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Social-Emotional Competence among Students with Special Needs: Relationship between Foundational and Applied SEL Skills

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Abstract This study used two waves of data from a multi-dimensional social and emotional measure to examine the role that foundational SEL skills (i.e., Self-Management, Self-Awareness, Social Awareness) and Optimistic Thinking play in developing applied SEL skills (i.e., Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making). This study provided evidence that students classified as emotionally disturbed (ED) can benefit from SEL instruction that is embedded within multitiered, positive behavioral support interventions. There was an association between various foundational SEL skills (i.e., Self-Management, Self-Awareness, Social Awareness) and developing applied SEL skills (i.e., Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making) over an academic school year. While Optimistic Thinking is not one of the central social-emotional competencies in the CASEL framework, this study provided evidence of its ability to contribute to the development of applied social-emotional competencies.

Keywords: *social emotional learning, optimistic thinking, high school students, Middle school students, emotional and behavioral disorders*

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1. Introduction

A dynamic interplay exists between the development of social-emotional competencies and students' academic progress [1,2,3]. Addressing the development of social-emotional competencies of students is critical for both universal and secondary prevention efforts that schools might undertake [4]. Social-emotional competence represents a set of knowledge, behaviors, and attitudes that comprise a person's intrapersonal and interpersonal skill sets [4]. Intrapersonal skills refer to a set of competencies that focus on the individual's ability to regulate emotions, set realistic goals, possess a growth mindset, and cope with stressful situations. Interpersonal skills focus on the ability of a student to engage in social problem solving, perspective-taking, and effectively communication. The development of social-emotional competencies is related to developing positive relationships with others (peers and adults) and is directly related to success both in and outside of school [4,5].

Students with Emotional and Behavioral Disorders (EBD) experience difficulties acquiring social and emotional competencies that support their ability to navigate complex social environments (i.e., school, extra-curricular, groups, peer networks, etc.) effectively [6,7]. The acquisition of social and emotional competencies for students with EBD is critical to their academic and interpersonal success [8,9,10]. Efforts to promote students' social and emotional development are aided when we understand how the multi-facets of this construct support each other and contribute to positive educational engagement [11]. This study sought to investigate the extent to which SEL competencies identified as developmentally foundational (Self-Awareness, Self-Management, Social Awareness), predict the future development of applied SEL competencies (Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making). While noting the absence of Optimistic Thinking in the CASEL social-emotional learning model [12], it was included as a foundational competence in this analysis. The inclusion of Optimistic Thinking was guided by the Expectancy-Value models of motivation that highlight the importance of optimistic thinking in individuals [13,14]. Optimistic Thinking contributes to a person's intentions to engage in a particular behavior [15]. Being optimistic regarding the likelihood that one can successfully engage in a behavior and that engagement will lead to a positive outcome increases the likelihood of engaging in the behavior [15].

Additionally, optimism contributes to student educational engagement, student achievement, and well-being [13,16].

The assessment of social-emotional competencies over the academic school year for the group of children receiving special education services provides an opportunity to gather preliminary evidence of growth in these competencies while participating in a school-wide effort to promote social-emotional competencies.

Statement of Purpose. Building on the previous findings [11], this study seeks to examine the role that foundational SEL skills (i.e., Self-Management, Self-Awareness, Social Awareness) and Optimistic Thinking play in developing applied SEL skills (i.e., Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making). Figure 1 depicts the conceptual path model that will be assessed. Two path models will be examined. Model 1 will assess the association between foundational SEL skills assessed during the Fall term (Time 1) and applied SEL skills assessed during the Spring term (Time 2). Model 2 will assess the same association adding Time 1 applied skills as controls.

The following research questions guided this study:

1. To what extent do students with an EBD classification demonstrate increases in social-emotional competencies from the beginning to the end of the academic school year?
2. To what extent are Self-Management, Self-Awareness, Social Awareness, and Optimistic Thinking assessed in the beginning of the school year (Fall/Time 1) associated with Goal-Directed Behavior, Personal Responsibility, Relationship Skills and Decision Making evaluated at the end of the school year (Spring/Time 2)?
3. Do the associations found persist when the beginning of the school year levels of Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making are controlled?

