

The Pennsylvania State University

The Graduate School

**BELIEFS ABOUT SOCIAL-EMOTIONAL SKILLS: DEVELOPMENT OF THE  
ASSUMPTIONS SUPPORTING SOCIAL-EMOTIONAL TEACHING (ASSET) SCALE**

A Dissertation in

School Psychology

by

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Submitted in Partial Fulfillment  
of the Requirements  
for the Degree of

Doctor of Philosophy

May 2021

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## ABSTRACT

Although implementation science has highlighted the importance of implementer beliefs in influencing program outcomes, the application of these frameworks to teacher involvement in school-based social-emotional learning (SEL) is relatively new. The purpose of this study was to develop and examine the initial psychometric properties of the Assumptions Supporting Social-Emotional Teaching (ASSET) scale, a measure of teachers' underlying beliefs about student social-emotional skills, intended to be used as a practical tool for universal program planning and evaluation. Influenced by implementation science frameworks and school-based intervention literature, an initial item pool was developed. After research and practitioner expert review, items were completed by a sample of 385 K-12 teachers in the United States. Data were used to identify the final item pool, test hypotheses about the structure of the scale, and examine aspects of the reliability and validity of its scores. Results of exploratory factor analyses indicated a three-factor structure (Malleable, Compatible, and Influential), and scores demonstrated moderate-to-large positive concurrent correlations with teachers' comfort with and commitment to delivering SEL. In addition, pre-implementation ASSET scores correlated consistently and moderately with teachers' ratings of acceptability for a classwide SEL program. There were no statistically or practically significant relationships, however, with implementation dosage, adherence, and quality. Overall, while data supported a three-factor model with evidence of adequate reliability for its intended use, scores demonstrated expected relationships with only some aspects of later SEL implementation. Results suggest that measuring underlying assumptions about student social-emotional skills prior to implementation may be helpful to predict teachers' later acceptance of SEL programming, but more research is needed to identify factors that reliably predict implementation outcomes such as fidelity and quality.

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## ACKNOWLEDGEMENTS

I am very grateful for the financial support that made this study and my graduate training possible. This dissertation was supported in part by the Institute of Education Sciences, U.S. Department of Education, through Grants R305A170047 and R305B150033 to The Pennsylvania State University.<sup>1</sup> In addition, a dissertation grant from the Association of School Psychologists of Pennsylvania provided compensation to research participants. Thank you also to the school administrators and teachers who partnered in data collection as well as the individuals who contributed as part of the expert review process.

I would like to thank my advisor and dissertation chair, Dr. Jim DiPerna, for countless hours of guidance, support, and collaboration. Your eye for detail, careful decision-making, and ability to see possibilities within challenges are qualities I hope to emulate in my career. I am appreciative of the many opportunities you have facilitated for me; it is because of our work together that I discovered a passion for educational research. Thank you also to Dr. Jennifer Frank for the time spent helping me develop and refine my work; your forward-thinking ideas, knowledge of the field, and research productivity are bars to which I will always aim. Dr. Cristin Hall, thank you for teaching students to see the people behind the numbers; the career you have built blending clinical service and applied research is inspirational to me and so many others. Thank you also for providing me with much needed emotional support at several very pivotal moments in my training. Dr. David Ramey, thank you for your enthusiasm in blending our

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<sup>1</sup>Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author and do not necessarily reflect the views of the Institute of Education Sciences, U.S. Department of Education.



research interests. Your scholarship has been impacted me; you've helped me see research as an avenue toward racial and social justice.

There are so many others who have helped me in graduate school. In particular, I would like to thank Dr. Leah Hunter for being an enduring source of support and joy to me and my family. Your friendship is a treasure, and I feel so lucky to have met you. Thank you also to Dr. Karen Bierman and Dr. Lia Sandilos for your insight on this project and your advice on career and family. Dr. Puiwa Lei, thank you for your methodological assistance and collaboration. I would also like to thank Dr. Erica Culler, Dr. Shirley Woika, and Michelle McFall for your support of my clinical training. To Molly Kaufman, Dr. Megan Runion, Dr. Hongxuan Zhong, I feel grateful that we've had the opportunity to experience this journey together.

To my husband Bob, you have quite literally made it possible for me to balance school, work, and family. The time you have spent caring for our family while I work is immeasurable: so many late nights, diapers, meals, dishes, laundry, and pep talks. You have been the best medicine for graduate school anxiety, you have given me everything I've ever wanted, and I will never be able to thank you enough. To my brother Dave, my hero: I hope you know that it continues to be my aspiration to be just like you. I admire your research scholarship, your teaching, your leadership, your tenacity, your humor, and most of all, how you treat people. To my dad, Ron, thank you for instilling in me the skill of careful work and the ethos of putting others first. Thank you also for the childcare, caretaking, words of encouragement, and reminders to look carefully to the sky or on the ground in the search for beauty. And, to my children, Noah and Emmett, thank you for accompanying me along this journey for your entire lives thus far, for grounding me, and for reminding me daily of what is truly important in life. I hope I make you proud. Lastly, I would be remiss not to acknowledge the future backyard

chickens, which I promised to my son Noah if I ever finished my dissertation. You, along with the nagging of a 7-year-old, were the motivation I needed to get it done.

It is with a full heart that I would like to dedicate this dissertation to my mother, Sarah Margaret Crandall. Thank you for teaching me so many important lessons that have guided me through work and life. From your own career, I learned about accurate data entry, thoughtful data processing, a strong work ethic, and an imperative to stand up for what is right. From your own struggle, I learned that participating in research can be the ultimate selfless act, and I've watched as you've exchanged your own comfort for the possibility of medical advances that can heal unknown others in the future. From the past year, I've listened as you've read all seven Harry Potter books over the phone to my son on his breaks from remote schooling, even while you endured terrible side effects from an experimental drug treatment, during a frightening global pandemic and a year of social and civil unrest – all so that I could finish this dissertation. Thank you for all you've done to help, for being my very best friend, and for teaching me that nothing, nothing is more important than family: the little things truly are the big things, after all.

Finally, it is with a great deal of humility that I submit this dissertation as part of my doctoral degree requirements. I recognize the privilege I have had in being able to access and benefit from advanced educational opportunities, which have been historically out of reach for so many talented and deserving people. My desire to receive doctoral training in school psychology was motivated by almost a decade of experiences working with incredible Black students and families in Brooklyn, NY, who faced countless unfair hurdles and barriers due to systemic racism. The brilliance and pain that I saw in my students daily will forever sit with and inside me; I promise to keep trying to make things better.

## Chapter 1

### Introduction and Literature Review

Over the past two decades, there has been burgeoning interest in programming to promote the development of students' social-emotional skills in schools across the United States. Generally characterized as social-emotional learning (SEL) programs, these curricula aim to promote students' social-emotional competencies and behaviors (i.e., self-awareness, self-management, social-awareness, relationship skills, and responsible decision-making; Collaborative for Academic, Social, and Emotional Learning [CASEL], 2020a). At the universal level, SEL is delivered to all students in the classroom, usually by the teacher, and is considered a school-based public health approach for promoting positive behavior, preventing problem behaviors, and enhancing the benefit that students receive from academic instruction.

Meta-analyses have shown that universal SEL instruction in schools can yield positive outcomes for students in both the short- and long-term (e.g., Durlak et al., 2011; Taylor et al., 2017). However, collective evidence across large randomized controlled trials (RCTs) of individual SEL programs has indicated that effect sizes are often varied and modest in magnitude (Jones & Doolittle, 2017). Researchers (e.g., Durlak, 2015; Evans et al., 2015) have noted that implementation of SEL programming is highly variable across classrooms, schools, communities, and contexts, suggesting that inconsistencies in implementation may impact resulting outcomes. Given this, educational scientists (e.g., Greenberg, 2010; Okagaki et al., 2009) have argued for a paradigm shift in the field, suggesting that research move beyond a singular focus on evaluating child-level outcomes to include the factors that impact implementation of evidence-based programming.

Implementation scientists have identified a range of multi-level factors that may facilitate or inhibit effective implementation of interventions. In particular, characteristics of the people who implement interventions, including their perceptions, attitudes, and beliefs, have been hypothesized to impact how effectively programs are implemented (e.g., Durlak & DuPre, 2008; Forman et al., 2013; Han & Weiss, 2005). In particular, individual-level factors, even those measured prior to implementation efforts begin, have been hypothesized to affect teachers' readiness to adopt, implement, accept, and/or maintain evidence-based programming in practice (Brackett et al., 2012; Elias et al. 2003; Jennings & Greenberg, 2009; Wanless & Domitrovich, 2015). Congruent with this, within the field of SEL, many researchers have noted the need for studies that investigate the role of teacher factors in the implementation and outcomes associated with school-based SEL programming (e.g., Domitrovich et al., 2019; Elias et al., 2003; Jennings & Greenberg, 2009; Jones et al., 2017; Schonert-Reichl, 2017).

The current SEL literature base, however, has explored a relatively narrow collection of teacher-related variables to date. When implementation studies have included variables about teachers, they have focused on demographic characteristics, self-efficacy, stress, and school support perceptions. Despite theory linking such factors to implementation, empirical studies examining these relationships have mixed findings (Domitrovich et al., 2009, 2015, 2019; Downer et al., 2009; Malloy et al., 2015; Ransford et al., 2009; Roberts et al., 2015; Wanless et al., 2015). A recent study by Domitrovich and colleagues (2019) suggested the need for identification and measurement of additional teacher-related implementation factors: while most of the variance in implementation outcomes was between teachers in their study, the individual-level factors they measured left almost half of the variance unexplained.

In school-based research beyond the field of SEL, such as teacher coaching within early childhood settings, another category of teacher-related factors has been identified that may affect teacher practices: teachers' *underlying assumptions* about teaching and learning. For example, research on preschool settings has demonstrated links between teachers' foundational beliefs and aspects of their instruction such as quality, emotional support, and interactions with students (e.g., Bryant et al., 1991; Carter et al., 2014; Driscoll & Pianta, 2010; La Paro et al., 2009; Pianta et al., 2005). Beyond the early childhood literature, recent studies of brief interventions targeting teachers' underlying beliefs have demonstrated that they can change subsequent educational practices and approaches in the classroom (e.g., Cook et al., 2015; Okonofua et al., 2016; Yeager, 2017). There has been limited exploration of such constructs in the SEL literature, however, perhaps due in part to limited measurement work in this area. Current measures used for such purposes overlap conceptually with other teacher-related factors, lack psychometric evidence supporting their use, and/or lack focus on school-based SEL.

Therefore, the primary aim of this study was to develop a new measure, the Assumptions Supporting Social-Emotional Teaching (ASSET) scale, as a tool intended for school-based SEL program planning, implementation, and evaluation. Using a review of the literature, an initial item pool was developed and then reviewed by research and practitioner experts. The item pool was then completed by a sample of 385 current K-12 teachers in the United States. Resulting data were used to examine initial psychometric properties of the scale, including the relationship between scores and teachers' subsequent implementation of a universal SEL program.

## **School-Based Social-Emotional Learning Interventions**

Initiatives to integrate SEL into schools have been bolstered by advances in research, practice, and policy. Many studies have demonstrated significant relationships between indicators of students' social and behavioral functioning and future outcomes (e.g., Caemmerer & Keith, 2015; Duckworth & Seligman, 2005; Duncan et al., 2007; Jones et al. 2015; Moffitt et al., 2011; Pakarinen et al., 2017; Torres et al., 2015). As a result, a surge in the development and evaluation of school-based programs aimed at developing student social-emotional skills has occurred (CASEL 2013, 2015). At the same time, policies have formalized the integration of evidence-based SEL into school-based instruction (e.g., Dusenberry et al., 2014; Grant et al., 2017).

### ***Definitions and Conceptual Underpinning of SEL***

Despite convergence across these efforts, there has been considerable semantic and conceptual variation in the characterization of SEL (Humphrey et al., 2011). Studies of social-emotional skills span topics as diverse as effortful control, emotion/cognitive regulation, executive functioning, prosocial behavior, and aggressive behavior (Jones & Bouffard, 2012). Further, the term *noncognitive skills* has been used to describe social-emotional qualities thought to facilitate goal-directed effort, healthy social relationships, and sound decision-making (Duckworth & Yeager, 2015). Programming is similarly wide in scope as SEL is often used to describe a range of educational interventions targeting outcomes as diverse as positive youth development, mental health promotion, character education, violence/bullying prevention, conflict resolution, civic responsibility, and social skills training (Merrell & Gueldner, 2010; Social and Character Development Research Consortium [SACD], 2010).

Unifying frameworks have clarified definitions and theories of change associated with SEL. In 1994, CASEL was formed, and the organization has since been at the forefront of national efforts to promote and advocate for the science and practice of SEL. CASEL defines SEL as a process of acquiring and applying knowledge, skills, and attitudes to develop healthy identities, manage emotions and achieve goals, feel and show empathy for others, establish and maintain supportive relationships, and make responsible and caring decisions (CASEL, 2020a). The CASEL framework identifies five SEL competencies and associated skills across key settings of the classrooms, schools, families, and communities. *Self-Awareness* includes recognizing one's strengths and limitations with confidence and purpose. *Self-Management* involves delaying gratification, managing stress, and feeling motivation and agency to accomplish goals. *Social-Awareness* includes feeling compassion for others, understanding norms for behavior, and recognizing supports, while *Relationship Skills* include communicating clearly, listening actively, cooperating, navigating different social contexts, providing leadership, and seeking and offering help. Finally, *Responsible Decision-Making* consists of considering ethical standards and safety concerns and evaluating benefits and consequences of actions (CASEL, 2020a). CASEL's theory of change hypothesizes that SEL approaches can lead to short-term (improved attitudes and perceived climate), intermediate (positive social behavior, fewer conduct problems, less emotional distress, and improved academic performance) and long-term (graduation, college/career readiness, health/well-being, civic engagement) student outcomes (CASEL, 2020b).

### ***Impact of SEL on Student Outcomes***

Meta-analyses of evaluation studies generally support the hypothesized links between SEL and child outcomes. Analyzing 213 school-based SEL outcome studies, Durlak et al. (2011)

reported significant improvements in the areas of student social and emotional skills ( $g = .57$ ), attitudes ( $g = .23$ ), positive social behavior ( $g = .24$ ), conduct problems ( $g = .22$ ), emotional distress ( $g = .24$ ) and academic achievement ( $g = .27$ ) for students exposed to SEL relative to students in control conditions. Similarly, in a meta-analysis of 82 studies that collected follow-up data, statistically significant effects were found for SEL skills, attitudes, positive social behavior, academic performance, conduct problems, emotional distress, and drug use ( $.13 \leq g \leq .33$ ; Taylor et al., 2017).

Both of these meta-analyses synthesized results across studies that utilized a variety of research designs (i.e., experimental, quasi-experimental). Individual RCTs of SEL programs, however, have demonstrated more variable and modest impacts. As one example, a large-scale multisite RCT of seven SEL programs provided no evidence that the programs improved student outcomes (SACD, 2010). Further, in their review of 13 RCTs evaluating 11 popular SEL programs published between 2004 and 2015, Jones et al. (2017) concluded that program impacts on student-level outcomes (cognitive, emotional, behavioral, and academic) were mixed, with both statistically significant, and mostly small to moderate in magnitude, effects and nonsignificant findings reported.

Researchers have pointed to a number of explanations for the mixed evidence on SEL programming, including mismatches between program targets and outcomes assessed, methodological differences, and variation in implementation (Jones et al., 2017; SACD, 2010; Wigelsworth et al., 2016). With regard to the latter, a substantive literature base supports the assertion that aspects of implementation moderate outcomes obtained in prevention and intervention programs (e.g., Domitrovich et al., 2010; Durlak et al., 2011; Durlak & DuPre,



2008). Variations in implementation in school-based practice is a major concern facing the field of SEL (Durlak, 2015; Evans et al., 2015; Greenberg, 2010; Low et. al., 2016).

### **The Study of Implementation to Understand Intervention Effectiveness**

Given differences in the effectiveness of programs in practice settings, researchers have sought to better understand the role of implementation in resulting outcomes. By studying the translation of evidence-based practices in “real world” settings, the field of implementation science focuses on the processes and components of implementation (Eccles & Mittman, 2006). Considering implementation and its influences is key to explaining the validity and variability of traditional intervention research findings (Durlak & DuPre, 2008; Glasgow et al., 2003). With roots in healthcare but extending into other areas of professional practice, multiple implementation science theories, models, and frameworks guide research in the field (Nilsen, 2015).

### ***Outcomes Across Phases of Implementation***

Proctor and colleagues (2011) argued that implementation outcomes (i.e., the effects of actions to implement programs) should be evaluated alongside more traditional treatment outcomes in order to understand how interventions translate into practice. They further posited that there are eight implementation outcomes – acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability – that serve as indicators of intervention success or failure when programs are implemented by typical users under routine conditions (e.g., teachers in schools outside of the research context).

Of these implementation outcomes, implementation fidelity, or the integrity with which an intervention is actually delivered in practice, has been studied the most, as it captures a key concern for researchers moving their interventions from efficacy (highly controlled) studies to

effectiveness (real world) trials (Proctor et al., 2011). As described by Dane and Schneider (1998), implementation fidelity has five dimensions that capture the integrity with which an intervention is actually delivered: (a) adherence, or the extent to which intervention components are delivered as intended or described in the manual, (b) exposure/dosage, or how much a program was delivered, (c) quality, or how well the program was delivered, (d) participant responsiveness, or how much the program holds the attention/interest of participants, and (e) program differentiation, or how unique the intervention is compared to other programs.

Another implementation outcome that has received attention in the literature is acceptability, or stakeholder perceptions about the degree to which an intervention is agreeable, palatable, and satisfactory (Proctor et al., 2011) or appropriate, fair, and reasonable (Kazdin, 1981). Acceptability is often assessed as a program-specific and implementation-dependent outcome, measured after an implementer has substantial experience with implementing a specific program (Proctor et al., 2011), and it has been shown to be associated with implementation outcomes, particularly dosage and program maintenance (Domitrovich et al., 2015, 2019; Hunter & Bierman, 2020). However, acceptance of a general approach (e.g., SEL) can also be assessed at the pre-implementation/adoption stage as potential implementers report on their perceptions of appropriateness, fit, relevance, and compatibility prior to any experiences with training in or implementation of a specific program (Han & Weiss, 2005). In this way, pre-implementation intervention attitudes may be reflective of teachers' general philosophies or practices relative to teaching and learning rather than their actual experiences with a program (Domitrovich et al., 2015). Given differences in how and when acceptability is measured, it has been discussed in a variety of ways in the literature: an implementation outcome in and of itself (Proctor et al., 2011), a variable measured after implementation that relates strongly to implementation

outcomes (Domitrovich et al., 2019), a variable measured after training that can predict implementation outcomes (Domitrovich et al., 2015), or a variable that can influence implementation prior to any experience with a program (Han and Weiss, 2005).

