-value by affecting increases in goals (See Figure 1).

How did contextual resilience increase?

Within contextual resilience, every factor increased among the 37 students. The largest increase, the only one which was significant, was for activities, where the mean difference was .54. Increases in friends and community were .31 and .27, while smaller increases occurred for the factors of family (.05), school (.07), and afterschool (.05). (See Table 2).

Changes in support from the afterschool program were significantly correlated to changes in support from friends, school, and community. Changes in support from activities were significantly correlated to changes in support from school and friends (See Table 4).

Visually, the paths of changes in contextual resilience show how increases in supportive activities were a product of school and friends changes, which were influenced by changes in afterschool supports. Community and family changes were not very influential, only co-occurring with changing afterschool and school supports (See Figure 2).

Were changes in contextual resilience related to changes in individual resilience?

We found strong evidence that reported changes in contextual resilience (supports from schools, afterschool programs, family, friends, and neighbors) were highly related to reported changes in individual resilience (correlation of .69, significance .000) and self-value (correlation of .51, significance .001).

What about the role of changes in specific contextual factors? Below are the correlations between changes in different contextual factors and changes in self-value, the key individual resilience factor.

- Increases in afterschool program supports, along with increasing supports from activities, schools and friends were significantly related to increases in self-value;
- Family and community changes did not have significant impacts.

	Changes (from pre to post) in contextual supports					
	Afterschool program	Activities	School	Friends	Family	Community
Changes in Self-value	.283*	.481**	.448*	.376*	Not significant	Not significant

*significant at .05 level **significant at .01 level

Among the factors of contextual resilience, we had already found that changes in afterschool supports were strongly related to reported changes in school supports (correlation of .36, significance .014). Also, we found on the post survey that level of support from the afterschool program was strongly related to level of support from activities (correlation .51, significance .001). Because reported support for the afterschool program was so high initially on the pre survey, it was not able to increase much, on average. What did increase was reported support from activities which was related to changes in support from both the afterschool programs and the school, presumably because activities occurred both in the afterschool program and in the school. We also found that changes in supports from friends were related to changes in support from the afterschool program, again possibly because students made new friends in the afterschool program, thus leading us to expect that support from friends also had a role in increasing individual resilience.

The visual paths displayed in Figure 2 summarize our results on the effects of changes in contextual resilience on changes in individual resilience, again using self-value as the key factor in individual resilience.

- Changes in self-value were affected directly by changes in three support factors: activities, schools and friends supports;
- Changes in these three factors were affected by afterschool support changes;
- Therefore, increases in self-value were indirectly but significantly affected by changes in afterschool supports.

Students with ceiling effects (N=24)

Ceiling effect students answered almost all questions in the pre resilience survey with the highest value (5 on a Likert scale from 1-5). Therefore, increases from pre to post were not possible: they had already “hit the ceiling” at the start. Most of these students were also highly resilient on the post resilience survey, scoring top resilient scores on many factors.

Grade levels and backgrounds for the 24 students with ceiling effects did not differ significantly from those of the 37 first-time students already analyzed. A disproportionate number, 10, of the students with ceiling effects were from Berney, a newly participating school in the afterschool program. It is possible that these students either already had unusually high expectations at entry and/or were ‘aiming to please.’

Returning students (N=42)

Returning students are those who had been in the afterschool program before the 2021-22 year, for one or more sessions in prior years. When they returned in 2021-22, they reported in the pre survey that they had high supports and also that they had high individual resilience. Among the factors of individual resilience, level of trust in the pre survey was higher for students returning more recently, after one or two sessions, compared to students who had participated longer ago, possibly indicating that the afterschool program had improved its effect on students’ levels of trust.

Comparison of pre and post resilience scores showed that both individual and contextual resilience levels remained virtually the same (not significantly different), not only for the

students who had attended one prior session, but also for those who had attended multiple previous sessions in different prior years. Results showed no increase in individual or contextual resilience if students attended more than one prior session. The pattern is one of maintenance of levels of resilience.

We compared the increases in school performance measured on the iReady reading and math assessments for these returning students and found that they were similar to those for the students enrolling for the first time in the afterschool program. The pattern is one of similar increases in school performance, with no additional effects due to attendance in prior years.