2. Method

2.1. Participants

Using two waves of data from a multi-dimensional social and emotional measure, this study examined the role that foundational SEL skills (i.e., Self-Management, Self-Awareness, Social Awareness) and Optimistic Thinking play in developing applied SEL skills (i.e., Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making). The students are part of an administrative district. These students receive social-emotional, behavioral, and other support services to students in special education. This study involved a secondary analysis of 312 students attending middle and high schools in the administrative district. Ninety-six percent of the students in the sample (n = 300) were classified as ED, with the remaining 4% classified on the Autism Spectrum (n = 12). The range of ages in the sample was 10 to 15 years old (M = 11.77, SD = 1.35). Eighty-five percent of the sample were male and 15% were females. These schools used the DESSA in the beginning and the end of the year to evaluate student growth in the social-emotional domain. The sample was 85% male and 15% female, in line with research on gender disparities for students classified as Emotionally Disturbed and for Autism Spectrum Disorder [17]. All the schools included in the sample had active programs targeting students' social-emotional and behavioral development that included the use of school-wide Positive Behavioral Intervention and Supports and Social-Emotional Learning curricula at the time of the assessment. Additionally, all students received counseling services targeting social-emotional competencies from the school. Counselors and teachers discussed assessment results with students and used them to plan interventions to remediate any skill gaps [9]. Data for both waves of data collection were available for 280 participants, or approximately 90% of the original sample of 312 students.

2.2. Measures

Multi-dimensional social-emotional development measure. The Devereux Student Strengths Assessment (DESSA) is a norm-referenced behavioral rating scale that assesses youth social-emotional competencies [18]. The assessment's 72 items are divided into eight dimensions of social-emotional competency: Self-Awareness; Social Awareness; Self-Management; Goal-Directed Behavior; Relationship Skills; Personal Responsibility; Decision Making and Optimistic Thinking. Teachers assessed the student's competencies using a 5-point rating scale, which indicates the frequency of occurrence of a behavior, where 1 = Never to 5 = Very frequently. Data collection occurred during the Fall 2015 (Time 1) and Spring 2016 (Time 2) terms. For each subscale, scale scores and T-scores are provided. T-scores are used to identify norm-referenced cutoff scores among the various levels of social-emotional competency. Students with a T-score below 41 are identified as *"Need for Instruction."* *"Need for Instruction"* was meant to indicate the performance on the competency is below the student's norm-referenced peer scores, and additional instruction would be recommended to improve performance. Students with scores between 41 and 59 are considered demonstrating social-emotional behavior at a level *"Typical."* "Typical" ratings indicate that the student performance is consistent with normative peers. The rating was assigned to those students with a performance above 59. The *"Strength"* in the competency performance exceeds the normative peer group [18].

2.3. Foundational Competencies

Self-Management (11 items). These items indicate the youth's capacity to manage their emotions and behavior and to complete tasks or respond to new or challenging situations. An item like the following would appear in this subscale: "Pass up something he/she wanted, or do something he/she did not like, to get something better in the future?"

Self-Awareness (7 items). This subscale attempts to assess whether the student recognizes personal strength and identifies experiences that present an opportunity for growth. The scale is also meant to reflect the youth's desire for self-improvement. An item like the following is found on this subscale, "Show an awareness of her/his personal strength?"

Social Awareness (9 items). These items indicate the extent of the youth's capacity to interact with others in a way that demonstrates respect, cooperation, and tolerance. "Cooperate with peers or sibling?" is the type of item one would find on this subscale.

2.4. Optimistic Thinking

Optimistic Thinking (7 items). These items focus on youth's expression of confidence, hopefulness, and positive thinking about the future. An item like "Speak about positive things?" can be found on this subscale.

2.5. Applied Competencies

Goal-Directed Behavior (10 items). These items indicate the extent to which youth demonstrate the ability to initiate skills and persist at tasks. An item like the following is present on this subscale: "Seek out additional knowledge or information?"

Personal Responsibility (10 items). These items indicate the extent to which youth demonstrate the capacity to be trustworthy and reliable when contributing to group efforts. "Do routine tasks or chores without being reminded?" is an example of an item on the subscale.

Relationship Skills (10 items). These items indicate the extent to which youth demonstrate the capacity to engage in socially acceptable actions that promote and maintain positive connections with others. An item like the following would be found on this subscale: "Respond to another person's feeling?"

Decision Making (8 items). These items focus on the youth's demonstration of the ability to utilize experience and values to guide the problem-solving process. This subscale also evaluates the youth's ability to accept responsibility for actions. "Follow the advice of a trusted adult?" is an example of the type of item on this subscale.

2.6. Analysis Strategies

Pair-sample t-tests were conducted to examine the first hypothesis. Applying the Bonferroni correction, (divide p =0.05 by the number of tests, 8), Bonferroni p-value for this analysis was set at $p < .006$.