In addition to acceptability, other implementation outcomes may change in meaning and/or saliency across the phases of program implementation. Implementation scientists (e.g., Durlak & DuPre, 2008; Han & Weiss, 2005; Rogers, 2003; Wanless & Domitrovich, 2015) have described three phases relevant to the transfer of studied interventions into practice settings: the *pre-implementation* phase (the introduction to, decision to use, and preparation for a program; also termed *adoption*), the *implementation delivery* phase (trial period of implementation often with supports like coaching and professional development provided), and the *sustainability* phase (continued implementation sometimes with lessened support; also termed *maintenance*). In their Quality Implementation Framework, Meyers et al. (2012) emphasized the importance of the pre-implementation phases as 10 of their 14 quality implementation steps occur prior to actual program delivery.

Similarly, other researchers have pointed to the pre-implementation phase as a key period from which effective implementation of evidence-based practices stems (Han & Weiss, 2005; Humphrey, 2010; Proctor et al., 2011). For example, a 2015 issue of *Prevention Science* was devoted to the concept of implementation *readiness*, which was defined in the introduction as the capacity to implement an evidence-based intervention (Wanless & Domitrovich, 2015). The authors specified that characteristics of readiness are evident during the pre-implementation/adoption and early implementation phases, and they positively predict implementation outcomes such as fidelity and quality. Readiness factors reflect capacities at the

individual and organizational levels as well as general and program-specific influences on implementation.

### ***Multi-Level Factors Hypothesized to Influence Implementation***

The concept of readiness stems from multiple theories and frameworks that aim to identify factors that influence – either by facilitating and inhibiting – implementation outcomes. Termed determinant frameworks by Nilsen (2015), many conceptualize influences from a social-ecological perspective (Bronfenbrenner & Morris, 1998), in which factors at multiple levels can affect implementation outcomes in interactive ways. For example, diffusion theory (Rogers, 2003) categorized influences on the adoption, implementation, and sustainability of new programs at the organizational, intervention, and individual levels. Similarly, in studying prevention programs, Durlak & DuPre (2008) proposed a multi-level framework for effective implementation including community, innovation, and individual provider characteristics. Relative to SEL, Domitrovich et al. (2008) described macro-level (policies, finances, human capital, partnerships), school-level (school characteristics, leadership, resources, personnel, school and classroom climate), and individual-level (professional characteristics, psychological characteristics, perceptions, and attitudes) factors that impact implementation efforts in schools.

While frameworks differ with respect to how the upper-level spheres of influence are defined and categorized (e.g., macro, policy, community, institution, organization, school, administrator, classroom, program), the lowest level of these multi-level influence hierarchies are typically the same: the individual level. At this level, both implementer/provider (teacher) and consumer (student) factors can be included (Proctor et al., 2011); however, in school-based universal intervention research, teachers are generally the focus given their role as the primary implementer.

As presented in Table 1, hypothesized implementation factors at the individual/implementer level have been identified across several fields (e.g., management, sociology, school mental health, prevention science, school psychology). Most frameworks describe broad categories of implementer characteristics, behaviors, attitudes, and perceptions as general influences on outcomes throughout the phases of implementation (e.g., Berkel et al., 2011; Domitrovich et al., 2008; Rogers, 2003; Wandersman et al., 2008), while other frameworks define the factors with more specificity. For example, after reviewing 81 studies on the implementation process, Durlak and DuPre (2008) focused on three individual-level beliefs in the pre-implementation phase that were most salient with respect to implementation quality: (a) the need for the innovation, (b) the potential benefits of the innovation, and (c) self-efficacy. They noted that these same categories were identified in two other systemic reviews of factors affecting implementation (i.e., Greenhalgh et al., 2005; Stith et al., 2006), suggesting convergent perspectives.

Han and Weiss (2005) similarly identified several pre-implementation beliefs as important influences on subsequent judgments and practices: (a) attributions about the compatibility of the program with their own beliefs about children's behaviors and (b) anticipated effectiveness of the program. During and after implementation, they theorized that teachers also experience several internal changes. Specifically, teachers who have successfully implemented an intervention begin to perceive themselves as more self-efficacious, and they attribute improvements in student behavior to the program. The combination of these changes leads to increased motivation, continued skill development, and sustained quality implementation practices (Han & Weiss, 2005).

**Table 1***Individual-Level Factors Hypothesized to Influence Program Implementation in Selected Implementation Science Frameworks*

Article	Name of model / framework	Discipline	Implementer factors
Klein & Sorra (1996)	Determinants of the effectiveness of organizational implementation	Management	Perceived fit with values
Elias et al. (2003)	Factors associated with successful, enduring implementation of SEL	Social-emotional learning	High morale, good communication, and a sense of ownership
Rogers (2003)	Theory of diffusion	Sociology	Attitudes, beliefs, and relationships
Han & Weiss (2005)	Process model of enhanced sustainability	School mental health	Pre-implementation - perceived benefits, attributions, and general acceptability
Domitrovich et al. (2008)	Multilevel model of contextual factors that affect implementation quality	Prevention science	Post-implementation - experience of success, self-efficacy, and attributions Professional characteristics, psychological characteristics, perceptions, & attitudes
Durlak & DuPre (2008)	Framework for effective implementation	Prevention science	Perceived need/benefits, self-efficacy, and skill proficiency
Wandersman et al. (2008)	Interactive systems framework for dissemination and implementation	Prevention science	General capacities and innovation-specific capacities
Damschroder et al. (2009)	Consolidated framework for implementation research	Health services	Knowledge and beliefs, self-efficacy, stage of change, identification with organization, other personal attributes
Berkel et al. (2011)	Integrated model of program implementation	Prevention science	Skills and behaviors
Forman et al. (2013)	Critical issues for implementation science in school psychology	School psychology	Attitudes, beliefs, and skills
Owens et al. (2014)	School mental health implementation science research agenda	School mental health	Perceptions and motivation

## **Teacher-Related Implementation Factors in SEL Research**

While SEL researchers have also acknowledged the need to better understand the relationships between implementer factors and implementation outcomes (Elias et al., 2003; Humphrey, 2013; Jennings & Greenberg, 2009; Jones et al., 2017), this is a relatively new line of research for the field. Few SEL impact studies have focused on variables outside of student skill outcomes, although an emphasis on assessing and understanding variables relating to teachers and implementation of universal SEL approaches appears to be gaining momentum (Jones et al., 2017; Schonert-Reichl, 2017; Domitrovich et al., 2019; Wanless & Domitrovich, 2015).

To help understand what teacher-related implementation factors have been explored within the universal SEL literature base to date, a search of peer-reviewed, published, experimental studies in the United States published within the past 20 years was conducted. Studies evaluating manualized programs focused on social-emotional skills delivered in K-12 settings were included in the review. The focus was on teacher-level quantitative variables hypothesized to be related to implementation; that is, variables about teachers that were assessed as possible influences on or effects from implementation of SEL approaches. Therefore, measures of implementation outcomes themselves (e.g., implementation fidelity, acceptability after implementing a program) were not included. However, variables that captured broad aspects of attitudes toward innovation or intervention approaches (e.g., not tied to experience with specific program attributes and administered prior to implementation) were included, given that these have been hypothesized as important pre-implementation factors (Domitrovich et al., 2008, 2015; Han & Weiss, 2005). As most studies considered teachers' affective reports about classroom- or school-level attributes as individual-level factors, these were included in the review when applicable. Observational measures of classroom quality, teacher-student

interactions, or student misbehavior were not included given that these captured multi-level factors involving students or classrooms (beyond a teacher's own individual characteristics or perceptions). Studies were also not included if the only teacher-related variables they included were teacher demographic or background characteristics.

The search yielded 11 studies that measured and reported teacher-related variables when evaluating the implementation or impact of universal SEL programming (Table 2). All studies reported basic teacher demographic characteristics (e.g., age, gender, education level). Beyond those variables, the teacher-related implementation factors most studied in SEL impact research to date focused on *teacher perceptions of themselves and their context*, specifically the categories of (a) self-efficacy, (b) stress/burnout and (c) school climate. These categories are consistent with those identified by other researchers in earlier reviews of teacher-related implementation factors identified within the school-based intervention literature (e.g., Brackett et al., 2012; Domitrovich et al., 2008; Han & Weiss, 2005; Schultz et al., 2010; Wanless & Domitrovich, 2015).



**Table 2**

*The Role of Teacher-Related Variables in Selected Studies of Universal SEL Implementation (2000-2020)*

SEL program	Study	Demographics	School support	Self-efficacy	Stress	Innovation attitudes	Beliefs	Skills	Practices/ behaviors
4Rs	Brown et al. (2010)	D	-	-	M	-	-	M	-
Good Behavior Game & PATHS	Domitrovich et al. (2015)	<b>P</b>	P	P	<b>P</b>	<b>P</b>	-	-	-
	Domitrovich et al. (2016)	M	M	<b>O</b>	<b>O</b>	-	-	<b>O</b>	-
PATHS	Domitrovich et al. (2019)	<b>P</b>	P	P	-	<b>P</b>	-	-	-
	Ransford et al. (2009)	<b>P</b>	-	<b>P</b>	<b>P</b>	-	-	-	-
Positive Action	Beets et al. (2009)	D	<b>M</b>	-	-	-	<b>M</b>	-	-
	Malloy et al. (2015)	D	<b>P</b>	-	-	<b>P</b>	-	-	-
Responsive Classroom	Rimm-Kaufman et al. (2004)	D	-	<b>O</b>	<b>O</b>	-	<b>O</b>	-	-
	Wanless et al. (2013)	D	P	-	-	-	-	-	-
	Wanless et al. (2015)	P	P	P	-	-	-	-	<b>P/M</b>
RULER Approach	Reyes et al. (2012)	D	-	<b>P</b>	-	-	-	-	-

*Note.* SEL = Social-emotional learning; PATHS = Promoting Alternative Thinking Strategies; D = descriptive variable; M = mediator or moderator of intervention outcome; O = teacher-level outcome; P = predictor of implementation outcome. Bold indicates at least one significant association with an implementation outcome was reported.

The review indicated that there has been variation in how teacher-related implementation factors have been characterized and analyzed within SEL studies to date. Domitrovich and colleagues (2015) described teacher burnout and self-efficacy as *personal resources* to be studied at the individual level. Roberts et al. (2015) described anxiety, conscientiousness, and readiness to change as *psychological factors*, and self-efficacy, adult-centered teaching beliefs, and intentional teaching beliefs as *beliefs*. Roberts et al. (2015) termed school climate, work stress, and classroom poverty as *contextual factors* (measured at the teacher-level). Domitrovich et al. (2015) described aspects of school climate as *organizational health* and used scores to represent teachers' perception at the individual level but also aggregated scores across all staff members as a school-level factor in analyses. A similar approach was used by Domitrovich et al. (2019) as ratings of teacher implementers were used as individual-level measures of *administrative support* and *perceived SEL culture* while aggregated ratings from the entire school staff were used in the study as organization-level factors. Domitrovich et al. (2019) also noted differences between *general- and innovation-specific* implementation factors, and they made a conceptual distinction between a school's *SEL culture* and *SEL climate*.

In addition to differences in how variables were described and analyzed, results across the studies suggested an unclear relationship between teacher-related constructs and implementation outcomes. With respect to demographic characteristics, teacher age and experience have been shown to relate to aspects of implementation in some studies (Domitrovich et al., 2015, 2019; Ransford et al., 2009; Roberts et al., 2015) but not others (Wanless et al., 2015). Similarly, higher levels of teacher self-efficacy (i.e., belief about one's own capacity to achieve a desired outcome; Bandura, 1978) have been associated with greater program use, fidelity, and/or dosage in some studies (e.g., Downer et al., 2009; Ransford et al., 2009). In other

studies (Domitrovich et al., 2015, 2019; Wanless et al., 2015), however, self-efficacy did not predict implementation.

Congruent with this, research on relationship between teacher burnout (i.e., emotional exhaustion, depersonalization, and reduced personal accomplishment; Maslach & Jackson, 1981) and SEL implementation has also been mixed. In some studies (Domitrovich et al., 2015; Ransford et al., 2009; Roberts et al., 2015), burnout was related to lower levels of intervention use and engagement; however, in another study at the preschool level, burnout was positively related to implementation (Domitrovich et al., 2009). Likewise, with respect to perceptions about school climate, aspects of this construct have been found to be related to implementation in some studies of SEL interventions (e.g., Roberts et al., 2015) but relationships were not found in others (Domitrovich et al., 2015; Wanless et al., 2015). For example, Malloy et al. (2015) found that teacher perceptions that a school culture promoted teacher affiliation and openness to innovate positively predicted implementation fidelity indicators; however, teacher perceptions of participatory decision-making at their school predicted *lower* implementation quality.

Other categories and methods of assessing teacher-related factors have received less attention in the literature. For example, actual observations of teacher behavior during program training was used as a proxy for engagement in one study (Wanless et al., 2015); however, almost all other studies used self-report variables. Teacher perceptions about aspects of self beyond efficacy, such as their own social-emotional skills or competence, have been assessed in only two studies (Brown et al., 2010; Domitrovich et al., 2016); in both cases, these variables did not relate to implementation outcomes. Three studies measured teacher attitudes toward the intervention (after training but prior to implementation; Domitrovich et al., 2015, 2019; Malloy et al., 2015); in all three cases, these demonstrated an association with some aspect of later

implementation. Lastly, two studies (i.e., Rimm-Kaufman & Sawyer, 2004; Roberts et al., 2015) assessed teachers' underlying beliefs about teaching and student learning and found relationships with at least one implementation outcome.

A recent study by Domitrovich et al. (2019) was first to take into account both school-level and teacher-level factors simultaneously to predict implementation of a universal SEL program. Teacher positive attitudes about the program prior to implementation (but after training) predicted frequency of lesson delivery, but not quality of implementation. Teacher-level perceptions of openness, self-efficacy, perceived SEL culture, SEL commitment, and administrative support were *not* found to be predictive in their final model. The only aggregated school-level factor predictive in the expected direction was SEL culture (i.e., whether teachers perceived their school to be supportive of SEL), which was related to teacher ratings of implementation quality and more frequent use of supplemental materials. Contrary to this, school-level SEL capacity (whether teachers perceived their school to have a plan and resources to implement SEL) predicted less frequent use of supplemental materials. While they concluded that the majority of the variance in school-based SEL implementation outcomes in their study was within, not between, schools (Domitrovich et al., 2019), they noted that almost half of the between-teacher variability remained unexplained in their model. As such, Domitrovich et al. (2015, 2019) and Wanless and Domitrovich (2015) urged researchers to identify and assess additional teacher-level variables with predictive utility for SEL implementation in order to improve the explanatory power of models—and ultimately, improve implementation in schools.

## **A New Model of Teachers' Underlying Assumptions about Social-Emotional Skills**

The current study provides a response to that call for action, proposing that teachers' *underlying assumptions about student social-emotional skills* are potentially salient to the universal SEL program implementation process. In contrast to *perceptions* about oneself and one's school (e.g., self-efficacy, stress, or school culture), or *attitudes* about a specific program (e.g., acceptability), the term *underlying assumptions* is used to describe teachers' core beliefs about the nature of teaching and student learning. Building on a foundation of social psychology theory suggesting that underlying beliefs are key influences on subsequent practices and behaviors (e.g., Bandura, 1986; Brophy, 1983; Clark & Peterson, 1986; Fishbein & Ajzen, 1975; Weiner, 1985), a body of research in education has focused on teachers' core beliefs as being important to influencing their actions in the classroom. At the early education level, for example, several studies have demonstrated that preschool and kindergarten teachers' beliefs about child-centered teaching predicted observations of quality classroom instruction (Bryant et al., 1991; La Paro et al., 2009; Pianta et al., 2005) and positive interactions with children (Driscoll & Pianta, 2010). Similarly, preschool teachers' attributions about students' behavior have been found to correlate with their choice of behavior management strategies and demonstration of emotional support in the classroom (Carter et al., 2014). In studying a preschool classroom management and coaching program, researchers found that teachers' core beliefs about teaching predicted aspects of their engagement and responsiveness with training and implementation efforts (Downer et al., 2009; Roberts et al., 2015).

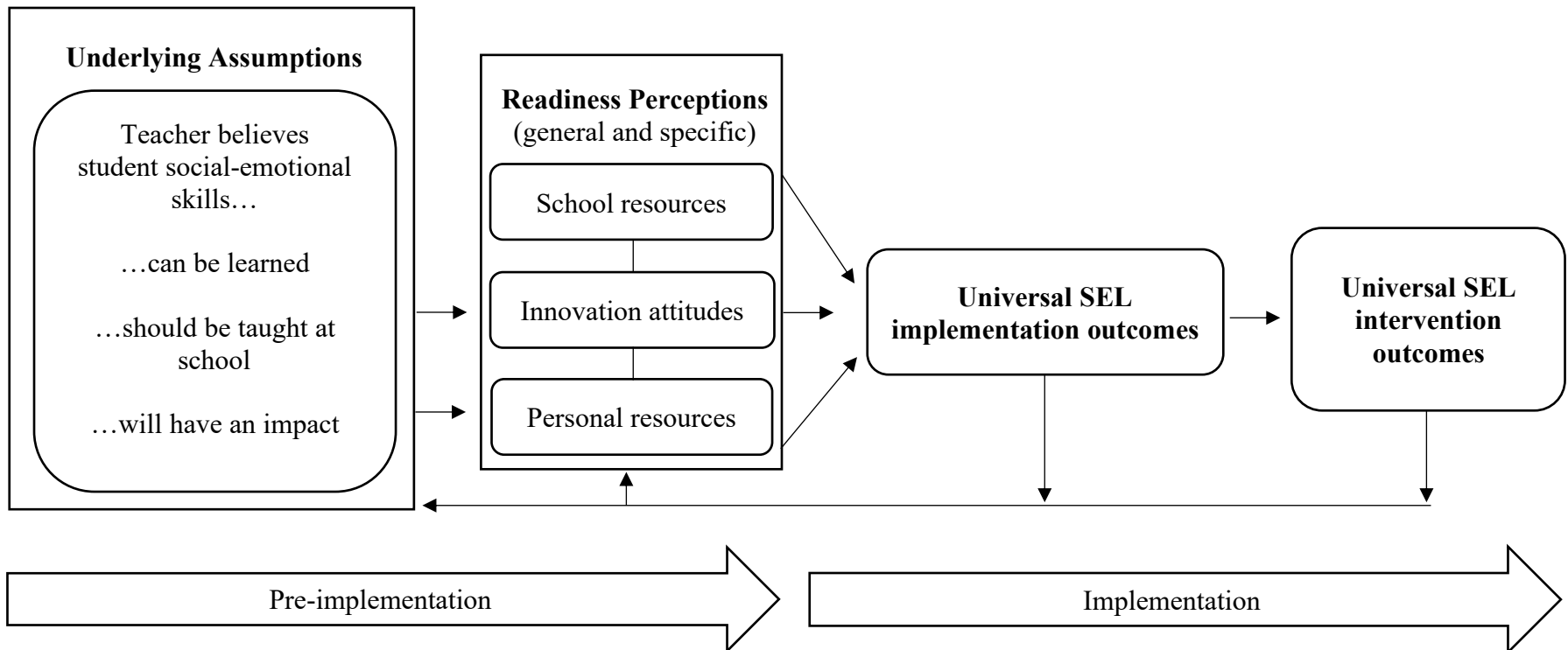
Outside of the early education realm, several recent experimental studies have suggested that teachers' underlying assumptions about teaching and learning can be effectively targeted by brief interventions to improve educational practice. Yeager (2017) described research that has

demonstrated the potential promise of shifts in teacher beliefs and mindsets to promote changes in practices and, in turn, influence student outcomes. In one such study, for example, changes in teacher beliefs about attributions for student misbehavior led to actual reductions in student misbehavior and suspension rates without direct intervention with students (Okonofua et al., 2016). In another study, a school-level index of teacher beliefs about student behavior were found to relate to initial fidelity of implementation of evidence-based practices within multi-tiered systems of support; in addition, changes in the belief index were related to improved implementation over time (Cook et al., 2015). Cook and colleagues (2015) suggested that teacher beliefs are a key construct to be included in evaluation and planning for successful implementation efforts.