Academic Performance and Resilience

Did school performance change from Fall 2021 to Spring 2022 for all 103 students in the afterschool programs?

For students in the afterschool programs, we assessed academic performance with the iReady reading scores; these scores increased significantly by 35.5 points ($t = 7.32$, significance .000). The iReady math scores increased by 25.8 points ($t=9.09$, significance .000). These increases in academic performance were correlated with students' levels of resilience in the post survey in the Spring (correlation .31, significance .05) indicating that both students who stayed high in resilience, and those who increased in resilience, improved in school performance during the year. We found similar results for post survey Spring self-value (correlation .38, significance .013). We conclude that higher resilience is associated with higher school performance.

Were changes in iReady scores related to levels of resilience reached post program?

Changes in iReady reading scores were affected by levels of individual resilience post program which were affected by levels of contextual resilience supports post program. Specifically, changes in iReady reading scores were affected by levels of self-value which were affected by levels of support from the afterschool program and from the school (see Figure 4).

More than two-thirds of the students in the afterschool program ($n=66$) were at high levels of resilience when they exited. These students, who scored 4 or 5 on self-value on the post survey, increased more in iReady reading scores when compared to all students in the elementary schools in Walla Walla, and twice as much when compared to the students with lower levels of resilience measured by self-value (less than 4). There were few differences in iReady math scores: all students increased by 29 points compared to the increase for high resilience students of 25 and lower resilience students of 24 (see Table 5). In the year following this study, the afterschool program placed more emphasis on improving math scores, so data from 2022-23 may show afterschool program impacts on iReady math scores.

Table 6 compares the high resilience students to the lower resilience students on factors of individual and contextual resilience. For the high resilience students, trust, goals, and self-value are the factors of individual resilience with the highest average scores, and reported supports from the afterschool program and the school are the factors of contextual resilience with the highest average scores, suggesting that higher support from the afterschool program and the school are related to increases in academic performance measured by the iReady reading scores.

Conclusion

This study found evidence that:

1. individual resilience increased significantly among new afterschool students (among those with no ceiling effects in the pre survey that made increases impossible) and that these increases involved changes in the individual resilience factors of trust, self-regulation, problem solving, and goal setting;
2. increasing contextual supports from the afterschool program were significantly related to the increases in individual resilience as students in the afterschool programs felt increasing supports from activities they engaged in, from friends and from their own schools;
3. school performance increased significantly for both new and returning afterschool students:
 - the extent of increases in reading and math iReady scores for the 2021-22 school year being very similar to their fellow elementary school students even though the afterschool students came from more disadvantaged backgrounds, and
 - the magnitude of increases being correlated with the level of resilience achieved on the post survey, as the 66 afterschool students who reached high levels of resilience increased their reading iReady scores twice as much as the 31 who only reached medium or low levels of resilience.

Limitations

For returning students who had participated in the afterschool program in prior years and had returned for a session or two this year, we currently don't have information on their previous increases in resilience. All we know is that they maintained their already high resilience this year. When the 2022-23 school-year data are available, we will have data for two consecutive years with information on previous increases in resilience for returning students.

We have no information currently on what components of the afterschool program affect resilience increases more than others. The finding that increases in math iReady scores for more resilient and less resilient students were similar and lower than for students as a whole suggests that the afterschool program could include more mathematical skill building activities; these were introduced in the 2022-23 school year.

Discussion

This study has provided for the first time strong empirical evidence for increases in resilience among elementary school students in the afterschool program. This was due to the pre-post longitudinal design and the measurement of both individual and contextual factors of resilience. It was also due to the reinforcing results of analyses of means (average increases in resilience factors), of expected correlations among resilience factors, and of resilience effects produced by statistical path analyses.

The data in this study were gathered when students returned to in-school learning after COVID. National research has shown a learning gap occurred during COVID, when only online schooling was available. Current findings from this study suggest that the afterschool program may be a useful tool in helping close this gap.

Next Steps

The afterschool program expanded to first and second graders in the last two years after the short-form survey was developed in 2018-19. For the 2021-22 data, no differences were found in response patterns of resilience factors between the first-second graders and the third-fifth graders. Therefore, we recommend using the same short-form survey for students from all grades next year in 2023-24 so that we can compare results across three years.

