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The Hard Science of Soft Skills

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The Hard Science of Soft Skills
Examining Measures used to Evaluate an SEL/Mindfulness Program
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SEAS | Science Education And Society

THE UNIVERSITY OF RHODE ISLAND

Introduction

Students need a strong foundation in academic skills paired with social and emotional skills to prepare for future careers and a life of well-being[1]. Beyond preparing for the future, social and emotional learning (SEL) acts as prevention of risky behavior and as promotion of healthy lifestyles[2]. Recently a connection has been made in the literature between mindfulness based practices and the development of social and emotional learning skills. As both national and state-level attention turns to SEL curricula for improved education, understanding fair and valid assessment becomes critical[3]. In Rhode Island specifically, an emphasis on SEL is reflected in the Basic Education Plan. Although the state is quick to encourage districts to adapt SEL practices, they are lagging in providing viable assessments.

Research Goals

The current study looks to:

1) Understand how a small battery of measures, including two mindfulness self-report surveys as well as one SEL external rater survey, perform psychometrically.

2) Examine the Center for Resilience SEL/mindfulness program using the battery of measures to determine which is most sensitive to the curriculum delivered.

Methods

Procedure

Pre- and post-assessments took place in the fall, before students received the mindfulness programming, and again after 7 months of the program. At both the pre and post-assessments students were administered two self-report surveys on mindfulness. Teachers also completed a survey that allowed them to report on the social and emotional learning competencies of each of their students. Assessments took no longer than 30 minutes for both students and teachers. Assessments were administered by the researcher and two graduate students from the SEAS research lab.

Literature Review of Mindfulness and SEL Measures [intended for child and adolescent populations]

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Participants: n= 29 students in sixth-grade at an urban charter school receiving a SEL/Mindfulness program for the 2016/2017 academic school year.

PRE-TEST   POST-TEST

Analysis
Hypothesis 1:
Internal Reliability à Cronbach's alpha
Construct Validity à Pearson correlation coefficients
Hypothesis 2:
Significance Testing à Related measures t-tests

Measures

Name of Tool	What it Measures/Method	Reliability and Validity
Mindful Attention Awareness Scale – Adolescents (MASS-A)	➢ Measures: **Mindfulness** as it applies to awareness and attention, or the ability to notice what is taking place in the moment ➢ Method: Self Report	➢ Found to have high internal reliability using Cronbach's alpha along with high test-retest reliability ➢ It has also shown to have good incremental validity and criterion-related concurrent validity
The Child and Adolescent Mindfulness Measure – (CAMM)	➢ Measures: **Mindfulness** focusing on the degree to which an individual is aware and one's ability to deal with situations as they arise without judgment ➢ Method: Self Report	➢ Has been found to have good internal consistency using coefficient alpha ➢ Also has shown signs of strong incremental validity and criterion-related concurrent validity
The Devereux Student Strengths Assessment – Mini (DESSA-mini)	➢ Measures: **SEL**, students' general development of social and emotional learning skills over time (also identifies at need students) ➢ Method: External Rater	➢ Internal reliability has been reported as strong in previous studies using Cronbach's alpha ➢ Has been found to have strong criterion related concurrent validity as well as high discriminant validity

Results

Psychometric Properties of Measures

Internal Reliability

Internal Reliability using Cronbach's Alpha			
Measure	**Item Total**	**Pre-Test**	**Post Test**
Mindfulness Attention Awareness Scale - Adolescents (MASS-A)	14	α = .881	α = .910
The Child and Adolescent Mindfulness Measure (CAMM)	10	α = .750	α = .817
The Devereux Student Strengths Assessment – Mini (DESSA-mini)	8	α = .945	α = .976