The current study proposes a new model of teachers' underlying assumptions about student social-emotional skills (Figure 1). In the model, teacher beliefs about whether these skills *can be learned, should be taught at school, and will have an impact* contribute to teachers' readiness to implement, including their perceptions of personal resources and general acceptance of new approach. Combined with support from their school, teachers with readiness are more likely to adopt programs and implement SEL with fidelity, quality, student responsiveness, and a positive view of specific program components after experience with the intervention. As a result of high-quality program implementation, intervention outcomes for students and teachers should be enhanced. These relationships may also be reciprocal and iterative: as teachers' experience successful SEL implementation and outcomes, their underlying beliefs about student social-emotional skills may also become more positive. The three specific categories of teacher beliefs proposed in the model have been drawn from a review of extant literature in implementation science, SEL, and related fields; they are described in the following sections.

**Figure 1**

*Reciprocal Model of Underlying Assumptions Supporting Social-Emotional Teaching Across Universal SEL Implementation Phases*



***Assumption 1: Social-Emotional Skills Can Be Learned***

Teacher beliefs about whether social-emotional skills *can be learned* by students is rooted in attributional theory (Weiner, 1985), which posits that individuals respond differently to a situation based on their perception of its cause. Weiner identified four dimensions of attributions: locus of causality (internal or external factors), stability (malleable or permanent), and controllability (lack of effort or ability). Several studies have supported the application of Weiner's theory to teacher-student interactions in the classroom, demonstrating that teacher attributions for student behavior can influence their subsequent practices and interactions with students (e.g., Andreou & Rapti, 2010; Bibou-Nakou et al., 2000; Chang & Davis, 2009; Hart & DiPerna, 2017; Poulou & Norwich, 2002; Reyna & Weiner, 2001).

As applied to SEL, the fundamental assumption of attribution theory would suggest that teachers are less likely to put effort into instruction when they feel that the target skills are internally determined and stable (e.g., not malleable from external influences); whereas they are more likely to put effort into instruction if they believe the target skills are malleable (unstable) and can be improved by external influences such as teaching and interpersonal support. Accordingly, describing a teacher-related implementation factor that has not yet been explored within the SEL literature, Brackett et al. (2012) posited that teacher beliefs about the malleability and causal locus of student social-emotional skills may relate to the degree to which teachers buy into and adhere to program implementation. Kress and Elias (2006) theorized that teachers who believed social-emotional skills are internal and stable were less supportive of SEL efforts at their schools. Similarly, in their theory of school-based implementation, Han and Weiss (2005) suggested that when teachers' pre-implementation attributions about children's behavior (i.e., teachers' beliefs about the cause of student behavior) are congruent with the goals and intent of



an intervention program, teachers may be more likely to implement with fidelity. In setting research agendas for their fields, scholars in school mental health and school psychology have noted the need for studies that investigate the role and malleability of provider beliefs, particularly as they relate to both implementation success and failure (Forman et al., 2013; Owens et al., 2014).

While attribution theory has not been applied to SEL implementation to date in the empirical literature, studies in related fields suggest its applicability. In studies of an early childhood intervention targeted toward students at-risk of disruptive behavior problems, negative teacher attributions for preschool student misbehavior at baseline were associated with greater usage of inappropriate behavior strategies, more authoritarian beliefs, lower emotional support, lower reported closeness, and lower quality teacher-child interactions (Carter et al., 2014; Carter, 2016). In the trauma-informed education literature, school staff beliefs about causes of behavior problems and skills have been found to be strongly correlated with indicators of implementation (i.e., familiarity with and positive attitudes toward trauma-informed care; Baker et al., 2016).

***Assumption 2: Social-Emotional Skills Should Be Taught by Teachers at School***

Implementation science models have emphasized the compatibility between teachers' pre-implementation beliefs about instruction and the intervention approach as being critical to quality implementation (e.g., Domitrovich et al., 2008; Han & Weiss, 2005; Rogers, 2003). For example, teachers who felt the instructional approach of a substance-abuse prevention program matched their own teaching philosophy were more likely to continue to implement after the initial year (Rohrbach et al., 1993); in a more recent study of a schoolwide SEL program, teachers who already had instructional perceptions that were consistent with the program's goals implemented a program with more fidelity (Rimm-Kaufman & Sawyer, 2004). In a qualitative

study, teacher assumptions about social-emotional development that were inconsistent with the intervention approach (e.g., believed that punitive approaches were more likely to change student behavior) were identified as barriers for implementation of a schoolwide program (Anyon et al., 2016). Studies of teacher coaching programs have similarly reported that teachers who demonstrated instructional beliefs that were congruent with the aims of the program were more likely to be responsive and engaged during the intervention process (Downer et al., 2009; Roberts et al., 2015).

A 2009 survey of U.S. teachers indicated that, while a vast majority believed that SEL is important for students, just under 70% of teachers thought that these skills should be taught in school, about 50% felt that someone else at school should be teaching SEL, and less than half were currently teaching SEL programs in their classroom. In addition, less than 7% of teachers felt they could devote two class periods a week to teach SEL programs, and less than 5% felt they could devote 30 minutes per week to prepare for SEL (Buchanan et al., 2009). Similarly, Reinke et al. (2011) found that teachers were more likely to assert that school psychologists—not classroom teachers—should be responsible for teaching social-emotional lessons at school. Using qualitative methods, Brownell (2006) found that teachers who did not implement new evidence-based practices in the classroom were also more likely to think it was not their responsibility to teach behavior and prioritize academics over behavioral instruction. Similarly, a study of schoolwide positive behavioral supports and interventions identified both teacher skepticism and philosophical differences regarding the idea of universal programming as barriers for implementation (Lohrmann et al., 2008).

### ***Assumption 3: Social-Emotional Skills Will Have an Impact***

Several researchers (e.g., Cook et al., 2015; Domitrovich et al., 2008; Durlak, 2016; Durlak & DuPre, 2008) have emphasized the importance of teachers' pre-implementation perceptions about the potential benefits of interventions, suggesting they may play a role in predicting implementation quality. Han and Weiss (2005) posited, for example, that, in line with the theory of outcome expectancy (Bandura, 1978), teacher beliefs about the anticipated effectiveness of an intervention can promote program adoption and adherence. Although a majority of teachers nationwide appear to believe that SEL will have a positive effect on student success (Bridgeland et al., 2013), teachers' perceptions about the effectiveness of SEL interventions in improving proximal and distal student outcomes (behavioral, academic, educational, vocational) have not been examined in SEL intervention studies to date. Brackett et al. (2012) recommended measure development work for assessing teacher beliefs about the impact of SEL given their potential utility in predicting SEL implementation.

### **Measurement of Underlying Teaching Beliefs and Assumptions**

While examining the predictive power of teachers' underlying assumptions about social-emotional skills appears warranted based on theory and research in related fields, very few SEL studies have assessed this construct to date. The limited research in this area may be due, in part, to a shortage of validated measures to assess such core beliefs. To better understand what instruments are available and have been used in prior research, studies of school-based implementation were reviewed to identify pre-implementation measures of teachers' underlying assumptions related to teaching or learning topics. Given the goal of extending beyond those constructs most studied to date, measures of teacher beliefs about constructs *other than* self-efficacy, school culture, and stress/burnout were the focus. In addition, because teachers' general

attitudes about an approach prior to experience with implementing a program has been hypothesized to reflect aspects of their general teaching philosophy (Domitrovich et al., 2015), such measures were also included. As few program evaluation studies of K-12 universal SEL conducted in the United States have incorporated measures of teaching beliefs or general pre-implementation innovation attitudes (Table 2), the search was extended into implementation literature conducted in other countries, at the preschool level, and with related social-behavioral approaches (e.g., schoolwide positive behavior and supports, multi-tiered systems of support). Pre-implementation measures were categorized according to general teaching beliefs, innovation-related teaching beliefs, and program-specific teaching beliefs (Table 3).

**Table 3***Measures of Pre-Implementation Beliefs about Teaching in School-Based Implementation Research*

Measure Name	Author	Intended to assess	Subscales (internal consistency)	Validity evidence	Use in implementation research	Considerations for use
General Teaching Beliefs						
Beliefs about Behavior Survey	Cook et al., 2015	Beliefs about social-emotional and behavioral school practices	One scale (35 items)	None located	<b>A school-level index of beliefs predicted several aspects of MTSS implementation; change in beliefs also predicted implementation (Cook et al., 2015)</b>	Limited validity evidence available
Beliefs about Intentional Teaching	Hamre & Downer, 2008	Beliefs intentional interactions in the classroom	One scale (11 items; $\alpha = .68$ in Hamre et al., 2012)	Unpublished technical manual	<b>Intentional teaching beliefs predicted teacher engagement with a preschool coaching program (Roberts et al., 2015)</b>	Limited validity evidence available
Modernity Scale (adapted teacher version)	Schaefer & Edgerton, 1985	Adult-centered and child-centered teaching beliefs	One scale (16 items; $\alpha = .79$ )	No validation study located for teacher version	No relation with use of a preschool behavior program (Driscoll et al., 2011)  <b>Child-centered beliefs predicted responsiveness during preschool program training (Downer et al., 2009)</b>  <b>Child-centered beliefs predicted home use of preschool program materials (Roberts et al., 2015)</b>  Child-centered beliefs predicted <i>lower</i> dosage of a preschool program; no relationships with quality or generalization (Williford et al., 2015)	Limited validity evidence available

Preschool Teaching Attributions Scale	Carter et al., 2014	Attribution for child problem behaviors	1. Causal (3 items across 4 scenarios; $\alpha = .77$ ) 2. Responsibility (4 items across 4 scenarios; $\alpha = .85$ )	Carter et al. 2014; 153 preschool teachers	<i>Negative</i> responsibility attribution beliefs predicted generalization of preschool program; no relationships with dosage or quality (Williford et al., 2015)	Items written specifically for preschool teachers
Teachers' Beliefs about Emotions	Hyson & Lee, 1996	Beliefs about student emotional development	1. Bond (4 items; $\alpha = .62$ ) 2. Expressiveness (4 items; $\alpha = .46$ ) 3. Instruction/Modeling (3 items; $\alpha = .43$ ) 4. Talk/Label (6 items; $\alpha = .53$ ) 5. Protect (3 items; $\alpha = 0.41$ ) 6. Display/Control (3 items; $\alpha = .59$ )	Hyson & Lee, 1996; 279 preschool teachers (58 implementing teachers)	<b>Expressiveness beliefs predicted use of SEL extension activities. Lower Protect and higher Display/Control beliefs predicted dosage in a Canadian teacher sample (Hanson-Peterson et al., 2014).</b>	Poor psychometric properties
Teacher Belief Q-Sort	See Rimm-Kaufman et al., 2006	Teaching priorities assessed through a sorting activity	1. Behavior/discipline priorities 2. Teaching practice priorities 3. Beliefs about children  (60 items across 3 Q-Sort activities)	Rimm-Kaufman et al., 2006; 197 current/preservice teachers	<b>Teaching priority beliefs were associated with Responsive Classroom implementation (Rimm-Kauffman et al., 2004)</b>	Time intensive administration procedure

## Innovation-Related Teaching Beliefs

Attitudes toward Social-Emotional and Character Development	SACD, 2010	Attitude about teaching SEL-related concepts at school	One item	None located	<b>Attitude (after training but before implementation) was related to program usage (Malloy et al., 2015)</b>	One item; limited validity evidence
Beliefs about One's Responsibility to Teach Social and Character Development Concepts	Beets et al., 2008	Belief about their responsibility teaching for SEL-related concepts	One scale (14 items; $\alpha = .90-.96$ in Beets et al., 2008)	None located	<b>Beliefs were related to intervention attitudes and SEL program dosage (Beets et al., 2008)</b>	Limited validity evidence
Evidence-Based Practice Attitudes Scale	Aarons, 2004	Attitudes toward adoption of new treatments	1. Requirements (3 items; $\alpha = .90$ ) 2. Appeal (4 items; $\alpha = .80$ ) 3. Openness (4 items; $\alpha = .78$ ) 4. Divergence (4 items; $\alpha = .59$ )	Aarons, 2004, 2007, 2010; 322 behavioral health clinicians	Openness subscale did not relate to SEL dosage or quality (Domitrovich et al., 2019)	Items written specifically for behavioral health clinicians/consultants
Teacher Attitudes about Social-Emotional Learning	Schultz et al., 2010	Sources of SEL support for teachers at school	1. Administrative Support (10 items; $\alpha = .91$ ) 2. Training (4 items; $\alpha = .89$ ) 3. Competence (4 items; $\alpha = .87$ ) 4. Program Effectiveness (4 items; $\alpha = .81$ ) 5. Time Constraints (3 items; $\alpha = .66$ ) 6. Academic Priority (2 items; $\alpha = .90$ )	Schultz et al., 2010; 145 preschool teachers	<b>Five of the six scales related to one-item measure of other teachers' use of SEL at preschool centers (Schultz et al., 2010)</b>	Limited use in research to date; validity study with preschool teachers only  Assesses aspects of multiple domains of readiness (school support, self-efficacy, stress, etc.)

Teacher SEL Beliefs Scale	Brackett et al., 2012	Readiness to teach SEL	1. Comfort (4 items; $\alpha = .76$ ) 2. Commitment (4 items; $\alpha = .82$ ) 3. Culture (4 items; $\alpha = .74$ )	Brackett et al., 2012; 935 Catholic school teachers (88 implementing teachers)	No relationships with observed implementation quality. <b>Comfort &amp; Commitment correlated with year-end program attitudes (Brackett et al., 2012)</b>  <b>Aggregated Culture scores related to self-reported implementation quality and use of supplemental materials.</b> No individual-level scores demonstrated relationships with implementation (Domitrovich et al., 2019)	Assesses aspects of multiple domains of readiness (school support, self-efficacy, intentions, etc.)
Program-Specific Teaching Beliefs						
PATHS Program Attitudes	Domitrovich et al., 2019	Value, compatibility, confidence, and commitment for PATHS	One scale (9 items; $\alpha = .88$ )	None located	<b>Positive PATHS attitudes (measured after training but before implementation) predicted program dosage (Domitrovich et al., 2019)</b>	Limited validity evidence; written specifically for PATHS
Teacher Perceptions of the Intervention Attributes	Domitrovich & Ialongo 2008	Compatibility with and motivation for implementing PATHS	1. Fit with Schedule (2 items; $\alpha = .68$ ) 2. Fit with Style (2 items; $\alpha = .76$ ) 3. Motivation to Implement (1 item)	Unpublished technical manual	<b>Fit with Style (measured after training but before implementation) was related to number of games played (Domitrovich et al., 2015)</b>	Limited validity evidence; written specifically for PATHS

*Note.* SEL = Social-emotional learning; PATHS = Promoting Alternative Thinking Strategies; Bold indicates a significant association with an implementation outcome (in the expected direction) was reported in previous research.



The review identified six measures assessing teachers' underlying assumptions about general teaching approaches. The most widely used was the Modernity Scale (Schaefer & Edgerton, 1985), which was originally developed to assess parenting beliefs. An adapted teacher-version intended to measure teachers' beliefs about student-centered versus teacher-centered instructional approaches has been used in several studies of preschool teacher programs. Scores from the measure have demonstrated relationships with aspects of implementation in the expected direction in some (Downer et al., 2009; Roberts et al., 2015) but not all studies (Driscoll et al., 2011; Williford et al., 2015). This measure is over 35 years old, and no validation studies were located for the teacher version. Several of the other general teacher belief measures lacked published validation information as well (Cook et al., 2015; Hamre & Downer, 2008) or demonstrated weak psychometric properties (Hyson & Lee, 2006). Of the two measures that have published validity evidence, one involved scenarios appropriate to the preschool age group (Carter et al., 2014), and the other had an involved assessment protocol featuring a sorting activity for teachers to complete (Rimm-Kaufman et al., 2006).

Five innovation-related (i.e., about intervention approaches, not specific programs) measures of teaching beliefs were also located. A one-item "measure" of general pre-implementation attitudes toward SEL-related concepts demonstrated relationships with some aspects of teachers' use of a program in one study (Malloy et al., 2015); another similar researcher-generated measure demonstrated limited psychometric evidence (Beets et al., 2009). One measure of attitudes toward evidence-based practice was developed and validated in several studies (Aarons, 2004; Aarons et al., 2007, 2010); while original items were written for clinical mental health providers in the community (e.g., "I like to use new types of therapies with my clients"), a recent adaptation was developed for school-based behavioral health consultants

(Cook et al., 2018). In a validation study with school-based providers, the adapted scale was shown to demonstrate small positive relationships with consultants' self-reported number of evidence-based strategies used in their work with students but relationships with actual implementation outcomes were not explored.