Pre-post monitoring of resilience increases in future years may help shed light on useful new policies such as how many sessions and what components of the afterschool program are most beneficial to increase resilience and its impacts on school performance, and for which students.

Table 1

**Descriptive Statistics Individual Resilience
37 cases with Pre and Post data and no ceiling effects**

Measure of Resilience	Mean Pre	Mean Post	Difference	t statistic	Significance (1-tailed)
Overall Resilience – both Individual and Contextual	3.45	3.73	.273	2.93	.006**
Individual Resilience All Factors	3.37	3.70	.330	3.51	.001**
Trust	3.69	3.86	.172	.829	.413
Self-Regulation	2.94	3.24	.302	1.90	.065 [†]
Problem Solving	3.19	3.51	.316	1.60	.117
Goals	3.61	4.27	.662	3.84	.000**
Beliefs	3.28	3.18	-.108	-0.89	.378
Self-Value	3.51	4.04	.527	4.10	.000**

* significance of .05; ** significance of .01; [†] significant as a trend

Ceiling effects occurred when new students marked both Self-value and Activities with a score of 5, the highest possible score.

Table 2

**Descriptive Statistics Contextual Resilience
37 cases with Pre and Post data and no ceiling effects**

Measure of Resilience	Mean Pre	Mean Post	Difference	t statistic	Significance (1-tailed)
Overall Resilience – both Individual and Contextual	3.45	3.73	.273	2.93	.006**
Contextual Resilience All Factors	3.54	3.75	.215	1.99	.054 ^t
Family Support	4.03	4.08	.054	.305	.762
Friends Support	3.36	3.68	.311	1.43	.161
Community Support	2.55	2.82	.270	1.60	.117
School Support	3.80	3.86	.068	.335	.739
Afterschool Support	4.17	4.22	.050	.397	.693
Activities	3.30	3.84	.541	2.44	.020*

* significance of .05; ** significance of .01; ^t significant as a trend

Ceiling effects occurred when new students marked both Self-value and Activities with a score of 5, the highest possible score.

Table 3

**Correlations among Changes in Factors of Individual Resilience
37 cases with Pre and Post data and no ceiling effects**

Changes from Pre to Post					
	Trust	Self-Regulation	Problem Solving	Goals	Self-Value
Trust	1.00	0.027	0.432**	0.262*	0.250 ^t
Self-Regulation	0.027	1.00	0.026	0.184	0.363*
Problem Solving	0.432**	0.026	1.00	0.511**	0.329*
Goals	0.262 ^t	0.184	0.511**	1.00	0.410**
Self-Value	0.250 ^t	0.363*	0.329*	0.410**	1.00

* significance of .05; ** significance of .01; ^t significant as a trend

Ceiling effects occurred when new students marked both Self-value and Activities with a score of 5, the highest possible score.

Table 4

**Correlations among Changes in Factors of Contextual Resilience
37 cases with Pre and Post data and no ceiling effects**

Changes from Pre to Post in Reported Supports from						
	Afterschool program	Activities	School	Friends	Family	Community
Afterschool Program	1.00	0.123	0.360*	0.419*	0.161	0.213*
Activities	0.123	1.00	0.322*	0.259 ^t	-0.002	0.188
School	0.360*	0.322*	1.00	0.167	0.3323*	0.262 ^t
Friends	0.419*	0.259 ^t	0.167	1.00	0.139	0.003
Family	0.161	-0.002	0.323*	0.139	1.00	0.150
Community	0.313*	0.188	0.262 ^t	0.003	0.150	1.00

* significance of .05; ** significance of .01; ^t significant as a trend

Ceiling effects occurred when new students marked both Self-value and Activities with a score of 5, the highest possible score.