Construct Validity

Correlation Matrix for Measures

Correlations		DTotal	MTotal	CTotal	DPTotal	MPTotal	CPTotal
DTotal	Pearson Correlation	1	.348	.039	.583	.414	.086
	Sig. (2-tailed)		.131	.854	.001	.076	.675
	N	29	30	25	28	19	26
MTotal	Pearson Correlation	.348	1	.581	.080	.372	.365
	Sig. (2-tailed)	.131		.008	.721	.190	.125
	N	30	20	19	20	14	19
CTotal	Pearson Correlation	.039	.581	1	.268	.438	.586
	Sig. (2-tailed)	.854	.008		.195	.160	.008
	N	25	19	25	25	17	22
DPTotal	Pearson Correlation	.583	.080	.268	1	.362	.238
	Sig. (2-tailed)	.001	.721	.195		.140	.252
	N	28	20	25	28	19	25
MPTotal	Pearson Correlation	.414	.372	.438	.362	1	.565
	Sig. (2-tailed)	.076	.190	.160	.140		.012
	N	19	14	17	19	19	19
CPTotal	Pearson Correlation	.086	.365	.586	.238	.565	1
	Sig. (2-tailed)	.675	.125	.006	.252	.012	
	N	26	19	22	25	19	26

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Note. In the matrix all of the measures are entirely correlated with themselves. Additionally, in both the pre and post-test, the two mindfulness self-report measures are significantly correlated with each other. DTotal= total raw score for DESSA-mini pre-test, MTotal= total raw score for MASS-A, CTotal= total raw score for CAMM, DPTotal= total raw score for DESSA-mini post-test, MPTotal= total raw score for MASS-A post-test, and CPTotal= total raw score of CAMM post-test.

Pre and Post-test Results (Significance Testing)

Means, Standard Deviations, 'N', and P-value			
Measure	**Pre-Test**	**Post-Test**	**p-value**
Mindfulness Attention Awareness Scale - Adolescents (MASS-A)	*M* = 57.0, *SD* = 16.6, *n* = 14	*M* = 58.5, *SD* = 15.5, *n* = 14	0.760
The Child and Adolescent Mindfulness Measure (CAMM)	*M* = 25.5, *SD* = 7.2, *n* = 22	*M* = 23.8, *SD* = 7.04, *n* = 22	0.247
The Devereux Student Strengths Assessment – Mini (DESSA-mini)	*M* = 26.2, *SD* = 5.3, *n* = 28	*M* = 27.6, *SD* = 5.4, *n* = 28	0.154

Note. All p-values are found to be >0.05

Discussion

Research Goal 1

➢ Looking at the correlation matrix, the two self-report measures of mindfulness, the MASS-A and CAMM, were significantly correlated accounting for about 32% to 34% of the variance in scores

➢ Neither of the two mindfulness measures, the MASS-A or CAMM, were correlated with the SEL measure DESSA-mini, at either time point