Two measures have been developed for use with teachers and are featured in published studies providing initial reliability and validity information supporting their use in research and practice: the Attitudes about Social-Emotional Learning scale (TASEL; Schultz et al., 2010) and the Teacher SEL Beliefs Scale (Brackett et al., 2012). Both measures are intended to assess sources of SEL implementation support for teachers, including their perceptions of both school-level support and their own personal resources (i.e., self-efficacy, intentions, etc.). In a study of the TASEL, scores for five of the six scales demonstrated significant correlations with a one-item measure of teachers' perceptions of how frequently other teachers were implementing SEL at their preschool centers (Schultz et al., 2010). Beyond this initial development work, no known published studies have integrated the TASEL into their measurement battery, however. Scores from the Teacher SEL Beliefs Scale (Brackett et al., 2012) assessing teachers' Comfort and Commitment demonstrated moderate to high correlations with teachers' year-end attitudes about their use of a universal SEL program (e.g., buy-in, openness, confidence, program effectiveness, and enjoyment), while teachers' perceptions of SEL school Culture correlated highly with principal support. The measure has subsequently been used in several correlational studies examining teacher job satisfaction (e.g., Collie, Shapka, & Perry, 2012), and recently appeared for the first time in an SEL impact study (Domitrovich et al., 2019).

Lastly, two researcher-developed measures that were used to assess beliefs relative to a specific program (e.g., PATHS) were located. Both measures asked teachers to report on their

perceptions of compatibility as well as their own personal resources related to implementation (e.g., commitment, motivation). Scores from both measures demonstrated a relationship with a dosage-related implementation outcome (Domitrovich et al., 2015; 2019); however, no validation studies with other samples were located. It should be noted that, in both studies, measures were collected from teachers prior to implementation but after program training because teachers must have some familiarity with the intervention to respond to items.

Overall, while several measures used to assess underlying assumptions and beliefs have been used in implementation studies to date, the reliability and validity evidence supporting their use varies greatly from instrument to instrument. Several high quality implementation measures have recently been developed, but they are either not intended for use by teachers in school-based settings or overlap conceptually with constructs that have previously been examined within SEL (i.e., teacher perceptions of self-efficacy, stress, and/or school support rather than core beliefs about teaching and learning). Several researchers (e.g., Cook et al., 2015; Sanetti & Collier-Meek, 2019; Wanless & Domitrovich, 2015) have noted the need for more psychometrically sound measures of teachers' pre-implementation beliefs in order to make meaningful inferences about the relationship between these factors and implementation outcomes.

### **Purpose, Rationale, and Research Questions**

Implementation science theory has linked many individual-level variables to effective implementation (Domitrovich et al., 2008; Durlak & DuPre, 2008; Han & Weiss, 2005), and SEL researchers have recommended further examination of teacher-related readiness factors in evaluation studies (Domitrovich et al., 2016; Jones et al., 2017; Schonert-Reichl, 2017; Wanless & Domitrovich, 2015). However, only a relatively narrow collection of such variables have been

considered to date, and there has been limited measurement work in this area. Therefore, this project attempted to address this need by developing a measure to assess teachers' underlying assumptions in areas hypothesized to influence the SEL implementation process, examining the psychometric properties of that measure, and assessing the degree to which those beliefs affected the implementation of a SEL program.

The project was guided by two aims. The first was to develop an instrument that could reliably and validly assess teachers' underlying assumptions about student social-emotional skills. The second was to understand the relationships between scores from the measure and teachers' implementation of a universal SEL program. Hypotheses were informed by a review of theoretical and empirical research in implementation science and school-based SEL interventions.

### ***Research Question 1 (Content and Factor Structure)***

What items can be used to assess teachers' underlying assumptions about student social-emotional skills, and what is the internal factor structure of the ASSET measure?

**Hypothesis 1.** ASSET scores reflect three domains of teachers' underlying assumptions about student social-emotional skills: (a) they *can be learned* through experiences and instruction, (b) they *should be taught* by teachers in the school setting, and (c) they *will have an impact* on student outcomes.

### ***Research Question 2 (Internal Consistency and Temporal Stability)***

Do scores from the ASSET demonstrate adequate reliability for group research and program planning purposes?

**Hypothesis 2a.** ASSET scores demonstrate adequate internal consistency for group research and program planning.

**Hypothesis 2b.** ASSET scores demonstrate stability over a relatively short time period (i.e., 3-6 weeks).

***Research Question 3 (Concurrent Relationships)***

Do ASSET scores demonstrate expected relationships with teacher- and school-related variables measured at the same time?

**Hypothesis 3a.** ASSET scores demonstrate moderate positive relationships with SEL experience and teachers' personal resources related to teaching SEL (perceptions of comfort and commitment).

**Hypothesis 3b.** The relationship between ASSET scores and teachers' perceptions of school resources for SEL will be positive but small. This hypothesis is based on research from Brackett et al. (2012) suggesting that SEL Comfort and Commitment scores, which may reflect internal perceptions such as self-efficacy as well as previous experiences, demonstrate smaller relationships with Culture scores, which reflect organizational-level supports and resources.

***Research Question 4 (Predictive Relationships)***

Do pre-implementation ASSET scores relate to measures of teachers' implementation of a classwide SEL program later in the year?

**Hypothesis 4.** Pre-implementation ASSET scores demonstrate significant and positive correlations with indicators of program dosage, adherence, quality, student responsiveness, and acceptability in a sample of teachers who implemented a classwide SEL program.

## Chapter 2

### Method

#### Participants

Teachers were recruited for participation in this study via two pathways. First, in an effort to reach a nationally representative sample, about two-thirds of the sample ( $n = 256$ ) were recruited online via email and social media posts inviting participation in an online questionnaire about teachers' perspectives on social-emotional learning. Participants were encouraged to pass along the information to other teachers in their personal and professional networks. The remaining teachers were already participating in a larger federally-funded national effectiveness trial (R305A170047; PI: James DiPerna) evaluating the SSIS-SEL Edition Classwide Intervention Program (SSIS-CIP; Elliott & Gresham, 2017), a classwide social skills program, when implemented under routine conditions in the primary grades. For the trial, districts already considering implementation of an SEL program were recruited to participate via contacts with national school psychology professional networks. First and second grade teachers ( $n = 129$ ) across four states and seven districts were assigned to treatment and business-as-usual conditions as part of the larger trial.

An overall sample of 385 K-12 teachers from across the United States completed the pilot version of the ASSET (Table 4). The majority of teachers were between 25-44 years old (73%), female (87%), and White (88%); about 8% were Latinx, 7% spoke Spanish as their primary language, and 4% were Black. Almost half of teachers taught predominately racial-ethnic minoritized students. Teachers were a mix of general educators (56%), subject area teachers (25%), and special educators (17%). Over 70% of participants taught students at the elementary

level, while about 60% had less than 10 years of teaching experience. Most teachers had bachelor's or master's degrees (40% and 50%, respectively) and taught in traditional public schools (87%). Participants taught in urban (42%), suburban (35%), and rural (20%) schools. Most teachers taught in the Northeast (41%) and Southern (36%) regions of the United States; with fewer from the midwestern (19%) and western (4%) parts of the country. The total sample was generally representative of the current U.S. teacher population with respect to gender, race/ethnicity, education level, school type, and grade level taught; however, it had a lower percentage of experienced (>10 years) teachers and a higher percentage of teachers from urban schools (U.S. Department of Education, 2019).

**Table 4***Participant Characteristics (Reported as Percentage)*

	% Total Sample ( <i>N</i> = 385)	% Implementation Subsample ( <i>n</i> = 41)
<b>Age</b> <sup>a</sup>		
24 and younger	6.35	--
25-34	37.70	--
35-44	34.92	--
45-54	15.48	--
55-64	5.16	--
65 and older	0.40	--
<b>Gender</b>		
Female	87.27	90.24
Male	11.43	9.76
Transgender	0.26	0.00
Gender-queer/Non-conforming	0.78	0.00
Prefer not to answer	0.26	0.00
<b>Race</b>		
Asian	2.08	2.44
American Indian/Alaska Native	0.52	0.00
Black/African American	4.16	4.89
Native Hawaiian/Pacific Islander	0.26	0.00
White	88.31	80.49
Other	4.42	9.76
Prefer not to answer	2.08	2.44
<b>Ethnicity</b> <sup>b</sup>		
Not Hispanic, Latino(a), or Spanish	90.29	87.50
Mexican, Mexican American, Chicano(a)	2.62	0.00
Puerto Rican	1.31	0.00
Cuban or Cuban American	0.52	0.00
Some other Hispanic or Latino(a) background	3.67	10.00
Prefer not to answer	2.62	2.50
<b>Primary Language</b> <sup>c</sup>		
English	92.25	90.24
Spanish	6.98	9.76
Other Language	0.78	0.00
<b>Classroom Composition</b>		
Less than 25% minoritized students	29.61	31.70
25-50% minoritized students	23.12	12.20
51-75% minoritized students	15.58	12.20
Over 75% minoritized students	31.69	43.90
<b>Teacher/Student Racial-Ethnic Match</b> <sup>d</sup>		
White/White Match	49.87	42.50
Minoritized/Minoritized Match	12.20	20.00
White/Minoritized Non-Match	35.28	37.50
Minoritized/White Non-Match	2.65	0.00



<b>Classroom Role</b>		
General education teacher	56.36	95.12
Special education teacher	17.14	4.88
Subject area teacher	24.93	0.00
Other	10.65	4.88
<b>Grade Level Taught</b>		
Early elementary (K-2)	51.95	100.00
Late elementary (3-5)	20.26	0.00
Middle school (6-8)	16.62	0.00
High school (9-12)	23.12	0.00
<b>Years of Teaching Experience</b>		
Less than 5	36.36	48.78
5-10	25.19	29.27
11-15	16.62	7.32
16-20	11.17	7.32
More than 20	10.65	7.32
<b>Attained Education</b>		
Associates	0.26	0.00
Bachelors	42.08	63.41
Masters	50.65	36.59
Education specialist	5.71	0.00
Doctorate or Professional Degree	1.04	0.00
Prefer not to answer	0.26	0.00
<b>School Type</b>		
Traditional Public	86.75	97.56
Charter	6.23	2.44
Private	4.42	0.00
Other	2.60	0.00
<b>School Community<sup>c</sup></b>		
Urban	42.19	60.98
Suburban	34.64	14.63
Rural	19.79	24.39
Other	2.34	0.00
Prefer not to answer	1.04	0.00
<b>Region</b>		
Northeast	40.78	0.00
Midwest	19.22	58.54
South	35.84	41.46
West	4.16	0.00

*Note.* Total percentages may not add up to 100 due to rounding or because participants were allowed to endorse more than one option for some items.

<sup>a</sup> Total sample  $N = 253$ ; data not collected from entire sample.

<sup>b</sup> Total sample  $N = 381$  and implementation sample  $N = 39$  due to missing data.

<sup>c</sup> Total sample  $N = 129$ ; data not collected from entire sample.

<sup>d</sup> Total sample  $N = 377$  and implementation sample  $N = 40$  due to unknown teacher race/ethnicity.

<sup>e</sup> Total sample  $N = 384$  due to missing data.

## Measures

### *Assumptions Supporting Social-Emotional Teaching (ASSET) Scale – Pilot Version*

The initial item pool for the Assumptions Supporting Social-Emotional Teaching (ASSET) scale was developed based on a review of the extant SEL and implementation science literature and informed by methods suggested by DeVellis (2017). Items were written to assess content across three domains of teachers' underlying assumptions about student social-emotional skills hypothesized to be supportive to the program implementation process: (a) can be learned, (b) should be taught by teachers at school, and (c) will have an impact (Table 5). In order to tap into teachers' personal beliefs about student social-emotional skills, item stems included first-person pronouns (i.e., "my students," "my classroom"). To ensure that teachers had a common understanding of social-emotional skills as they responded to items, definitions derived from the CASEL (2020a) model were included in the instructions. A 5-point scale with options ranging from Strongly Disagree to Strongly Agree was used as the response format, and a "Prefer Not to Answer" choice also was provided.

**Table 5***Content and Items on Pilot Version of the ASSET*

Domain	Subdomain	Student social-emotional skill area... [Self-Awareness, Self-Management, Social-Awareness, Relationship Skills, Responsible Decision-Making]...
Can be learned	Genetics (Internal locus)	... is <b>influenced by their genetics</b> .
	Change (Stability)	... is <b>changeable over time</b> .
	Experience (External locus)	... is <b>influenced by their experiences</b>
	Own Control (Student control)	... is <b>under student's control</b> .
	Instruction (Teacher control)	... is <b>influenced by my classroom instruction</b> .
Should be taught at school by teachers	Universal	... <b>should be taught to all students</b> as part of core instruction at the grade level I teach.
	Important	... is <b>important</b> to teach explicitly (i.e., through formal lessons) in my classroom.
	Feasible	... is <b>feasible</b> to explicitly teach (i.e., through formal lessons) in my classroom.
Will have an impact	Behavior	... impacts my students' <b>classroom behavior</b> .
	Academic	... impacts my students' <b>academic achievement</b> .
	Education	... impacts my students' <b>future educational progress</b> .
	Job	... will impact my students' <b>future job success</b>

To help maximize content validity of the scale prior to field testing (DeVellis, 2017), three groups of experts reviewed the scale. First, five early career applied researchers and five senior scholars with expertise in SEL reviewed the initial item pool. Reviewers were asked to provide feedback on (a) the relevance of each item to the constructs intended to be measured, (b) ways of tapping into the constructs that may be missing from the measure, and (c) clarity and conciseness in content, wording, vocabulary, and sentence structure. Feedback was used to revise wording and definitions, improve format and structure, and eliminate and add additional items to the pool. As a result of this feedback, the item pool was reduced to 70 items that were grouped under the five CASEL social-emotional skill areas of Self-Awareness, Social-Awareness, Self-Management, Relationship Skills, and Responsible Decision-Making.

A final round of expert review consisted of five current U.S. teachers who were asked for suggestions to refine and improve wording of items to maximize their social validity for the teacher and classroom context. Teachers received a gift card as a thank you for their feedback. After revisions, the resulting pool included 12 items that asked about each of the five CASEL domains (total item  $N = 60$ ; see Appendix A for full pilot measure).

### ***Teacher Demographic Information***

Teachers were asked to provide demographic information including their age, gender, race/ethnicity, grade level taught, type of school and community, classroom racial/ethnic composition, years of teaching experience, preservice training, certification, and education level (Appendix B).

### ***SEL Experience***

Several researcher-generated items (Appendix C) assessed the extent to which teachers had learning and teaching experiences related to SEL. Items were asked using a 4-point Likert

scale from *Not at all* to *To a great extent*. Two SEL Preservice Training items asked about teachers' learning experiences with SEL in their preservice training (teacher education program); these items were averaged. One SEL Familiarity item asked the degree to which teachers were familiar with SEL practices. A final SEL Use item asked how many of the 5 CASEL skill domains were taught/emphasized in their classroom; endorsed skills were summed and ranged from 0 to 5.

### ***SEL Personal Resources***

Aspects of teachers' perceived personal resources related to teaching SEL were assessed at the beginning of the year using subscales from Brackett et al.'s (2012) measure (Appendix D). Specifically, the four-item Comfort subscale and the four-item Commitment subscales were used. The Comfort subscale taps into teachers' sense of self-efficacy for teaching SEL with items such as "I am comfortable providing instruction on social and emotional skills to my students" and "I feel confident in my ability to provide instruction on social and emotional learning." In the Brackett et al. (2012) validity study, the alpha for this subscale was .80, and scores demonstrated large, positive correlations with teachers' sense of personal accomplishment, adaptive teaching efficacy, and confidence levels at the beginning of the year. The Commitment subscale assesses aspects of teachers' motivation to learn about and teach SEL with items such as "I would like to attend a workshop to learn how to develop my students' social and emotional skills" and "I want to improve my ability to teach social and emotional skills to students." The alpha for this subscale was .93 in the original study, and scores demonstrated moderate, positive correlations with teachers' adaptive teaching efficacy at the beginning of the year.

### ***SEL School Resources***

Aspects of teachers' perceived school-level resources related to teaching SEL were assessed at the beginning of the year using a three-item version Culture subscale from the Brackett et al. (2012) measure. This subscale intends to assess both administrator and collegial support for teaching SEL with a school environment. The following items were used: "My principal creates an environment that promotes social and emotional learning for our students," "The culture in my school supports that development of children's social and emotional skills," and "My school expects teachers to address children's social and emotional needs." The alpha for the four-item version of the subscale was .84 in the original study, and scores demonstrated large, positive correlations with teachers' perceptions of administrator support at the beginning of the school year.

### ***Indicators of Program Implementation***

For the subset of teachers assigned to the intervention condition in the randomized trial of the classwide SEL program (SSIS-CIP), indicators of program implementation were assessed. Following Dane & Schneider's (1998) conceptualization of program integrity, four domains were of interest: dosage, adherence, quality, and student responsiveness. Program-specific acceptability was also assessed as an indicator of program implementation (Proctor et al., 2011).

Teacher self-report and independent observer report were both utilized when available. Teachers provided ratings of program completion, adherence, student responsiveness, and acceptability on weekly surveys administered during the implementation period (January-May). Research staff members, who attended a 2-day in-person training and participated in ongoing consultation, provided ratings after observing approximately 20% of the SEL lessons that teachers delivered (5-6 lessons per teacher).

**Dosage.** As a measure of dosage, teachers reported the number of classwide SEL lessons they taught to their first and second grade students via an online weekly survey distributed on Fridays. The number of lessons taught from the core program units (30 total possible lessons across 10 units) was summed across the implementation period.

**Adherence.** Teachers rated their implementation adherence for the lessons they delivered in a given week via weekly online surveys. Ratings were provided on a 5-point scale ranging from *Not at All* to *Completely*, and scores were averaged across all surveys completed. In addition, during each observed lesson, trained research staff rated the extent to which teachers adhered to the verbal scripts for each of the six lesson steps; these scores were rated on a 5-point scale (0-20%, 21-40%, 41-60%, 61-80%, 80-100%) and averaged across steps and observations. Observers also indicated which lesson components stated in the manual were implemented with dichotomous ratings (*yes, no*). Because the lesson components varied by unit, scores were calculated as proportion of lesson components implemented and were averaged across observations. Inter-observer agreement across paired observations was  $K = .65$  (weighted Kappa; Cohen, 1986) for verbal adherence and  $K = .72$  for lesson component adherence (Kappa; Cohen, 1970).

**Quality.** As an indicator of implementation quality assessed at the end of each observation, research staff rated 5 items about teachers' overall approach to implementation including preparedness, interest/enthusiasm, responsiveness to students, clarity of presenting key concepts, and skill in facilitating the planned activities. Each question was rated on a 5-point scale from *Very Low* to *Very High*, and items were averaged across all observations conducted. Inter-observer observer agreement (weighted Kappa) was  $K = .52$ .