Table 5

**Average Increase in iReady Reading and Math scores from Fall 2021 to Spring 2022
N=97 with no missing data**

Average Increase in iReady Reading scores from Fall 2021 to Spring 2022						
Grade	1	2	3	4	5	Total
1200 students in four elementary schools in Walla Walla	43	37	40	36	22	35
97 students with pre and post resilience and iReady reading scores	48	35	43	22	34	34
66 students with high post resilience (4 or 5)	55	37	47	31	39	41
31 students with lower post resilience (LT 4)	12	24	31	17	19	20

Average Increase in iReady Math scores from Fall 2021 to Spring 2022						
Grade	1	2	3	4	5	Total
1200 students in four elementary schools in Walla Walla	34	28	38	25	20	29
97 students with pre and post resilience and iReady math scores	28	29	28	19	22	25
66 students with high post resilience (4 or 5)	30	28	28	16	23	25
31 students with lower post resilience (LT 4)	20	42	28	21	20	24

Table 6a

**Average Scores on Factors of Individual Resilience
Comparing Students with High Post Self-value (4 or 5)
to Students with Lower Post Self-value (less than 4)
N=103**

Post factors of Individual Resilience	Trust	Self-regulation	Problem solving	Goals	Self-value	Individual Resilience
Students with high post Self-value (4 or 5)	4.2	3.6	3.9	4.3	4.5	4.0
Students with lower post Self-value (LT4)	3.4	3.0	3.2	3.5	3.1	3.2
Significance of difference	.000	.005	.002	.000	.000	.000

Table 6b

**Average Supports from Factors of Contextual Resilience
Comparing Students with High Post Self-value (4 or 5)
to Students with Lower Post Self-value (less than 4)
N=103**

Post factors of contextual resilience	After-school Program	School	Activities	Friends	Family	Community	Contextual
Students with high post Self-value (4 or 5)	4.7	4.4	4.1	4.1	4.3	3.2	4.1
Students with lower post Self-value (LT4)	3.8	3.5	3.6	3.5	3.8	2.5	3.4
Significance of difference	.000	.000	.005	.02	.05	.002	.000

Figure 1
How Changes in Dimensions of Individual Resilience Affect Each Other (N=37)

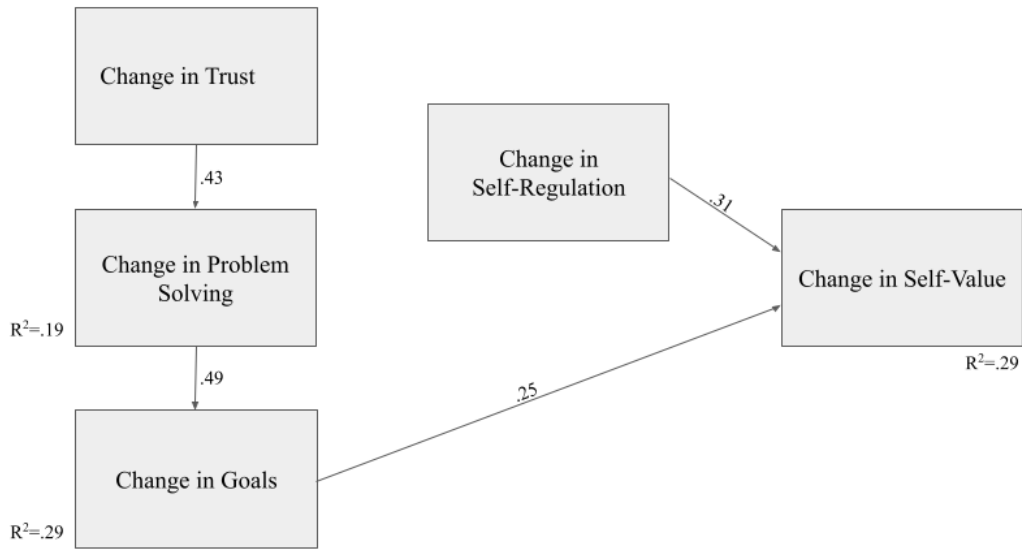


Figure 2
How Changes in Various Contextual Supports Affect Each Other and Self-Value Resilience Changed (N=37)