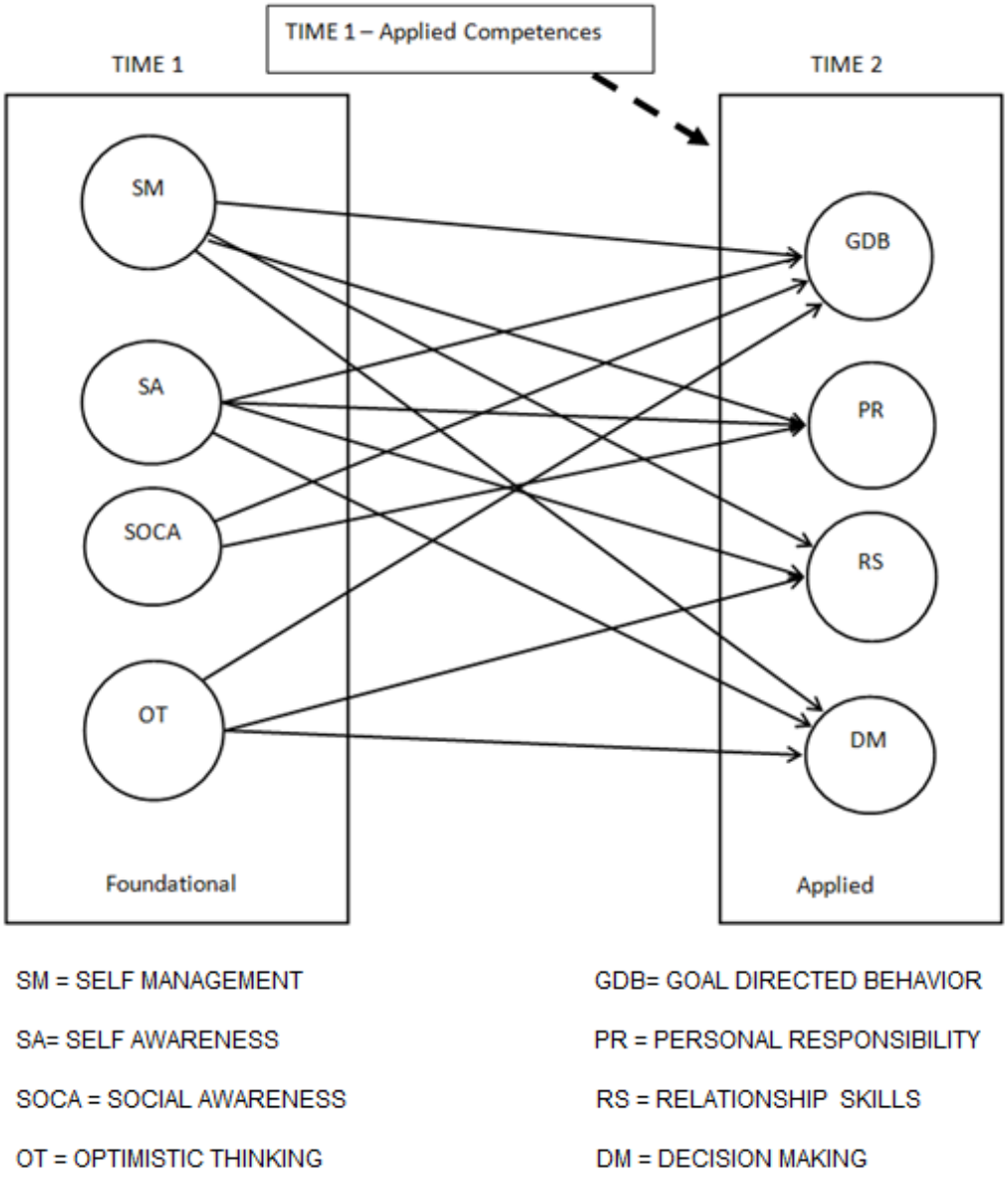

Figure 1. Conceptual Model (**Note:** covariation among foundation competencies at Time 1 and applied competencies at Time 2 were allowed)

Mplus 8.0 Path Analysis was used to estimate the relationship between the foundational and applied SEL skills using maximum likelihood estimation [19]. Figure 1 depicts the path model that was estimated. Two path models were estimated. The first model addressed the first research question. The first model assessed the relationship between Time 1 foundational SEL competencies (Self-Management, Self-Awareness, Social-Awareness and Optimistic Thinking) and Time 2 applied SEL (Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making) competencies. The second model examined the second research question. The second model included Time 1 applied competencies as controls. For example, Time 1 Goal-Directed Behavior was used as a control variable when Time 1 foundational competencies were regressed on Goal-Directed Behavior at Time 1.