**Student Responsiveness.** On the weekly surveys administered on Fridays, teachers responded to three items about students' active engagement, interest/enthusiasm, and understanding of the lessons taught that week on a 5-point scale from *Very Low* to *Very High*. Scores were averaged across items and weekly surveys completed. In addition, after each observed lesson, trained research staff rated these same items about their observations of student responsiveness. Scores were averaged across items and observations. Inter-observer agreement (weighted Kappa) was  $K = .54$ .

**Acceptability.** Teachers' perceptions of lesson acceptability was assessed on a weekly basis as they taught the program. At the end of each weekly survey completed, teachers responded to the following question: "Overall, how would you rate the lessons that you taught during the current week?" The item was rated on a 5-point scale from *Poor* to *Excellent*, and scores were averaged across surveys completed.

Teachers also rated their overall acceptability at the end of the implementation period (June) using an online survey. Three items inquired about whether teachers liked the program, found it worth the time, and perceived it to be compatible with their classroom context. Items were rated using a 5-point response format from *Strongly Disagree* to *Strongly Agree* and a mean score was calculated by averaging the items.

## **Procedures**

Following approval to conduct this study from the Institutional Review Board at The Pennsylvania State University, the initial items were developed after a review of the extant literature in implementation science and related fields. Next, teacher and SEL researcher experts reviewed the items and provided feedback on them (see Measures section for more information). After this, the pilot version of the ASSET was administered to a sample of current K-12 teachers



across the country through an online field test. As previously noted, there were two avenues through which teachers were made aware of the questionnaire: a) receiving an electronic invitation through email or a social media post or b) participating in a larger national effectiveness trial. All teachers completed informed consent, and all measures were completed online via Qualtrics.

Teachers completed measures using an online questionnaire. In the fall, all teachers completed the ASSET pilot measure and additional items used to assess their demographic characteristics, experience with SEL, and perceptions of personal and school resources related to SEL implementation (Appendix A-D). The teachers recruited online were also asked to provide feedback about the ease and clarity of the ASSET items (Appendix E). These same teachers were able to elect to be included in a gift card drawing as well as complete the measure again in 3-6 weeks for inclusion in a second raffle. Teachers who elected to do so ( $n = 88$ ) completed the ASSET again in several weeks later in order to provide data to assess temporal stability.

In the spring, teachers ( $n = 41$ ) in the treatment condition of the effectiveness trial completed additional measures used to assess aspects of their implementation of a universal SEL program. These teachers were compensated for their time spent in data collection activities. They were also provided the materials to teach the SSIS-SEL-CIP program, which consisted of 30 lessons across 10 core social skills units. More information on the program and its research base can be found in published studies of a previous efficacy trial of the SSIS-CIP (DiPerna et al., 2015, 2016, 2018; Hart et al., 2020; Hunter et al., 2018; Wollersheim Shervey et al., 2017). However, given that the primary goal of the effectiveness trial was to evaluate implementation by typical users under typical circumstances, training and implementation plans were determined locally by districts/schools rather than guided by a standard research protocol.

## **Planned Data Analysis**

All analyses were conducted using the IBM SPSS Statistics (Version 27) software program.

### ***Research Question 1 (Content and Factor Structure)***

**Item-Level Analyses.** Preliminary analyses were undertaken to identify items with limited utility; item means, item variance, skewness, kurtosis, corrected item-scale correlations, inter-item correlations, and item-domain correlations were calculated. Relatively high item variance and non-extreme means are both desirable (DeVellis, 2017). In assessing the normality of data, skewness and kurtosis statistics above an absolute value of 2 are considered problematic (Bandalos & Finney, 2010). Corrected item-scale correlations are recommended to be greater than .30 (Nunnally & Bernstein, 1994). Average inter-item correlations between .15 and .50 has been suggested as a reasonable metric for well-functioning items (Clark & Watson, 1995); for instruments measuring affective domains, between .30 and .60 has been recommended (McCoach et al., 2013). Inter-Item correlations above .90 may indicate multicollinearity problems. Finally, comments from respondents about the ease of responding to pilot items were reviewed. Items that were problematic across these criterion were considered for deletion from the scale.

**Exploratory Factor Analysis.** The factorability of the correlation matrix was assessed by several criteria: adequate sample size (i.e., at least 300; MacCallum et al., 2009), a majority of item-total correlations of at least .3, and suitable results on the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity.

Data were subjected to a principal axis factoring (PAF). PAF was used instead of principal components analysis (PCA) because the goal of the analysis was to understand the

latent construct rather than only reduce item content (Costello & Osborne, 2005). PAF is used when scores are hypothesized to be the result of an underlying construct (Beaver et al., 2013). In addition, as opposed to PCA which includes all sources of variance when examining relationships, PAF partials out specific and error variance in calculations. For this reason, PAF may be used when common and unique variance is likely captured by items as is often the case in psychological research (Beavers et al., 2013). PAF also does not require assumptions of normality (Fabrigar et al., 1999), and it has been recommended as the method that most closely aligns with the goals of scale development (Worthington & Whittaker, 2006).

As no single criteria should be used in the decision to retain factors (Costello & Osborne, 2005), multiple methods and an iterative process were used. The “eigen value greater than one” criteria (Kaiser, 1960) is intended to identify stable factors; however, researchers have cautioned that it may lead to extracting too many or too few factors (Beavers et al., 2013; Kline, 2013; Worthington & Whittaker, 2006). Visual inspection of the scree plot can also help identify factors to be retained (Fabrigar et al., 1999); however, this can be subjective so should be used in conjunction with other methods (Beavers et al., 2013). Percent of variance explained by factors can also be examined; above 50% is recommended (Beaver et al., 2013). Finally, parallel analysis (e.g., Hayton et al., 2004), whereby an actual scree plot (Cattell, 1966) is compared to random data from computer-generated data sets to identify eigen values greater than would be expected by chance, has been recommended for scale development purposes (Kline, 2013; Watkins, 2006). An online application (Patil, Singh, Mishra, & Donovan, 2017) was used to conduct the parallel analysis; 1000 random correlation matrices were generated, and both a mean and a 95 percentile of eigen values was used as a comparison.

With the assumption that factors were correlated with one another, an oblique rotation method (Promax) was selected as the rotation method. To obtain a simple structure, the following criteria should be met: item loadings should be at least .30, communalities should be at least .40, and there should be no factors with fewer than three items (Costello & Osborne, 2005). In addition, cross-loading items should be minimized, and secondary loadings should have at least a .20 difference from an item's highest factor loading (Howard, 2016) and not be above .32 (Tabachnick & Fidell, 2001).

### ***Research Question 2 (Internal Consistency and Temporal Stability)***

Internal consistency (Cronbach's coefficient alpha) was computed, and temporal stability of scores from respondents who completed the measure twice (3-6 weeks apart) was assessed using Pearson's product moment correlations.

### ***Research Question 3 (Concurrent Relationships)***

Pearson's product moment correlations were calculated between ASSET scores and scores reflecting teachers' personal and school resources related to SEL (experience, comfort, commitment, and culture).

### ***Research Question 4 (Predictive Relationships)***

Pearson's product moment correlations were calculated between ASSET scores and indicators of teachers' actual implementation of a classwide SEL program (dosage, adherence, quality, student responsiveness, and acceptability).

## Chapter 3

### Results

Prior to data analysis, data were examined to check for missing values and outliers. Of the completed questionnaires collected during the field test, less than 1.6% of surveys ( $n = 6$ ) were missing one or more ASSET items; as a result, missing ASSET data were handled using listwise deletion. As discussed in the Method (see Table 5), the 60 items on the pilot scale featured a set of 12 core items (*genetics, change, experience, own control, instruction, universal, important, feasible, academic, behavior, education, and job*) asked separately for each of 5 SEL skill areas (e.g., Self-Awareness, Self-Management, Social-Awareness, Relationship Skills, Responsible Decision-Making). As the first step in the analyses, all 60 items were evaluated.

#### Research Question 1 (Content and Factor Structure)

##### *Item Evaluation*

Descriptive statistics including means, standard deviations, minimum and maximum values, skewness, kurtosis, and corrected item-scale correlations (CITCs) are displayed in Table 6. The overall mean of all item means was 4.12; means ranged from 2.94 to 4.56. Averaged across SEL domains, the lowest means were *genetics, own control, and feasible* items (3.03, 3.68, and 3.76, respectively); the highest means were *experience, behavior, and job* items (4.51, 4.49, 4.48, respectively). The overall mean of all item standard deviations was 0.71; the range was from 0.52 to 1.04. Averaged across SEL domains, the lowest standard deviations were present with *change, behavior, and experience* items (.54, .54, .55, respectively); the highest standard deviations were for *genetics, feasible, and important* items (1.01, .94, and .85, respectively).

**Table 6***Descriptive Statistics for ASSET Pilot Items*

	Min	Max	Mean	Standard deviation	Skewness	Kurtosis	CITC (total)	CITC (subscale)
Genetics (SeA)	1.00	5.00	3.00	0.99	-0.25	-0.84	.10*	.28*
Genetics (SeM)	1.00	5.00	3.18	1.00	-0.39	-0.64	.14*	.37
Genetics (SoA)	1.00	5.00	3.03	1.03	-0.08	-0.81	.17*	.33
Genetics (RS)	1.00	5.00	3.02	1.04	-0.14	-0.83	.19*	.37
Genetics (RD)	1.00	5.00	2.94	1.01	-0.11	-0.78	.20*	.38
Change (SeA)	1.00	5.00	4.38	0.56	-0.56	2.08	.35	.38
Change (SeM)	3.00	5.00	4.34	0.52	0.14	-0.95	.42	.43
Change (SoA)	2.00	5.00	4.24	0.57	-0.19	0.55	.40	.44
Change (RS)	2.00	5.00	4.30	0.53	0.04	0.00	.41	.40
Change (RD)	3.00	5.00	4.30	0.53	0.17	-0.61	.43	.42
Experience (SeA)	1.00	5.00	4.55	0.61	-1.89	7.46	.22*	.21*
Experience (SeM)	3.00	5.00	4.49	0.53	-0.27	-1.25	.39	.41
Experience (SoA)	3.00	5.00	4.52	0.52	-0.29	-1.41	.45	.40
Experience (RS)	3.00	5.00	4.54	0.52	-0.34	-1.48	.49	.42
Experience (RD)	2.00	5.00	4.46	0.55	-0.65	1.01	.48	.40
Own Control (SeA)	1.00	5.00	3.62	0.75	-0.44	-0.08	.19*	.35
Own Control (SeM)	2.00	5.00	3.45	0.77	-0.41	0.05	.20*	.31
Own Control (SoA)	1.00	5.00	3.68	0.80	-0.49	0.18	.29*	.40
Own Control (RS)	1.00	5.00	3.76	0.75	-0.61	0.52	.27*	.39
Own Control (RD)	1.00	5.00	3.89	0.74	-0.59	0.68	.18*	.35
Instruction (SeA)	2.00	5.00	4.02	0.63	-0.66	1.75	.40	.36
Instruction (SeM)	2.00	5.00	4.08	0.64	-0.62	1.50	.51	.53
Instruction (SoA)	2.00	5.00	4.04	0.68	-0.69	1.20	.51	.51
Instruction (RS)	1.00	5.00	4.10	0.69	-0.82	1.92	.54	.45
Instruction (RD)	2.00	5.00	4.09	0.64	-0.68	1.64	.51	.47
Universal (SeA)	2.00	5.00	4.17	0.87	-1.13	1.25	.50	.56
Universal (SeM)	2.00	5.00	4.22	0.77	-1.09	1.73	.59	.68
Universal (SoA)	2.00	5.00	4.16	0.80	-1.08	1.70	.62	.70
Universal (RS)	1.00	5.00	4.20	0.71	-0.88	1.30	.63	.68
Universal (RD)	2.00	5.00	4.21	0.77	-1.04	1.45	.66	.73
Important (SeA)	1.00	5.00	3.93	0.93	-0.74	0.05	.59	.72
Important (SeM)	1.00	5.00	4.07	0.86	-0.87	0.45	.63	.76
Important (SoA)	1.00	5.00	4.07	0.85	-0.88	0.54	.65	.78
Important (RS)	1.00	5.00	4.10	0.81	-0.88	0.80	.66	.76
Important (RD)	1.00	5.00	4.15	0.83	-0.88	0.44	.67	.79

Feasible (SeA)	1.00	5.00	3.58	0.97	-0.52	-0.39	.50	.64
Feasible (SeM)	2.00	5.00	3.80	0.93	-0.57	-0.47	.51	.62
Feasible (SoA)	1.00	5.00	3.75	0.99	-0.63	-0.40	.58	.72
Feasible (RS)	1.00	5.00	3.83	0.92	-0.67	-0.17	.54	.67
Feasible (RD)	1.00	5.00	3.84	0.92	-0.63	-0.19	.59	.72
Behavior (SeA)	1.00	5.00	4.50	0.58	-0.97	2.20	.59	.59
Behavior (SeM)	3.00	5.00	4.56	0.52	-0.50	-1.23	.60	.70
Behavior (SoA)	2.00	5.00	4.45	0.57	-0.60	0.38	.65	.69
Behavior (RS)	3.00	5.00	4.44	0.53	-0.08	-1.29	.65	.71
Behavior (RD)	3.00	5.00	4.48	0.52	-0.14	-1.47	.65	.74
Academic (SeA)	1.00	5.00	4.41	0.61	-0.80	1.50	.56	.62
Academic (SeM)	3.00	5.00	4.51	0.54	-0.41	-1.09	.56	.72
Academic (SoA)	1.00	5.00	4.23	0.74	-1.08	1.87	.66	.69
Academic (RS)	2.00	5.00	4.31	0.64	-0.67	0.91	.64	.69
Academic (RD)	2.00	5.00	4.45	0.55	-0.39	-0.31	.67	.78
Education (SeA)	1.00	5.00	4.47	0.64	-1.11	1.87	.58	.68
Education (SeM)	3.00	5.00	4.51	0.55	-0.49	-0.91	.62	.77
Education (SoA)	1.00	5.00	4.26	0.75	-1.09	1.72	.64	.70
Education (RS)	2.00	5.00	4.32	0.63	-0.64	0.65	.64	.71
Education (RD)	2.00	5.00	4.49	0.56	-0.56	-0.18	.64	.77
Job (SeA)	1.00	5.00	4.45	0.63	-1.02	1.93	.54	.65
Job (SeM)	3.00	5.00	4.50	0.57	-0.73	0.02	.55	.70
Job (SoA)	1.00	5.00	4.40	0.64	-0.96	1.91	.61	.72
Job (RS)	2.00	5.00	4.50	0.56	-0.61	-0.13	.59	.72
Job (RD)	3.00	5.00	4.54	0.53	-0.48	-1.09	.60	.72

*Note.*  $N = 379$ . SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making; CITC = Corrected Item-Total Correlation. CITC-subscale refers to hypothesized domains as displayed in Table 5.

\* Fell below a priori criteria of at least .30.

Skewness values were generally within an acceptable range, however, they were almost all negatively skewed, indicating respondents tended to agree rather than disagree with items. Kurtosis for one item (*experience* for Self-Awareness skills) indicated a highly leptokurtic (peaked) shape. Corrected item-total correlations (with the entire scale) were below .30 for all *genetics* items, all *own control* items, and the *experience* item for Self-Awareness skills. In relation to hypothesized subscales, corrected item-total correlations for *genetics* and *experience* items for Self-Awareness fell below .30.

Tables F1 through F12 in Appendix F display inter-item correlations within the entire 60-item pilot measure. Notably, *genetics* items demonstrated very small to negligible correlations with other ASSET items (all  $r_s < .18$  with most  $r_s < .10$ ). Items about *own control* also demonstrated low inter-item correlations ( $< .15$ ) with most items with the exception of *change* and *instruction*, which were closer to .20. All inter-item correlations fell below .90. Mean inter-item correlations, in order from lowest to highest, were: *genetics* .03, *own control* .09, *change* .21, *experience* .21, *feasible* .23, *instruction* .24, *universal* .28, *job* .30, *academic* .32, *education* .32, *behavior* .33, and *important* .39. The overall mean inter-item correlation for the pilot measure was .26, which fell below the minimum threshold of .30 recommended by McCoach et al. (2013). Mean inter-item correlations when calculated within hypothesized subscales were: .19 (*genetics, change, experience, own control, instruction*), .53 (*universal, important, feasible*) and .52 (*behavior, academic, education, job*).

### ***Exploratory Factor Analysis***

**Initial PAF with All Items.** Before items with limited utility were trimmed, the entire pilot measure was subjected to an EFA in order to explore its structure. While there were suitable results on the Kaiser-Meyer-Olkin measure of sampling adequacy ( $KMO = .91$ ) and Bartlett's



test of sphericity ( $BHS \chi^2 = 18315.61, df = 1770, p < .001$ ), the determinant of the correlation matrix ( $5.36 \times 10^{-23}$ ) was close to zero, indicating a possible issue with multicollinearity (Field, 2013; Tabachnick & Fidell, 2013). While there were 12 eigen values greater than one (Table G1), the scree plot indicated a bend at three to four factors and another leveling off point between five and eight factors (Figure G1). Given the results of Parallel Analysis, eight factors were extracted which accounted for 58.75% of variance (Table G1). Four items—one each within *experience* and *change*, two within *instruction*—had communalities below .40 (Table G2). After rotation (Table G3), the *behavior*, *academic*, *education*, and *job* items all clustered together across SEL domains (Factor 1) *except* for items asked about Self-Awareness; *behavior*, *academic*, *education*, and *job* items asked about Self-Awareness formed their own factor (Factor 7). All *universal* and *important* (Factor 2) and *experience* and *change* (Factor 3) items loaded together to form factors. All *feasible*, *genetics*, *own control*, and *instruction* items formed their own separate factors (Factors 4, 5, 6, and 7, respectively). All items loaded on their primary factor above .40; however, there were four items (about *instruction*, *job*, *academic*, and *education*) that had secondary loadings above .32.

**Item Trimming.** Given the results of the initial item analyses and PAF, as well as the overarching goal of a simple factor structure, several items were trimmed. As previously noted, teachers provided feedback that the *genetics* and *own control* items lacked clarity and were difficult to answer. Items about *genetics* and *own control* also had weak inter-item correlations and corrected item-total correlations, indicating they may be assessing different rather than cohesive content relative to the rest of the scale. In addition, several *instruction* items loaded onto secondary factors and had communalities below .40 in the initial EFA. After reviewing the wording of that item, it seems possible that some teachers may have responded to the item

relative to their views on their own self-efficacy (i.e., about their view of the effectiveness of their instruction in influencing students) rather than their beliefs about the malleability of SEL skills as intended by the hypothesized conceptual framework. For these reasons, these three item sets were removed, and the resulting scale consisted of 45 items.