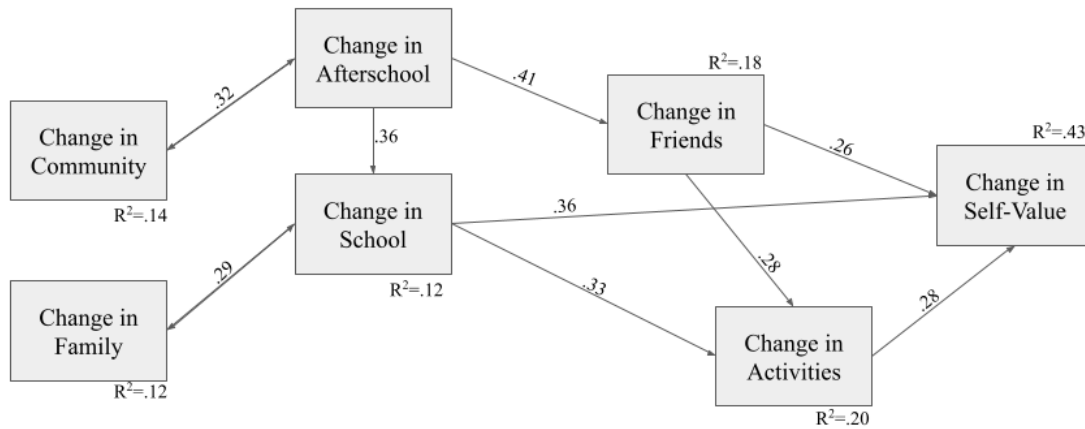


Figure 3

How Achieved Levels of Resilience and its Supports Affect Changes in School Performance Among New Students (N=37)

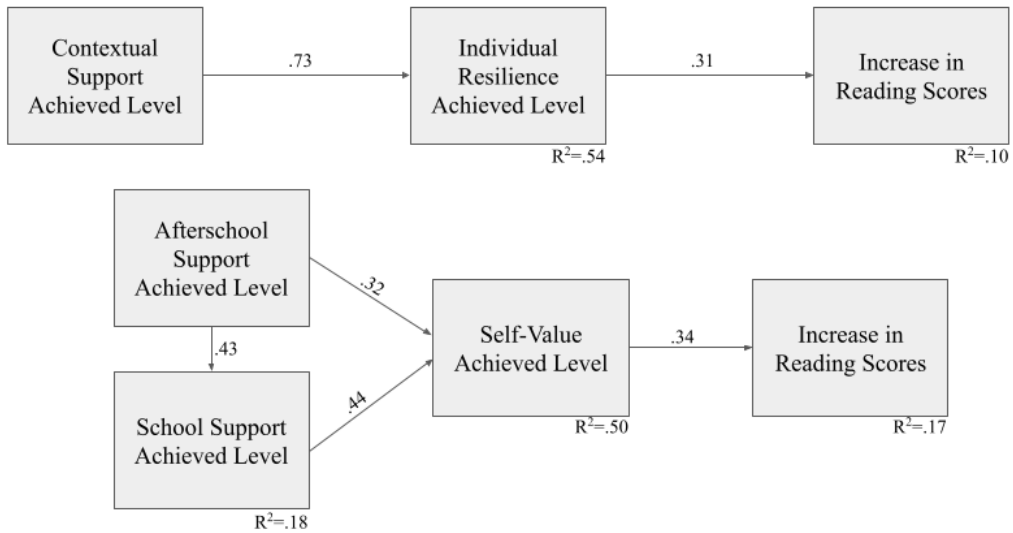
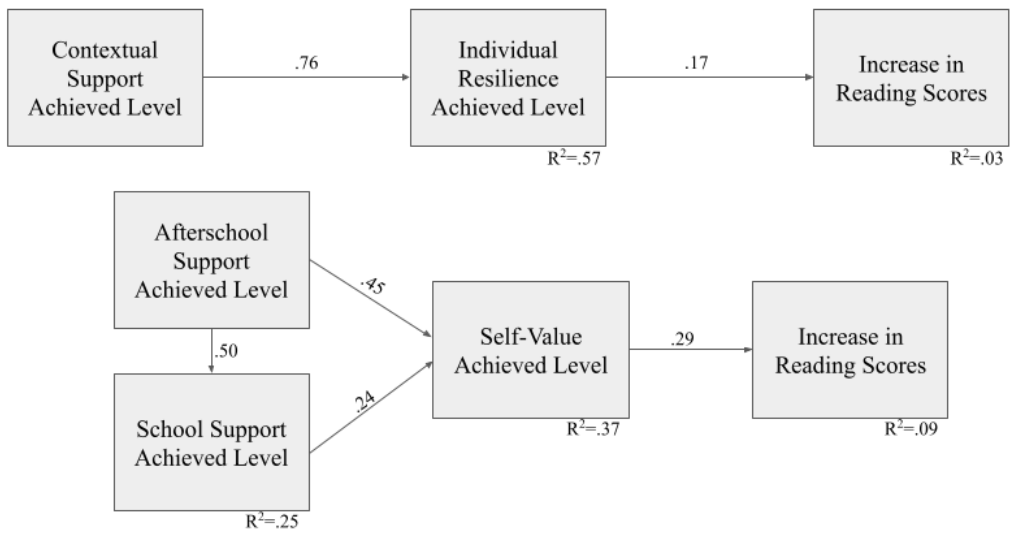