2.7. Data Availability

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

3. Results

Preliminary analyses. To obtain an understanding of student's level of social-emotional competencies, Table 1 contains the average T-scores and the percentage of students who moved from "*Need for Instruction*" to at least the "*Typical*" rating from the assessment done in the fall to those done in the spring. Over the academic school year, students have a statistically significant increase in mean SEL competencies. Between approximately 38 to 44% moved from a "*Need for Instruction*" in a competence to at least the "*Typical*" level of each of the competencies being assessed.

Table 2 contains the correlation matrix and the descriptive statistics of the scale scores for the social-emotional competencies (i.e., mean and standard deviations). All the correlations between foundational and applied competencies are statistically significant at $p < .01$. Before the estimation of path models, analyses were carried out to assess normality, the presence of outliners, linearity, and missing data. The assumption associated with the use of Maximum Likelihood (ML) estimator was met.

Table 1. Social-Emotional Competencies (Mean, standard deviation and Fall-Spring paired t-test of T-scores)

Competency	Time	Mean	Std. Deviation	[+]Mean difference (t_{paired})	% Positive Classification Change
Self-Management					40.3%
	Fall	39.443	7.771	2.862(6.262)**	
	Spring	42.306	8.881		
Self-Awareness					48.5%
	Fall	40.701	7.815	3.531(7.584) **	
	Spring	44.232	8.446		
Social-Awareness					
	Fall	39.19	8.281	3.300(4.853) **	37.6%
	Spring	42.49	8.266		
Optimistic Thinking					43.9%
	Fall	40.114	8.201	3.494(7.166) **	
	Spring	43.609	9.348		
Goal Directed Behavior					
	Fall	40.059	8.503	2.590(6.002) **	
	Spring	42.649	9.284		
Personal Responsibility					40.3%
	Fall	40.262	7.798		
	Spring	42.940	8.575	2.708(6.504) **	
Relationship Skills					42.1%
	Fall	40.428	8.330	3.100(6.071) **	
	Spring	43.528	8.703		
Decision Making					
	Fall	38.915	7.782	2.756(6.058) **	39.6%
	Spring	41.672	8.679		
Personal Responsibility					40.3%
	Fall	40.262	7.798		
	Spring	42.940	8.575	2.708(6.504) **	
Relationship Skills					42.1%
	Fall	40.428	8.330	3.100(6.071) **	
	Spring	43.528	8.703		
Decision Making					
	Fall	38.915	7.782	2.756(6.058) **	39.6%
	Spring	41.672	8.679		

Note: N=271; % Positive Classification Change = the percentage of students whose ratings moved from "Needs" category to at least "Typical."
[+] Bonferroni correct p>.006, Paired sample t-test, df = 270. Applying the Bonferroni correction, divide p =0.05 by the number of tests,8, to get the Bonferroni critical value, of p < .006.

Table 2. Path Analysis Results (Foundational Social Emotional Competencies association with applied Social Emotional Competencies (N= 280))

Time 2- Goal Directed Behavior		
Independent Variables	Estimate (95%CI)	
	Model 1	Model 2
Self-Management	**0.271(0.077, .466)****	.159(-.023,.341)
Self-Awareness	0.162(.-.007,.331)	.003(-.157,.163)
Social Awareness	-0.124(-.007,.331)	-.140(-.332,.051)
Optimistic Thinking	**0.301(.136,.466)****	**.160(.040,.316)****
Time 1- Goal Directed Behavior		**.492(.394,.590)****
R^2 (SE)	**.32(.05)****	**.41(.04)****
Time 2 - Personal Responsibility		
Independent Variables	Estimate (95%CI)	
	Model 1	Model 2
Self-Management	**.258(.081,.506)****	.144(-.040,.328)
Self-Awareness	.272 (-.012,.556)	-.042(-.201,.117)
Social Awareness	-.156 (-.374,.105)	.01(-.192,.161)
Optimistic Thinking	**.472(.210,.733)****	**.240(.084,.396)****
Personal Responsibility- Time 1		**.35(.05)****
R^2 (SE)	**.37(.05)****	**.41(.04)****
Time 2- Relationship Skills		
Independent Variables	Estimate (95%CI)	
	Model 1	Model 2
Self-Management	.165(-.020,.351)	.159(-.023,.341)
Self-Awareness	-.147(-.369,.102	.003(-.157,.163)
Social Awareness	**.295(.067,.523)****	.157(-.055,.369)
Optimistic Thinking	**.388(.158,.617)****	**.245(.082,.408)****
Relationship Skills - Time 1		**.218(.084,.353)****
R^2 (SE)	**.335(.05)****	**.345(.05)****
Time 2- Decision Making Skills		
Independent Variables	Estimate (95%CI)	
	Model 1	Model 2
Self-Management	**.296(.145,.447)****	**.245(.052,.438)****
Self-Awareness	-.030(-.232,.172)	-.074(-.240,.092)
Social Awareness	.158(.-.027,.344)	-.073(-.136,.282)
Optimistic Thinking	.102(-.084,.289)	.097(-.065,.259)
Decision Making - Time 1		**.323(.197,.449)****
R^2 (SE)	**.34(.05)****	**.36(.05)****