**PAF with 45 Items.** With 45 items, there continued to be suitable results on the Kaiser-Meyer-Olkin measure of sampling adequacy ( $KMO = .93$ ) and Bartlett's test of sphericity ( $BHS \chi^2 = 14927.15, df = 990, p < .001$ ). The determinant of the correlation matrix was again very close to zero ( $1.58 \times 10^{-18}$ ); however, no inter-item correlations were above .90 indicating no severe multi-collinearity problems (Field, 2013; Tabachnick & Fidell, 2013). The eigen value rule indicated an eight-factor solution (Table H1), and the scree plot indicated an initial bend at three factors (Figure H1). Parallel analysis indicated a five-factor solution based on the 95<sup>th</sup> percentile eigen value with 58.74% of variance accounted for after extraction. Extracted communalities were above .40 with the exception of two items (Table H2). The factor structure after rotation (Table H3) indicated the following items loaded together: *behavior, academic, education, and job* for all SEL domains except Self-Awareness (Factor 1); *universal and important* (Factor 2); *change and experience* (Factor 3); *feasible* (Factor 4); and *behavior, academic, education, and job* for Self-Awareness only. There was one item that had a secondary loading above .32, but all items had primary loadings above .40.

Given results of the scree plot as well as the goal of a simple structure, alternate factor structures were explored. A forced four-factor structure accounted for 55.19% of the variance (Table H4). The factor structure after rotation (Table H5) indicated the following items loaded together: *behavior, academic, education, and job* (Factor 1); *universal and important* (Factor 2), *change and experience* (Factor 3), and *feasible* (Factor 4). While all items loaded on primary

factors at .40 or above, there were four items that loaded on secondary factors at or above .32 and one additional factor that had a secondary loading with less than .20 separation from its primary loading.

The three-factor solution accounted for 51.41% of the variance (Table H6). The factor structure after rotation (Table 7) indicated the following items loaded together: *behavior, academic, education, and job* (Factor 1); *universal, important, and feasible* (Factor 2), and *change and experience* (Factor 3). There were no secondary loadings above .32, and all item loadings fell at or above .40. Ultimately, this structure was selected for subsequent analyses given that it aligned best with the hypothesized conceptual model, offered the most parsimonious fit, and met all a priori criteria for factor retention decisions.

The three factors were named to reflect their corresponding items. Factor 1 was intended to assess teachers' assumptions about whether student social-emotional skills impact a variety of student outcomes (*Influential*). Factor 2 captured teachers' assumptions about whether social-emotional skill instruction should and can be taught at school (*Compatible*). Finally, Factor 3 measured teacher assumptions about whether student social-emotional skills can change and be influenced by experiences (*Malleable*). Correlations between factors were significant and moderate to large in magnitude: Influential and Compatible = .57; Influential and Malleable = .58; Compatible and Malleable = .34. Based on the structure displayed in Table 7, mean total and subscale scores were calculated (Table 8).

**Table 7***Rotated Pattern Matrix of Three-Factor Solution for 45-Item ASSET Scale*

	1	2	3
Education (SeM)	<b>.93</b>	-.14	-.05
Job (SeM)	<b>.86</b>	-.17	-.02
Academic (SeM)	<b>.84</b>	-.19	.05
Job (SeA)	<b>.76</b>	-.07	-.08
Education (RD)	<b>.76</b>	-.05	.11
Job (RS)	<b>.75</b>	-.03	.02
Job (SoA)	<b>.73</b>	.08	-.09
Education (SeA)	<b>.73</b>	.00	-.08
Job (RD)	<b>.73</b>	-.11	.15
Academic (RD)	<b>.72</b>	.03	.09
Education (RS)	<b>.69</b>	.15	-.10
Education (SoA)	<b>.66</b>	.22	-.17
Behavior (SeM)	<b>.65</b>	.00	.14
Behavior (RD)	<b>.64</b>	.07	.14
Academic (RS)	<b>.62</b>	.18	-.06
Academic (SoA)	<b>.59</b>	.28	-.13
Academic (SeA)	<b>.55</b>	.10	.03
Behavior (RS)	<b>.54</b>	.15	.15
Behavior (SoA)	<b>.48</b>	.23	.15
Behavior (SeA)	<b>.40</b>	.19	.15
Important (SoA)	.04	<b>.82</b>	-.08
Feasible (SoA)	-.14	<b>.81</b>	.05
Feasible (RD)	-.12	<b>.79</b>	.06
Important (RD)	-.03	<b>.78</b>	.13
Important (SeA)	.06	<b>.77</b>	-.15
Feasible (RS)	-.16	<b>.77</b>	.08
Important (RS)	.03	<b>.76</b>	.05
Important (SeM)	.06	<b>.76</b>	-.05
Feasible (SeA)	-.11	<b>.73</b>	-.02
Universal (RD)	.12	<b>.68</b>	.03
Feasible (SeM)	-.09	<b>.68</b>	.03
Universal (SoA)	.13	<b>.66</b>	.00
Universal (SeM)	.14	<b>.63</b>	-.04
Universal (RS)	.10	<b>.63</b>	.07
Universal (SeA)	.15	<b>.54</b>	-.14

Change (SoA)	-.15	.06	<b>.77</b>
Change (SeM)	-.06	.03	<b>.71</b>
Change (RS)	-.10	.10	<b>.68</b>
Change (RD)	-.03	.05	<b>.68</b>
Change (SeA)	-.10	.03	<b>.64</b>
Experience (SeM)	.13	-.12	<b>.60</b>
Experience (SoA)	.13	-.03	<b>.59</b>
Experience (RS)	.25	-.08	<b>.57</b>
Experience (RD)	.19	.01	<b>.54</b>
Experience (SeA)	.10	-.12	<b>.40</b>

Note. SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Principal Axis Factoring and Promax with Kaiser Normalization. Rotation converged in 6 iterations. Primary loadings are bold.

**Table 8***Descriptive Statistics, Internal Consistency, and Temporal Stability of ASSET Composite Scores (N = 381)*

	# of items	Min	Max	Mean	Standard Deviation	Skewness	Kurtosis	Cronbach's alpha	Temporal Stability <sup>a</sup>
Malleable	10	3.00	5.00	4.41	.37	.02	-.69	.87	.56
Compatible	15	1.87	5.00	4.00	.64	-.48	.17	.94	.82
Influential	20	3.05	5.00	4.44	.43	-.20	-.96	.95	.68
Total ASSET	45	2.96	5.00	4.29	.41	-.09	-.65	.96	.80

<sup>a</sup> N = 88 (3-6 week retest).

## **Research Question 2 (Internal Consistency and Temporal Stability)**

### ***Internal Consistency***

Cronbach's coefficient alpha was calculated (Table 8) as an indicator of internal consistency (Field, 2013). Cronbach's alphas for all ASSET subscales and total score was  $\geq .87$ , which fell into the "very good" range according to DeVellis' standard (2017).

### ***Temporal Stability***

Temporal stability (Table 8) was also assessed using scores from respondents ( $n = 88$ ) who retook the pilot measure between 3-6 weeks after completing it the first time. The total ASSET stability coefficient (Pearson's product correlation) was .80; subscale coefficients ranged from .56 to .82. The Compatible and Total ASSET scores showed the greatest stability over a relatively short period of time, whereas the Influential scores were less stable. Paired sample  $t$ -tests between first and second administrations, however, indicated no significant differences in mean scores across time: Malleable  $t(87) = .22$  ( $p = .83$ ); Compatible  $t(87) = 1.24$  ( $p = .22$ ); Influential  $t(87) = -.35$  ( $p = .73$ ); Total ASSET  $t(87) = .53$  ( $p = .60$ ).

## **Research Question 3 (Concurrent Relationships)**

Concurrent relationships were assessed through correlations with teacher SEL experience as well as perceptions of personal and school resources for teaching SEL (Table 9). With respect to SEL experience, ASSET scores demonstrated positive relationships with teachers' reported familiarity with SEL ( $r_s = .12 - .22$ ), but these relationships were smaller in magnitude than hypothesized. In addition, while Compatible and Total ASSET scores were associated with SEL use ( $r = .23$  and  $.13$ , respectively), most ASSET scores were not related to teachers' experience with SEL in their preservice training.

**Table 9***Correlations Between ASSET Scores and Concurrent Teacher SEL Measures (N = 372)*

	Malleable	Compatible	Influential	Total ASSET
<u>Teacher SEL Experience</u>				
Preservice Experience	-.08	.12*	.01	.05
Familiarity	.14**	.22**	.12*	.20**
Use	-.02	.23**	.03	.13*
<u>Personal SEL Resources</u> <sup>a</sup>				
SEL Comfort	.16**	.35**	.21**	.31**
SEL Commitment	.22**	.51**	.35**	.48**
<u>School SEL Resources</u> <sup>a</sup>				
SEL Culture	.12*	.20**	.09 <sup>†</sup>	.17**

<sup>a</sup> Teacher SEL Beliefs Scale (Brackett et al., 2012)<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .



Supporting the hypothesis that ASSET scores would demonstrate positive and moderate relationships with personal resources related to implementing SEL, Compatible and ASSET total scores demonstrated moderate correlations with SEL Comfort ( $r_s = .31 - .35$ ) and large correlations with SEL Commitment ( $r_s = .48 - .52$ ). Influential beliefs were also moderately correlated with SEL Commitment ( $r = .35$ ). Relationships between Malleable beliefs and personal resources were positive but small in magnitude. Again as hypothesized, relationships between ASSET scores and SEL Culture were positive but small to negligible in size. Compatible and Total ASSET scores appeared most related to perceptions of a school culture supportive of SEL ( $r_s = .17 - .20$ ).

#### **Research Question 4 (Predictive Relationships)**

Pre-implementation ASSET scores were predicted to demonstrate significant and positive correlations with indicators of actual program implementation of a classwide SEL program. Table 10 summarizes correlations with dosage, adherence, quality, student responsiveness, and acceptability. Pre-implementation ASSET scores demonstrated moderate positive relationships with teacher acceptability ratings reported weekly during implementation ( $r_s = .30 - .41$ ) and small-to-moderate correlations with acceptability reported at the end of the year ( $r_s = .17 - .34$ ). While Malleable beliefs demonstrated a moderate positive relationship with self-reported student responsiveness ( $r = .33$ ), and Compatible beliefs demonstrated a small relationship with observer-rated quality that trended toward statistical significance, all other associations were not statistically significant and very small to negligible in magnitude. Therefore, with the exception of acceptability, results did not consistently support this hypothesis.

**Table 10***Correlations between Pre-Implementation ASSET Scores and SEL Implementation Indicators (N = 41)*

	ASSET				Teacher SEL Beliefs Scale (Brackett et al., 2012)		
	Malleable	Compatible	Influential	Total ASSET	Comfort	Commitment	Culture
Dosage (teacher)	.07	-.07	-.02	-.03	-.25	-.13	-.22
Adherence (teacher)	-.01	.02	-.16	-.07	.02	-.04	-.08
Verbal Adherence (observer)	.04	.19	.11	.16	-.11	.10	.12
Component Adherence (observer)	.11	.24	.14	.21	-.02	.04	.10
Quality (observer)	.13	.27 <sup>†</sup>	.15	.23	-.24	.02	.18
Student responsiveness (teacher)	.33*	.08	.12	.17	.21	.14	.31*
Student responsiveness (observer)	.14	.07	.17	.15	-.12	.00	.22
Acceptability (teacher-weekly)	.39*	.36*	.30 <sup>†</sup>	.41**	.37*	.32*	.40**
Acceptability (teacher – year end) <sup>a</sup>	.17	.28 <sup>†</sup>	.32*	.34*	.26	.36*	.43**

<sup>a</sup> N = 39 due to missing end-of-year survey data.<sup>†</sup>  $p < .10$ ; \*  $p < .05$  level; \*\*  $p < .01$ .

## Chapter 4

### Discussion

The primary aim of this study was to develop and conduct an initial evaluation of a measure of teachers' underlying assumptions about student social-emotional skills. Items were written, reviewed by experts, and then administered via a field test to a sample of U.S. teachers. An exploratory factor analysis with 45 items indicated that the internal structure of the ASSET generally mapped onto a hypothesized model of teachers' underlying assumptions salient to the universal SEL process (Figure 1). This internal structure suggested that three underlying assumptions are assessed with items on the measure: student social-emotional skills can be changed through experiences and instruction (*Malleable*), should be taught by teachers in the school setting (*Compatible*), and will impact future life outcomes (*Influential*). All ASSET scores demonstrated good internal consistency, and the overall ASSET total score demonstrated adequate temporal stability.

Correlations with concurrent measures of teachers' perceptions of personal resources relative to teaching SEL were generally in the expected size and direction. Teachers who held the underlying assumption that SEL skills should be taught by teachers in the school setting (*Compatible*) were more likely to perceive themselves as comfortable and committed to teaching SEL. These moderate-to-large correlations are consistent with previous research demonstrating that SEL Comfort and Commitment scores related to teachers' buy-in and openness to programming (Brackett et al., 2012; Domitrovich et al., 2019). Teachers who assumed that SEL skills are impactful on students (*Influential*) were also more likely to be committed to teaching SEL. This supports the process model posited by Han and Weiss (2015) in which perceived

effectiveness increases teachers' intention and motivation to implement a program. Relationships between ASSET scores and teachers' previous SEL experiences were small to negligible in size, suggesting that teachers may hold supportive underlying assumptions about social-emotional skills regardless of their previous experiences with training in or implementation of SEL.

As hypothesized, concurrent relationships between ASSET scores and teachers' perspectives of a positive SEL culture at their school were also positive but small in magnitude. Collie et al. (2015) studied profiles of teachers' ratings of SEL Comfort, Commitment, and Culture and found that SEL Culture was the variable that differentiated teachers to the greatest extent. They noted that SEL Culture is likely to demonstrate more variability given that it taps into an organizational construct that is dependent on school-level factors, while SEL Comfort and Commitment instead reflect teachers' internal perceptions of their own efficacy and intentions. It should be noted that, given limited research in this area, there were no a priori hypotheses about whether ASSET scores would differ by teacher demographic and background characteristics. To explore this possibility, mean scores for the teacher groups displayed in Table 4 were compared as a post hoc analysis. Results (Appendix I) indicated that ASSET scores generally did not differentiate teachers by group membership; however, subject area and high school teachers reported lower Compatible scores compared to their general and special education colleagues at the elementary/middle school level.

Contrary to hypotheses, results provided limited support that teachers' underlying assumptions about teaching social-emotional skills—as measured by the ASSET prior to their experience with training or implementation of a universal SEL program—would relate to their actual implementation of that program. Specifically, ASSET scores did not consistently demonstrate statistically significant (i.e.,  $p < .05$ ) or practically meaningful correlations with

indicators of teachers' program dosage or adherence. While the correlation between teachers' Compatible scores and observer-rated lesson quality trended toward statistical significance, all other correlations with implementation quality were small to negligible in magnitude. The lack of a statistically significant relationship between underlying assumptions and subsequent implementation fidelity and quality suggests that the construct does not have strong predictive utility for these outcomes. This result is consistent with some previous research that did not find relationships between individual-level pre-implementation factors and implementation outcomes (e.g., Brackett et al., 2012; Domitrovich et al., 2015; 2019; Wanless et al., 2015). It runs contrary, however, to theory underlying many implementation science frameworks, which have emphasized the importance of implementer beliefs in anticipating implementation efforts in practice (Domitrovich et al., 2008; Durlak & DuPre, 2008; Han & Weiss, 2005; Wanless & Domitrovich, 2015).

In contrast to implementation outcomes of fidelity and quality, however, pre-implementation ASSET scores were positively and moderately related to teachers' ratings of program acceptability during and after implementation. Similarly, Brackett et al. (2012) found that teachers' personal resources for SEL (e.g., Comfort and Commitment) were moderately correlated with teachers' year-end "goodness-of-fit" ratings but did not relate to observer-rated quality. It is possible that teachers with underlying assumptions supporting SEL, who later find the program acceptable, may make adaptations to the program that veer from implementation adherence, such as choosing to teach some lessons over others or changing the planned lesson activities. It is also possible that teachers who hold underlying assumptions supporting SEL efforts may find programming acceptable, but choose not to implement with fidelity as they deem their own classroom instruction to be as or more effective. More research is needed to

understand how teachers' pre-implementation assumptions and implementation choices relate to variation in student outcomes.

The relationship between underlying assumptions and acceptability may have implications for planning effective SEL implementation in schools. Given that Forman et al. (2013) asserted that sustained program implementation is likely dependent on teacher ratings of acceptability after initial implementation, teacher acceptability may be an indicator of continued use and engagement with a program. In practice, if program acceptability ratings can be estimated using a measure administered prior to the start of implementation, even for teachers who have no prior experience with teaching SEL programs, school administrators may be able to better anticipate which teachers will require support and assistance throughout the year. Han and Weiss (2005) noted that information gathered from teachers at pre-implementation can inform how training and consultation efforts proactively address teacher concerns, misconceptions, and needs in order to improve program acceptability.

Lastly, results indicated that teachers' underlying assumption about whether student social-emotional skills can be learned (Malleable) was moderately correlated with teacher ratings of student responsiveness to program lessons. This finding may suggest that teachers who believe that student social-emotional skills are influenced by experiences and able to change are more likely to perceive students to be engaged in and benefit from the skill instruction during lessons. Brackett et al. (2012) noted that teachers who do not believe that students can change their social-emotional skills through instruction in school may be less likely to buy-in and devote time to quality SEL implementation. In line with this, the current finding suggests that teachers who believe that student social-emotional skills are malleable may perceive themselves as successful in making their SEL instruction engaging and effective for students. This finding,

however, should be interpreted with caution given that other ASSET scores were not significantly related to teacher-rated student responsiveness, and no ASSET scores correlated with observer-rated student responsiveness.

### **Considerations for Measurement**

There are several potential explanations for why teachers' underlying assumptions about social-emotional skills as measured by the ASSET did not relate as expected with most implementation outcomes in this study. First, it should be noted that pre-implementation factors assessed by *both* the ASSET and the Brackett et al. (2012) measure were found to not demonstrate statistically significant relationships with *any* independent observer-rated implementation outcomes; relationships were only found with teacher self-report measures (Table 10). This finding could suggest that the source of implementation information is an important consideration not only for contextualizing this study within the existing literature but also for future SEL implementation and evaluation efforts. In the studies reviewed in Table 2, the majority of implementation outcomes were measured using teacher self-report, including two-thirds of the studies that assessed implementation quality. In those studies that included observer-rated outcomes (Domitrovich et al., 2015; Reyes et al., 2012; Wanless et al., 2013; 2015), all observers were coaches or trainers who had ongoing relationships with teachers (as opposed to members of a research team who were independent from the school context as in the current study).