Figure 4

How Achieved Levels of Resilience and its Supports Affect Changes in School Performance Among All Afterschool Program Attendees (N=103)



References

- Centers for Disease Control and Prevention. (2022, April 6). *Fast facts: Preventing adverse childhood experiences |violence prevention|injury Center|CDC*. Centers for Disease Control and Prevention. <https://www.cdc.gov/violenceprevention/aces/fastfact.html>
- Ellis, W., & Dietz, W. (2017). A new framework for addressing adverse childhood and community experiences: The building community resilience model. *Academic Pediatrics, 17*, S86 –S93. <https://doi.org/10.1016/j.acap.2016.12.011>
- Logan-Greene, P., Green, S., Nurius, P. S., & Longhi, D. (2014). Distinct contributions of Adverse Childhood Experiences and Resilience re- sources: A cohort analysis of adult physical and mental health. *Social Work in Health Care, 53*, 776 –797. <https://doi.org/10.1080/00981389.2014.94425>
- Longhi, D., Brown, M., and Taylor, K. (July 2019). Results of analyses of resilience factors and measures from Madsen’s and WW surveys of elementary afterschool students in Walla Walla, WA., with notes on construction of resilience scores for a New Short Form. 21st CCLC Walla Walla Report.
- Longhi, D. and Brown, M. (August 2020). Reliability of Resilience Measures in the Short Form of the Trauma Resilience Scale for Children (TRSC). 21st CCLC Walla Walla Report.
- Longhi, D., Brown, M., and Fromm Reed, S. (2021). Community-Wide Resilience Mitigates Adverse Childhood Experiences on Adult and Youth Health, School/Work, and Problem Behaviors. *American Psychologist, Vol. 76, No. 2*, 216 –229 <https://doi.org/10.1037/amp0000773>
- Madsen, M.D., and Abell, N. (2010). Trauma resilience scale: Validation of protective factors associated with adaptation following violence. *Research on Social Work Practice, 20*(2), 223-233.
- Madsen Thompson, M.D., and Klika, B. (2015), Increasing Resilience: Primary Healthcare Providers’ Opportunities to Promote Protective Factors Before and After Childhood Trauma. *AVA/NHCVA ACEs: Informing Best Practices* (pp. 12-18) <http://www.avahealth.org/aces-best-practices/increaasing-resilience.html>
- Masten, A. S. (2014). *Ordinary magic: Resilience in development*. Guilford Press.
- Masten, A., & Barnes, A. (2018). Resilience in children: Developmental perspectives. *Children, 5*(7), 98. <https://doi.org/10.3390/children 5070098>
- Nurius, P., Green, S., Logan-Green, P., Longhi, D., & Song, C. (2016). Stress pathways to health inequalities: Embedding ACEs within social and behavioral contexts. *International Public Health Journal, 8*(2), 241–256.

Ungar, M. (2013). Resilience, trauma, context, and culture. *Trauma, Violence, & Abuse*, 14(3), 255-266. <https://doi.org/10.1177/1524838013487805>

Yule, K., Houston, J., & Grych, J. (2019). Resilience in children exposed to violence: A meta-analysis of protective factors across ecological contexts. *Clinical Child and Family Psychology Review*, 22, 406 – 431. <https://doi.org/10.1007/s10567-019-00293-1>