Note. Estimate = β; SE = Standard Error; ** p <.01.

To what extent are foundational SEL competencies and Optimistic Thinking associated with applied SEL competencies? Table 2 contains the results of the path model. Model 1 examines the association between the Time 1 foundational competencies and the Time 2 applied competencies. Model 2 includes Time 1 applied competencies as controls. What follows is a summary of the path analyses for the conceptual model (Figure 1). Table 2 provides the results for the path analyses carried out.

Optimistic Thinking Predicts Goals Directed Behavior, Personal Responsibility, and Relationship Skills. Optimistic Thinking was a statistically significant predictor of Goal-Directed Behavior (Model 1: ß $_{\text{Optimistic Thinking}}$ =.301, p<.01), Personal Responsibility (Model 1: ß $_{\text{Optimistic Thinking}}$ =.472, p<.01), and Relationship Skills (Model 1: ß $_{\text{Optimistic Thinking}}$ =.28, p<.01). These findings remained when applied competencies assessed at Time 1 were used as controls, Goal-Directed Behavior (Model 2: ß $_{\text{Optimistic Thinking}}$ =.160, p<.01), Personal Responsibility (Model 2: ß $_{\text{Optimistic Thinking}}$ =.240, p<.01), and Relationship Skills (Model 2: ß $_{\text{Optimistic Thinking}}$ =.245, p<.01).

Self-Management Predicts Decision Making. Self-Management was a statistically significant predictor of Decision Making (Model 1: ß $_{\textit{Self-Management}}$ =.296, p<.01; Model 2: ß $_{\textit{Self-Management}}$ =.245, p<.01).

Self-Management Predicts Goal-Directed Behavior and Personal Responsibility. When the time 1 control was not included in the path model, Self-Management was predictive of Goal-Directed Behavior (Model 1: ß $_{\textit{Self-Management}}$ =.271, p<.01) and Personal Responsibility (Model 1: ß $_{\textit{Self-Management}}$ =.258, p<.01).

Social Awareness Predicts Relationship Skills. When the Time 1 control was not included in the path model, Social Awareness was predictive of Relationship Skills (Model 1: ß$_{\textit{Social Awareness}}$ =.295, p<.01).

4. Discussion

This study explored the contribution of those social-emotional competencies foundational to a person's effective self-regulation (i.e., Self-Management, Self-Awareness, and Social Awareness) along with

positive expectations (i.e., Optimistic Thinking) to future positive social interactions (i.e., Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making) among middle and high school students with an Emotional Disturbance classification. The results highlight the potential value of targeting these youth's Social Awareness, Self-Management, and Optimistic Thinking due to their positive association with future levels of Goal-Directed Behavior, Personal Responsibility, Relationship Skills, and Decision Making. This study also provides evidence that students classified as Emotionally Disturbed can benefit from behavioral supports that focus on the development of social-emotional competencies.

Positive SEL change. This study provided evidence that students classified as Emotionally Disturbed can benefit from SEL instruction that is embedded within a multitiered system of support (MTSS). Greater than one-third of the youth ratings moved from demonstrating a level of social-emotional competency below their normative group peers to being in line with those peers. These findings provide support for the potential of a social-emotional learning-based intervention to facilitate positive social and emotional development. This is in contrast to commonly used social skills-based approaches that have produced inconsistent results, and often lack positive outcomes, social validity, and generalizability beyond the initial instructional environment [20, 21].