Furthermore, while all the studies using self-report measures of implementation demonstrated at least one association with teacher-related implementation factors (Table 2), only half of the studies using an observational method found statistically significant relationships. Research has shown that teacher ratings tend to indicate higher levels of implementation as

compared to ratings from independent observers (Humphrey et al., 2013; Sanetti & Kratochwill, 2009), and ratings from different sources have varying levels of predictive utility relative to implementation (Wanless et al., 2013). It is possible that the mixed evidence regarding the relationship between teacher-related factors and implementation may relate to differences in methodology between these studies. It is also possible that the reason teachers' ratings at pre-implementation relate most strongly to their acceptability ratings at the end of the year is a reflection of a shared rater effect rather than a true predictive relationship (Malloy et al., 2015).

Another consideration for situating the current results within the SEL implementation literature is the type of implementation outcome assessed. The current study examined relationships between ASSET scores and several indicators of implementation including dosage, adherence, quality, student responsiveness, and acceptability. While almost all studies in Table 2 evaluated implementation dosage or usage, fewer studies incorporated measures of adherence or quality. Humphrey (2013) noted that the construct of implementation quality has been measured and defined in many different ways within the SEL literature base, which makes comparisons difficult. Consistent with this, one study (Malloy et al., 2015) used a one-item "measure" that asked teachers to comment on how well they taught the lesson to assess the outcome for implementation quality. Another (Beets et al., 2008) referred to "quality of delivery" as synonymous with "attitude towards a program" and measured it with items that were consistent with how program acceptability has been described by others (e.g., Proctor et al., 2011).

Relatedly, in previous work examining teacher ratings of their pre-implementation readiness, different terminology (e.g., beliefs, attitudes, perceptions, intentions, perspectives) have been used to describe these constructs. Individual-level implementation influences have been described using different terms like beliefs, perceptions, perspectives, experiences, and



intentions. Teacher perspectives about school climate or administrative support are used in analyses as individual-level factors in some studies but as school-level factors in others. Similarly, many studies do not differentiate between program-specific, intervention-specific, and general readiness factors. Sanetti and Collier-Meek (2019) described the conceptual and linguistic variability in implementation science as a major barrier for the field. Wanless and Domitrovich (2015) similarly asserted that there is more difference than consistency in studies of readiness factors hypothesized to impact implementation. Future research efforts can advance our understanding of the factors influencing SEL implementation outcomes by using psychometrically sound measures and becoming more precise and aligned—conceptually and linguistically.

### **Implications for School-Based SEL Implementation**

This study focused on just one sample and one program, so no definitive conclusions can be made without further replication. However, the findings suggest the proposed model of teachers' underlying assumptions hypothesized to impact implementation (Figure 1) should be reconsidered given limited evidence that pre-implementation ASSET scores can be utilized by practitioners and researchers to anticipate implementation outcomes. Interestingly, scores yielded from the Brackett et al. (2012) Teacher SEL Beliefs measure (Table 10) also demonstrated few relationships with indicators of later implementation. While it could be that fine-grained aspects of teacher assumptions and beliefs can be assessed by conceptually specific measures like the ASSET and the Brackett measure, current findings suggest that these precise belief components do not necessarily have a differentiated impact on implementation. Although an unexpected finding, a takeaway from this study may be that measures of teacher beliefs should be

consolidated (and clarified conceptually) rather than expanded in subsequent SEL implementation research.

While results of this study provided limited evidence that pre-implementation ASSET scores can be utilized by practitioners and researchers to anticipate implementation outcomes, more research is needed to determine if such a measure can be used to assess a teacher-level *outcome* associated with effective SEL implementation. There is some research to suggest that teacher beliefs may be malleable factors that should be assessed as effects alongside student outcomes in SEL impact studies (Rimm-Kauffman, 2004; Domitrovich et al., 2016). Given this, as a post-hoc analysis, pre-implementation and post-implementation ASSET and Teacher SEL Beliefs scores were compared in the current sample (Appendix J). Results indicated that teachers demonstrated increased Compatibility and Comfort scores post-implementation, and the positive change in Compatibility scores was associated with lesson dosage. Although exploratory, these results suggest that teacher-level outcomes of SEL implementation is an area ripe for further study.

Lastly, the field should continue to investigate possible implementation factors at different levels of influence and from different stakeholder perceptions. Despite a multitude of multi-level conceptual models guiding the field of implementation science, Domitrovich and colleagues (2019) recently authored the first study including multi-level factors (both teacher and school entered into the same model) to predict universal SEL implementation. While they noted that between-teacher variables were more explanatory than between-school variables, they suggested future work that examines factors at both levels. With respect to teacher-level variables, rather than focusing on teachers' self-report of internal perceptions and beliefs, indicators of teachers' actual skills, competencies, and behaviors may be more powerful

determinants of implementation. While a few studies have assessed teachers' skills through self-report (Brown et al., 2010; Domitrovich et al., 2015), Wanless et al. (2015) is the first study that used an observed indicator (teachers' engagement in pre-implementation training) to predict implementation. In future studies, research could examine indicators of teachers' instructional skills, "withitness" (Kounin, 1970), cultural competency, "going above and beyond" implementation actions (Ehrhart, 2015), and/or indicators of a teachers' active engagement in research activities (such as rate of response for student consent forms and completed questionnaires). Similarly, characteristics of school administrators and SEL intervention "champions" remain relatively unexamined in the SEL implementation literature to date, despite evidence that effective principals can significantly impact multiple aspects of instructional quality (Grissom et al., 2021). In addition, classroom-level factors like the characteristics and composition of students (e.g., student race, student-teacher racial match, poverty, achievement levels) may hold explanatory power for teachers' ability to implement programs effectively. Finally, student perspectives about their teacher, classroom, or the intervention may be important variables to consider.

### **Limitations**

This study represents only an initial evaluation of the ASSET scale; additional work is needed to further refine/improve the scale's psychometric properties and understand its usefulness in research and practice. Of particular concern, while asking items about each of the CASEL SEL skill domains was intended to provide a consistent framework through which all teachers considered their underlying assumptions, this format caused some methodological issues. Because slight variations of 12 core items were asked multiple times, this added length to the scale, presented potential multicollinearity problems, and may have inflated estimates of

internal consistency. Given that the ASSET is intended to be used in school settings, a shorter scale in which items are asked about social-emotional skills broadly warrants field testing.

Further, the Malleable subscale demonstrated substandard temporal stability, indicating concerns about the instability of those scores over time.

Teacher feedback during field testing indicated that several of the original items intended to assess teachers' attributions for social-emotional skill development were difficult to respond to; these items also demonstrated low inter-item correlations with other items on the scale. Should there be future field testing on the ASSET, item construction and revision should focus on strengthening the psychometric properties of these items. Likely because the majority of teachers generally support SEL efforts (Buchanan et al., 2009), the range of responses on items was restricted toward the upper end of the scale, which may have resulted in negatively skewed scores that could not differentiate between teachers with different assumptions. In addition, it is important to remember that predictive relationships reported in this study are correlational, and therefore no causal claims can be made. Finally, while the field testing sample was sufficiently large for the exploratory factor analysis and generally reflected the U.S. population of teachers, the majority of teachers were White and female. Given the importance of culturally-relevant interventions that meet local needs, future research should aim to examine factors that impact SEL implementation in racial/ethnic-minoritized teacher and student samples.

## **Conclusions**

Results from this study provide initial evidence that aspects of teachers' underlying assumptions about student social-emotional skills—specifically, whether skills are malleable, compatible and influential—can be reliably assessed using the ASSET. However, pre-implementation ASSET scores failed to relate to teachers' fidelity and quality of implementation

of a universal SEL program. Findings indicate that it may be possible to predict teachers' program-specific acceptability prior to training and implementation, allowing for targeted coaching and support—with the ultimate goal of continued program use and potentially increased effectiveness. However, until the field has a greater understanding of teacher-related and other factors that influence SEL implementation, it may be more practical to develop and utilize brief, rather than fine-grained, pre-implementation readiness measures for program planning and evaluation purposes.

## References

- Aarons, G. A. (2004). Mental health provider attitudes toward adoption of evidence-based practice: The evidence-based practice attitude scale (EBPAS). *Mental Health Services Research, 6*(2), 61–74. <https://doi.org/10.1023/B:MHSR.0000024351.12294.65>
- Aarons, G.A., McDonald, E. J., Sheehan, A., K., & Walrath-Greene, C. M. (2007). Confirmatory factor analysis of the Evidence-Based Practice Attitude Scale (EBPAS) in a geographically diverse sample of community mental health providers. *Administration and Policy Mental Health, 34*(5), 465-469. <http://doi.org/10.1007/s10488-007-0127-x>.
- Aarons G.A., Glisson, C., Hoagwood, K., Kelleher, K., Landsverk, J., & Cafri, G. (2010). Psychometric properties and United States norms of the Evidence-Based Practice Attitude Scale (EBPAS). *Psychological Assessment, 22*(2), 356-365. <http://doi.org/10.1037/a0019188>
- Andreou, E., & Rapti, A. (2010). Teachers' causal attributions for behaviour problems and perceived efficacy for class management in relation to selected interventions. *Behaviour Change, 27*(1), 53–67. <https://doi.org/10.1375/bech.27.1.53>
- Anyon, Y., Nicotera, N., & Veeh, C. A. (2016). Contextual influences on the implementation of a schoolwide intervention to promote students' social, emotional, and academic learning. *Children and Schools, 38*(2), 81–82. <https://doi.org/10.1093/cs/cdw008>
- Baker, C. N., Brown, S. M., Wilcox, P. D., Overstreet, S., & Arora, P. (2016). Development and psychometric evaluation of the attitudes related to trauma-informed care (ARTIC) scale. *School Mental Health, 8*, 61–76. <https://doi.org/10.1007/s12310-015-9161-0>

- Bandalos, D. L., & Finney, S. J. (2010). Factor analysis: Exploratory and confirmatory. In G. R. Hancock & R. O. Mueller (Eds.), *The reviewer's guide to quantitative methods in the social sciences* (pp. 125–155). Routledge Education.
- Bandura, A. (1978). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(4), 191–215. [https://doi.org/10.1016/0146-6402\(78\)90002-4](https://doi.org/10.1016/0146-6402(78)90002-4)
- Bandura, A. (1986). *Social foundations of thought and action. A social cognitive theory*. Prentice-Hall.
- Beavers, A. S., Lounsbury, J. W., Richards, J. K., Huck, S. W., Skolits, G. J., & Esquivel, S. L. (2013). Practical considerations for using exploratory factor analysis in educational research. *Practical Assessment, Research, and Evaluation*, *18*(6). <https://doi.org/10.7275/qv2q-rk76>
- Beets, M. W., Flay, B. R., Vuchinich, S., Acock, A. C., Li, K.-K., & Allred, C. (2008). School climate and teachers' beliefs and attitudes associated with implementation of the Positive Action program: A diffusion of innovations model. *Prevention Science*, *9*, 264–275. <https://doi.org/10.1007/s11121-008-0100-2>
- Berkel, C., Mauricio, A. M., Schoenfelder, E., & Sandler, I. N. (2011). Putting the pieces together: An integrated model of program implementation. *Prevention Science*, *12*(1), 23–33. <https://doi.org/10.1007/s11121-010-0186-1>
- Bibou-Nakou, I., Kiosseoglou, G., & Stogiannidou, A. (2000). Elementary teachers' perceptions regarding school behavior problems: Implications for school psychological services. *Psychology in the Schools*, *37*(2), 123–134. <https://doi.org/crcbtm>

- Brackett, M. A., Reyes, M. R., Rivers, S. E., Elbertson, N. A., & Salovey, P. (2012). Assessing teachers' beliefs about social and emotional learning. *Journal of Psychoeducational Assessment, 30*(3), 219-236. <https://doi.org/10.1177/0734282911424879>
- Bradshaw, C. P., Koth, C. W., Bevans, K. B., Ialongo, N., & Leaf, P. J. (2008). The impact of school-wide Positive Behavioral Interventions and Supports (PBIS) on the organizational health of elementary schools. *School Psychology Quarterly, 23*(4), 462–473. <https://doi.org/10.1037/a0012883>
- Bridgeland, J., Bruce, M., & Hariharan, A. (2013). *The missing piece: A national teacher survey on how social and emotional learning can empower children and transform schools*. Civic Enterprises, Hart Research Associates, and the Collaborative for Academic, Social, and Emotional Learning. <https://www.casel.org/wp-content/uploads/2016/01/the-missing-piece.pdf>
- Bronfenbrenner, U., & Morris, P. (1998). The ecology of developmental processes. In W. Damon & R.M Lerner (Eds.), *Theoretical models of human development: Vol. 1 of the Handbook of child psychology* (5<sup>th</sup> ed., pp. 993-1028). Wiley.
- Brophy, J. E. (1983). Research on the self-fulfilling prophecy and teacher expectations. *Journal of Educational Psychology, 75*(5), 631–661. <https://doi.org/10.1037/0022-0663.75.5.631>
- Brown, J. L., Jones, S. M., LaRusso, M. D., & Aber, J. L. (2010). Improving classroom quality: Teacher influences and experimental impacts of the 4rs program. *Journal of Educational Psychology, 102*(1), 153–167. <https://doi.org/10.1037/a0018160>
- Brownell, M. T., Adams, A., Sindelar, P., Waldron, N., & Vanhover, S. (2006). Learning from collaboration: The role of teacher qualities. *Exceptional Children, 72* (2), 169-185.



- Bryant, D. M., Clifford, R. M., & Peisner, E. S. (1991). Best practices for beginners: Developmental appropriateness in the kindergarten. *American Educational Research Journal*, 28(4), 783–803. <https://www.jstor.org/stable/1163021>
- Buchanan, R., Gueldner, B. A., Tran, O. K., & Merrell, K. W. (2009). Social and emotional learning in classrooms: A survey of teachers' knowledge, perceptions, and practices. *Journal of Applied School Psychology*, 25(2), 187–203. <https://doi.org/10.1080/15377900802487078>
- Caemmerer, J. M., & Keith, T. Z. (2015). Longitudinal, reciprocal effects of social skills and achievement from kindergarten to eighth grade. *Journal of School Psychology*, 53(4), 265–281. <https://doi.org/10.1016/j.jsp.2015.05.001>
- Carter, L. M. (2016). *Teachers' beliefs about children and their behavior: Furthering our measurement and understanding of how preschool teachers' beliefs relate to their interactions with young children*. [Doctoral dissertation, University of Virginia]. LibraETD. <https://doi.org/10.18130/V3PK1R>
- Carter, L. M., Williford, A. P., & LoCasale-Crouch, J. (2014). Reliability and validity of a measure of preschool teachers' attributions for disruptive behavior. *Early Education and Development*, 25(7), 949–972. <https://doi.org/1080/10409289.2014.898358>
- Cattell, R. B. (1966). The screen test for the number of factors. *Multivariate Behavioral Research*, 1, 245-276.
- Chang, M. L., & Davis, H. A. (2009). Understanding the role of teacher appraisals in shaping the dynamics of their relationships with students: Deconstructing teachers' judgments of disruptive behavior/students. In P. A. Schutz & M. Zembylas (Eds.), *Advances in teacher emotion research: The impact on teachers' lives*. Springer.

- Clark, C., & Peterson, P. (1986). Teachers' thought processes. In M.C. Wittrock (Ed.), *Handbook of research on teaching* (3<sup>rd</sup> ed., pp. 255–269). Macmillan.
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7(3), 309-310. <https://doi.org/10.1037/1040-3590.7.3.309>
- Cohen J (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20(1), 37-46. <https://doi.org/10.1177/001316446002000104>
- Cohen J (1968). Weighted kappa: Nominal scale agreement with provision for scaled disagreement or partial credit. *Psychological Bulletin*, 70(4), 213-220. <https://doi.org/10.1037/h0026256>
- Collaborative for Academic, Social, and Emotional Learning (2013). *2013 CASEL guide: Effective social and emotional learning programs: Preschool and elementary school edition*. <http://www.casel.org/preschool-and-elementary-edition-casel-guide/>
- Collaborative for Academic, Social, and Emotional Learning (2015). *2015 CASEL guide: Effective social and emotional learning programs: Middle and high school edition*. <http://secondaryguide.casel.org/>
- Collaborative for Academic, Social, and Emotional Learning (2020a). *CASEL'S SEL framework: What are the core competence areas and where are they promoted?* <https://casel.org/wp-content/uploads/2020/12/CASEL-SEL-Framework-11.2020.pdf>
- Collaborative for Academic, Social, and Emotional Learning (2020b). *SEL: Our theory of action for effective implementation*. <https://casel.org/theory-of-action/>

- Collie, R. J., Shapka, J. D., & Perry, N. E. (2012). School climate and social–emotional learning: Predicting teacher stress, job satisfaction, and teaching efficacy. *Journal of Educational Psychology, 104*(4), 1189–1204. <https://doi.org/10.1037/a0029356>
- Cook, C. R., Lyon, A. R., Kubergovic, D., Browning Wright, D., & Zhang, Y. (2015). A supportive beliefs intervention to facilitate the implementation of evidence-based practices within a multi-tiered system of supports. *School Mental Health, 7*(1), 49–60. <https://doi.org/10.1007/s12310-014-9139-3>
- Cook, C. R., Davis, C., Brown, E. C., Locke, J., Ehrhart, M. G., Aarons, G. A., Larson, M., & Lyon, A. R. (2018). Confirmatory factor analysis of the Evidence-Based Practice Attitudes Scale with school-based behavioral health consultants. *Implementation Science, 13*(1), 1-8. <https://doi.org/10.1186/s13012-018-0804-z>
- Costello, A.B., & Osborne, J.W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research and Evaluation, 10*(7), 1-9. <https://doi.org/10.7275/jyj1-4868>
- Damschroder, L. J., Aron, D. C., Rosalind, E. K., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science, 4*, 50–65. <https://doi.org/10.1186/1748-5908-4-50>.
- Dane, A. V., & Schneider, B. H. (1998). Program integrity in primary and early secondary prevention: Are implementation effects out of control? *Clinical Psychology Review, 18*(1), 23–45. [https://doi.org/10.1016/s0272-7358\(97\)00043-3](https://doi.org/10.1016/s0272-7358(97)00043-3)
- DeVellis, R. F. (2017). *Scale Development: Theory and Applications*. (4<sup>th</sup> ed.). Sage.