➢ Even though mindfulness is being used as a method for teaching SEL skills, the way both constructs are being measured differ significantly in the surveys examined
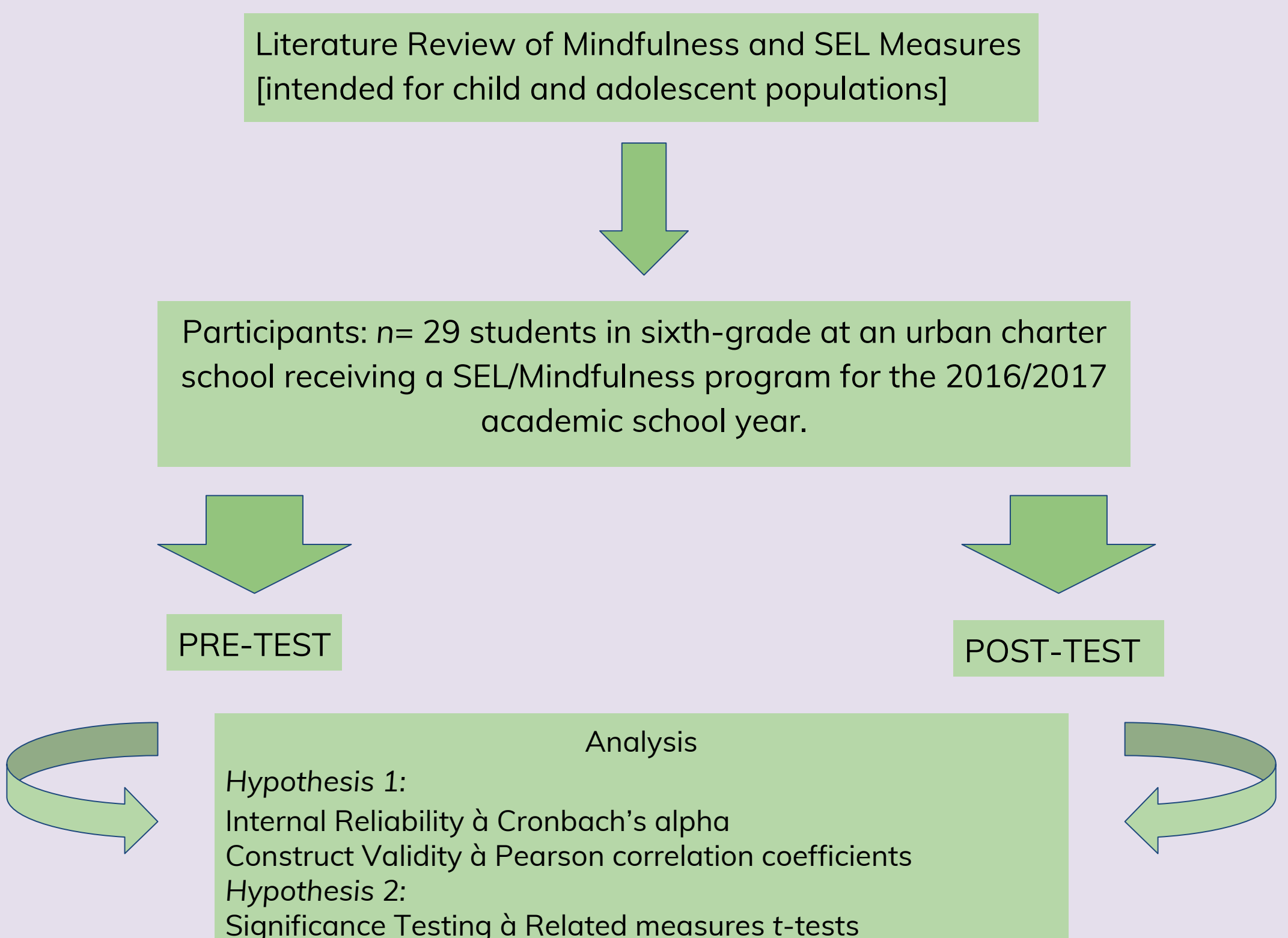
Research Goal 2

➢ Of the battery of measures used in the study, none were found to be sensitive to the SEL/Mindfulness curriculum intervention

➢ All of the t-tests conducted on pre- and post-test data were statistically insignificant resulting in no detectable difference between students' scores in SEL skills and mindfulness after receiving the program

➢ It is important to recognize that although resources are being spent to implement the SEL/mindfulness program, this small scale analysis finds no detectable change in students skill set

Limitations and Future Discussions

➢ With a maximum sample size of *n* = 29, the distribution was non-normal and thus failing to reject the null hypothesis may have been an instance of type II error

➢ Participants answered questions at a reading level higher than would be expected for their age affecting the validity of MASS-A scores

➢ Ideally, this study could be replicated in the future with a larger sample size for a more appropriate set of data

➢ Given the intervention was only delivered to participants for 40 minutes each week it may be students did not receive enough of the curriculum to show detectable improvement

Literature Cited

1. Dymnicki, A., Sambolt M., & Kidron Y. (2013). Improving College and Career Readiness by Incorporating Social and Emotional Learning. Retrieved from http://www.ccrscenter.org/sites/default/files/1528%20CCRS%20Brief%20d9_lvr.pdf.
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