Relationship of various SEL competencies over time. This study adds to the limited number of studies examining the relationship between SEL competencies over time. As schools seek to determine how to structure their efforts to promote student social-emotional development, knowledge of the ways in which specific competencies may contribute to the development of other competencies is valuable.

The importance of optimism. For students classified as Emotionally Disturbed, we have evidence that optimism predicts the development of SEL competencies that are reflective of challenges these youth experience (i.e., Goal-Directed Behavior, Decision Making, Personal Responsibility, and Relationship Skills). In this case, the assessment of optimism reflects an attitude of confidence and hopefulness that the student has about themselves. This study contributes to the literature on the importance of optimism as an influence on student educational engagement.

Goal-Directed Behavior, Decision-Making, Personal Responsibility, and Relationship Skills are social-emotional competencies that are frequently the target of annual goals on youth Individual Educational Plans (IEP). IEP goals reflect the importance of these competencies to the youth's achievement and success both in and outside of the school setting. As we seek to promote the success of students with special needs, these findings indicate that providing them with experiences and instruction that work to improve their confidence and sense of efficacy about their future can support their development of SEL competencies in the areas of Goal-Directed Behavior, Decision-Making, Personal Responsibility, and Relationship Skills. The research outcomes suggest that teaching school counselors, school psychologists, and school social workers how to scaffold experiences in ways that create early successes will be an important motivational contributor to student goal attainment.

Margolis and McCabe [22] elaborate on classroom practices that support Bandura's [23] original four sources of self-efficacy: Enactive mastery, through classroom practices that focus on the scaffolding of independent assignments so that students experience enough success to build positive self-models about their abilities. Vicarious experiences, through classroom practices that focus on the use of models that students relate to in order to create a visual representation of the task or skill that students believe in. Verbal persuasion, through classroom practices that focus on the emphasis of past successes and provision of feedback around the strategies that contributed to these successes. And lastly, Physiological Responses, through classroom practices that focus on developing student self-awareness of their emotions and teaching them relaxation techniques or cognitive problem-solving strategies to challenge the thoughts provoking the exaggerated emotional response. The authors of this study concur with the recommendations listed above and endorse their use in enhancing students' sense of optimism and self-efficacy.

Importance of self-management. Self-Management interventions are widely utilized to address the needs among students in special education [24]. Like Optimistic Thinking, the Self-Management construct contributed to these classified youths' development of applied SEL competencies, (i.e., Goal-Directed Behavior, Decision-Making, Personal Responsibility, and Relationship Skills) critical for success within and outside of the school setting. Given special education's focus on scaffolds towards independent functioning, many of these Self-Management interventions include a self-monitoring complement as well as adult feedback and reinforcement. The majority of these interventions were focused on improving on-task behavior and demonstrated moderate to strong effect sizes. Teaching self-monitoring strategies has a robust history in the educational context. Applications include the use of such strategies to facilitate metacognitive reading comprehension strategies [25], mathematical thinking [26], and increasing attentional awareness [27]. Meta-cognitive approaches to self-management, like self-monitoring, are particularly important in facilitating problem-solving in unique situations in which decision-making cannot rely on preformed schemas. Additionally, executive functioning deficits such as perseveration, poor planning (i.e., goal neglect), monitoring deficits, and memory retrieval impairments are also associated with challenges of metacognitive regulation and may be influenced by the development of self-monitoring approaches specifically, and Self-Management skills more broadly. In summary, like Optimistic Thinking, Self-Management contributed to these classified youths' development of applied SEL competencies (i.e., goal directed behavior) critical for success within and outside of the school setting.

Strengths and Limitations. As an observational study, this can only provide preliminary evidence of the association between the SEL competencies for future researchers to use as they design studies better equipped to examine causality. This study's strengths are found in the use of psychometrically sound measures of SEL competencies and use of longitudinal data. The lack of

information on the basis for student placement in the Emotionally Disturbed classification do not allow for the study of specific subgroups, for example, those classified due to Attention-Deficit Hyperactive Disorder (ADHD) or Conduct Disorder (CD). Additionally, the study sample comes from students placed in special education alternative schools and may not be representative of special education students receiving services with general education classrooms or schools.

Future Research. Given the heterogeneity of the population of students with special needs, attention to how their diversity contributes to or alters the relationship among various SEL competencies is warranted. Questions about the accumulative and bidirectional impact of SEL competencies could inform the development of SEL programs over the course of children's schooling.

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