- DiPerna, J. C., Lei, P., Bellinger, J., & Cheng, W. (2015). Efficacy of the Social Skills Improvement System Classwide Intervention Program (SSIS-CIP) Primary Version, *School Psychology Quarterly*, *30*(1), 123–141. <https://doi.org/10.1037/spq0000079>
- DiPerna, J. C., Lei, P., Bellinger, J., & Cheng, W. (2016). Effects of a universal positive classroom behavior program on student learning. *Psychology in the Schools*, *53*(2), 189–203. <https://doi.org/10.1002/pits.21891>
- DiPerna, J. C., Lei, P., Cheng, W., Hart, S. C., & Bellinger, J. (2018). A cluster randomized trial of the Social Skills Improvement System-Classwide Intervention Program (SSIS-CIP) in first grade. *Journal of Educational Psychology*. *110*(1), 1-16. <https://doi.org/10.1037/edu0000191>
- Domitrovich, C. E., Bradshaw, C. P., Berg, J. K., Pas, E. T., Becker, K. D., Musci, R., Embry, D. D., & Ialongo, N. (2016). How do school-based prevention programs impact teachers? Findings from a randomized trial of an integrated classroom management and social-emotional program. *Prevention Science*, *17*, 325–337. <https://doi.org/10.1007/s11121-015-0618-z>
- Domitrovich, C. E., Bradshaw, C. P., Poduska, J. M., Hoagwood, K., Buckley, J. A., Olin, S., Hunter Romanelli, L., Leaf, P. J., Greenberg, M. T., & Ialongo, N. S. (2008). Maximizing the implementation quality of evidence-based preventive interventions in schools: A conceptual framework. *Advances in School Mental Health Promotion*, *1*(3), 6–28. <https://doi.org/10.1080/1754730X.2008.9715730>
- Domitrovich, C. E., Gest, S. D., Jones, D., Gill, S., & DeRousie, R. M. S. (2010). Implementation quality: Lessons learned in the context of the HeadStart REDI trial. *Early*

*Childhood Research Quarterly*, 25(3), 284–298. [https://doi.org/](https://doi.org/10.1016/j.ecresq.2010.04.001)

10.1016/j.ecresq.2010.04.001

Domitrovich, C. E., Gest, S. D., Gill, S., Jones, D. J., & DeRousie, R. S. (2009). Individual factors related to the professional development process of the Head Start REDI intervention. *Early Education and Development*, 20(3), 402–430. [https://doi.org/](https://doi.org/10.1080/10409280802680854) 10.1080/10409280802680854

Domitrovich, C., & Ialongo, N. (2008). *The Teacher Perceptions of the Intervention Attributes (TPIA) scale*. Unpublished technical report. Johns Hopkins University.

Domitrovich, C. E., Li, Y., Mathis, E. T., & Greenberg, M. T. (2019). Individual and organizational factors associated with teacher self-reported implementation of the PATHS curriculum. *Journal of School Psychology*, 76, 168–185. <https://doi.org/10.1016/j.jsp.2019.07.015>

Domitrovich, C. E., Pas, E. T., Bradshaw, C. P., Becker, K. D., Keperling, J. P., Embry, D. D., & Ialongo, N. (2015). Individual and school organizational factors that influence implementation of the PAX Good Behavior Game intervention. *Prevention Science*, 16(8), 1064–1074. [https://doi.org/ 10.1007/s11121-015-0557-8](https://doi.org/10.1007/s11121-015-0557-8)

Downer, J. T., LoCasale-Crouch, J., Hamre, B., & Pianta, R. (2009). Teacher characteristics associated with responsiveness and exposure to consultation and online professional development resources. *Early Education & Development*, 20(3), 431–455. [https://doi.org/](https://doi.org/10.1080/10409280802688626) 10.1080/10409280802688626

Driscoll, K. C., & Pianta, R. C. (2010). Banking time in Head Start: Early efficacy of an intervention designed to promote supportive teacher–child relationships. *Early Education & Development*, 21(1), 38–64. <https://doi.org/10.1080/10409280802657449>

- Driscoll, K. C., Wang, L., Mashburn, A. J., & Pianta, R. C. (2011). Fostering supportive teacher-child relationships: Intervention implementation in a state-funded preschool program. *Early Education and Development, 22*(4), 593–619.  
<https://doi.org/10.1080/10409289.2010.502015>
- Duckworth, A. L., & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science, 16*(12), 939–944.  
<https://doi.org/10.1111/j.1467-9280.2005.01641.x>
- Duckworth, A. L., & Yeager, D. S. (2015). Measurement matters: Assessing personal qualities other than cognitive ability for educational purposes. *Educational Researcher, 44*(4), 237–251. <https://doi.org/10.3102/0013189X15584327>
- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Pagani, L.S., Feinstein, L., Engel, M., Brooks-Gunn, J., Sexton, H., Duckworth, K., & Japel, C. (2007). School readiness and later achievement. *Developmental Psychology, 43*(6), 1428–1446. <https://doi.org/10.1037/0012-1649.43.6.1428>
- Durlak, J. A. (2015). Studying program implementation is not easy but it is essential. *Prevention Science, 16*(8), 1123–1127. <https://doi.org/10.1007/s11121-015-0606-3>
- Durlak, J. A. (2016). Programme implementation in social and emotional learning: Basic issues and research findings. *Cambridge Journal of Education, 46*(3), 333–345.  
<https://doi.org/1080/0305764X.2016.1142504>
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development, 82*(1), 405–432.  
<https://doi.org/10.1111/j.1467-8624.2010.01564.x>

- Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, 41*(3-4), 327–350. <https://doi.org/10.1007/s10464-008-9165-0>
- Dusenberry, L., Weissberg, R. P., Goren, P., & Domitrovich, C. (2014). *State standards to advance social and emotional learning. Findings from CASEL's state scan of social and emotional learning standards, preschool – high school, 2014*. Collaborative for Academic Social and Emotional Learning. <https://casel.org/wp-content/uploads/2016/06/casel-brief-on-state-standards-january-2014.pdf>
- Elias, M. J., Zins, J. E., Graczyk, P. A., & Weissberg, R. P. (2003). Implementation, sustainability, and scaling up of social-emotional and academic innovations in public schools. *School Psychology Review, 32*(3), 303–319. <https://doi.org/10.1080/02796015.2003.12086200>
- Eccles, M. P., & Mittman, B. S. (2006). Welcome to implementation science. *Implementation Science, 1*(1), 1–3. <https://doi.org/10.1186/1748-5908-1-1>
- Elliott, S. N., & Gresham, F. M. (2007). *Social Skills Improvement System: Classwide Intervention Program*. Pearson.
- Ehrhart, M. G., Aarons, G. A., & Farahnak, L. R. (2015). Going above and beyond for Implementation: the development and validity testing of the Implementation Citizenship Behavior Scale (ICBS). *Implementation Science, 10*(65). <https://doi.org/10.1186/s13012-015-0255-8>

- Evans, R., Murphy, S., & Scourfield, J. (2015). Implementation of a school-based social and emotional learning intervention: Understanding diffusion processes within complex systems. *Prevention Science, 16*(5), 754–764. <https://doi.org/10.1007/s11121-015-0552-0>
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C. & Strahan, Ev.J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272-299. <https://doi.org/10.1037/1082-989X.4.3.272>
- Field, A. P. (2013). *Discovering statistics using SPSS*. (4<sup>th</sup> ed.). Sage.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Addison-Wesley
- Forman, S. G., Shapiro, E. S., Coddling, R. S., Gonzales, J. E., Reddy, L. A, Rosenfield, S. A, ... Stoiber, K. C. (2013). Implementation science and school psychology. *School Psychology Quarterly, 28*(2), 77–100. <https://doi.org/10.1037/spq0000019>
- Glasgow, R. E., Lichtenstein, E., & Marcus, A. C. (2003). Why don't we see more translation of health promotion research to practice? Rethinking the efficacy-to-effectiveness transition. *American Journal of Public Health, 93*(8), 1261–1267. <https://doi.org/10.2105/ajph.93.8.1261>.
- Grant, S., Hamilton, L. S., Wrabel, S, L., Gomez, C. J., Whitaker, A., Leschitz, J. T., Unlu, F., Chavez-Herrerias, E. R., Baker, G., Barrett, M., Harris, M., Ramos, A. (2017). Social and emotional learning interventions under the Every Student Succeeds Act: Evidence review. RAND Corporation. <https://www.rand.org/t/RR2133>
- Greenberg, M. T. (2010). School-based prevention: Current status and future challenges. *Effective Education, 2*(1), 27-52. <https://doi.org/10.1080/19415531003616862>



Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., Kyriakidou, O., & Peacock, R. (2005).

*Diffusion of innovations in health service organizations: A systematic literature review.*

Blackwell.

Grissom, J. A., Egalite, A. J., & Lindsay, C. A. (2021). *How principals affect students and schools: A systematic synthesis of two decades of research.* The Wallace Foundation.

<http://www.wallacefoundation.org/principalsynthesis>

Hamre, B. K., & Downer, J. T. (2007). *Beliefs about intentional teaching.* Unpublished measure, University of Virginia.

Hamre, B. K., Pianta, R. C., Burchinal, M., Field, S., LoCasale-Crouch, J., Downer, J., & Scott-Little, C. (2012). A course on effective teacher–child interactions: Effects on teacher beliefs, knowledge, and observed practice. *American Education Research Journal*, 49(1), 88–123. <https://doi.org/10.3102/0002831211434596>

Han, S. S., & Weiss, B. (2005). Sustainability of teacher implementation of school-based mental health programs. *Journal of Abnormal Child Psychology*, 33(6), 665–679. <https://doi.org/10.1007/s10802-005-7646-2>

Hanson-Peterson, J. L., Schonert-Reichl, K. A., & Smith, V. (2016). Teachers' beliefs about emotions: Relations to teacher characteristics and social and emotional learning program implementation. *Solsko Polje*, 27(1/2), 13-39.

Hart, S. C., & DiPerna, J. C. (2017). Teacher responses and beliefs toward child misbehavior: Influence of cognitive skill deficits. *Journal of Applied School Psychology*, 33(1), 1-15. <https://doi.org/10.1080/15377903.2016.1229705>

- Hart, S. C., DiPerna, J. C., Lei, P., & Cheng, W. (2020). Nothing lost, something gained? Impact of a universal social skills program on future state test performance. *Educational Researcher*, 49(1), 5-19. <https://doi.org/10.3102/0013189X19898721>
- Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods*, 7(2), 191-205. <https://doi.org/10.1177/1094428104263675>
- Howard, M. C. (2016). A review of exploratory factor analysis decisions and overview of current practices: What are we doing and how can we improve? *International Journal of Human-Computer Interaction*, 32, 51-62. <https://doi.org/10.1080/10447318.2015.1087664>
- Humphrey, N. (Ed.). (2013). *Social and emotional learning: A critical appraisal*. Sage.
- Humphrey, N., Kalambouka, A., Wigelsworth, M., Lendrum, A., Deighton, J., & Wolpert, M. (2011). Measures of social and emotional skills for children and young people: A systematic review. *Educational and Psychological Measurement*, 71(4), 617–637. <https://doi.org/10.1177/0013164410382896>
- Hunter, L. J. & Bierman, K. L. (2020). Implementing a school readiness intervention in community-based childcare centers: Director and teacher perceptions. *Early Education and Development*. Advance online publication. <https://doi.org/10.1080/10409289.2020.1833162>
- Hunter, L. J., DiPerna, J. C., Hart, S. C., & Crowley, M. (2018). At what cost? Examining the cost effectiveness of a universal social-emotional learning program. *School Psychology Quarterly*, 33(1), 147-154. <https://doi.org/10.1037/spq0000232>

- Hyson, M. C., & Lee, K. (1996) Assessing early childhood teachers' beliefs about emotions: Content, contexts, and implications for practice. *Early Education and Development* 7(1), 59–78. [https://doi.org/10.1207/s15566935eed0701\\_5](https://doi.org/10.1207/s15566935eed0701_5)
- Jennings, P. A., & Greenberg, M. T. (2009). The Prosocial Classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research*, 79(1), 491–525. <https://doi.org/10.3102/0034654308325693>
- Jones, D., Greenberg, M.T., & Crowley, M. (2015). Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. *American Journal of Public Health*, 105(11), 2283-2290. <https://doi.org/10.2105/AJPH.2015.302630>
- Jones, S. M., Barnes, S. P., Bailey, R., & Doolittle, E. J. (2017). Promoting social and emotional competencies in elementary school. *The Future of Children*, 27(1), 49-72. <https://doi.org/10.1353/foc.2017.0003>
- Jones, S. M., & Bouffard, S. M. (2012). Social and emotional learning in schools: From programs to strategies. *Social Policy Report* 26(4), 1-33. <https://doi.org/10.1002/j.2379-3988.2012.tb00073.x>
- Jones, S. M. & Doolittle, E. J. (2017). Social and emotional learning: Introducing the issue. *The Future of Children*, 27(1), 3-12. <https://www.jstor.org/stable/44219018>
- Kazdin, A. E. (1981). Acceptability of child treatment techniques: The influence of treatment efficacy and adverse side effects. *Behavior Therapy*, 12(4), 493–506. [https://doi.org/10.1016/S0005-7894\(81\)80087-1](https://doi.org/10.1016/S0005-7894(81)80087-1)

- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20(1), 141-151.  
<https://doi.org/10.1177/001316446002000116>
- Klein, K. J., & Sorra, J. S. (1996). The challenge of innovation implementation. *Academy of Management Review*, 21(4), 1055–1080. <https://www.jstor.org/stable/259164>
- Kline, R. B. (2005). *Principles and practice of structural equation modeling*. The Guilford Press.
- Kline, R. B. (2013). Exploratory and confirmatory factor analysis. In Y. Petscher, C. Schatschneider, & D. L. Compton (Eds.), *Applied quantitative analysis education and the social sciences* (pp. 171–207). Routledge.
- Kounin, J. S. (1970). *Discipline and group management in classrooms*. New York: Holt, Rinehart and Winston
- Kress, J. S., & Elias, M. J. (2006). School-based social and emotional learning programs. In K. A. Renninger, I. E. Sigel, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Child psychology in practice* (Vol. 4, 6<sup>th</sup> ed., pp. 592-618). John Wiley.
- La Paro, K. M., Hamre, B. K., Locasale-Crouch, J., Pianta, R. C., Bryant, D., Early, D., Clifford, R., Barbarin, O., Howes, C., & Burchinal, M. (2009). Quality in kindergarten classrooms: Observational evidence for the need to increase children’s learning opportunities in early education classrooms. *Early Education and Development*, 20(4), 657-692.  
<https://doi.org/10.1080/10409280802541965>
- Lohrmann, S., Forman, S., Martin, S., & Palmieri, M. (2008). Understanding school personnel’s resistance to adopting schoolwide positive behavior support at a universal level of intervention. *Journal of Positive Behavior Interventions*, 10(4), 256–269.  
<https://doi.org/10.1177/1098300708318963>

- Low, S., Smolkowski, K., & Cook, C. (2016). What constitutes high-quality implementation of SEL programs? A latent class analysis of Second Step implementation. *Prevention Science, 17*, 981–991. <https://doi.org/10.1007/s11121-016-0670-3>
- MacCallum, R. C., Widaman, K., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods, 4*(1), 84-99. <https://doi.org/10.1037/1082-989X.4.1.84>
- Malloy, M., Acock, A., DuBois, D. L., Vuchinich, S., Silverthorn, N., Ji, P., & Flay, B. R. (2015). Teachers' perceptions of school organizational climate as predictors of dosage and quality of implementation of a social-emotional and character development program. *Prevention Science, 16*, 1086–1095. <https://doi.org/10.1007/s11121-014-0534-7>
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior, 2*(2), 99-113. <https://doi.org/10.1002/job.4030020205>
- McCoach, D. B., Gable, R. K., & Madura, J. P. (2013). *Instrument development in the affective domain: School and corporate applications* (Third Edition). Springer.
- Merrell, K.W., & Gueldner, B.A. (2010). *Social and emotional learning in the classroom: Promoting mental health and academic success*. Guilford.
- Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H. L., . . . Caspi, A. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences, 108*(7), 2693–2698. <https://doi.org/10.1073/pnas.1010076108>
- Nilsen, P. (2015). Making sense of implementation theories, models, and frameworks. *Implementation Science, 10*(53), 1-13. <https://doi.org/10.1186/s13012-015-0242-0>
- Nunnally, J., & Bernstein, I. (1994). *Psychometric theory*. McGraw-Hill.

- Okagaki, L., Albro, E. R., & Buckley, J. A. (2009). Institute of Education Sciences – Putting science back into education research. In R. St. Clair (Ed.), *Education science: Critical perspectives* (pp. 1-24). Sense Publishers. [https://doi.org/10.1163/9789087908461\\_002](https://doi.org/10.1163/9789087908461_002)
- Okonofua, J. A., Paunesku, D., & Walton, G. M. (2016). Brief intervention to encourage empathic discipline cuts suspension rates in half among adolescents. *Proceedings of the National Academy of Sciences of the United States of America*, *113*(19), 5221–5226. <https://doi.org/10.1073/pnas.1523698113>
- Owens, J. S., Lyon, A. R., Brandt, N. E., Warner, C. M., Nadeem, E., Spiel, C., & Wagner, M. (2014). Implementation science in school mental health: Key constructs in a developing research agenda. *School Mental Health*, *6*(2), 99-111. <https://doi.org/10.1007/s12310-013-9115-3>
- Pakarinen, E., Lerkkanen, M., Poikkeus, A., Salminen, J., Silinskas, G., Siekkinen, M., & Nurmi, J. (2017). Longitudinal associations between teacher-child interactions and academic skills in elementary school. *Journal of Applied Developmental Psychology*, *52*, 191–202. <https://doi.org/10.1016/j.appdev.2017.08.002>
- Pas, E. T., Waasdorp, T. E., & Bradshaw, C. P. (2015). Examining contextual influences on classroom-based implementation of Positive Behavior Support strategies: Findings from a randomized controlled effectiveness trial. *Prevention Science*, *16*(8), 1096–1106. <https://doi.org/10.1007/s11121-014-0492-0>
- Patil, V. H., Singh, S. N., Mishra, S., & Donovan, D. T. (2017). Parallel Analysis Engine to Aid in Determining Number of Factors to Retain using R [Computer software], available from <https://analytics.gonzaga.edu/parallelengine/>

- Pianta, R., Howes, C., Burchinal, M., Bryant, D., Clifford, R., Early, C., & Barbarin, O. (2005). Features of pre-kindergarten programs, classrooms, and teachers: Do they predict observed classroom quality and child-teacher interactions? *Applied Developmental Science, 9*(3), 144–159. [https://doi.org/10.1207/s1532480xads0903\\_2](https://doi.org/10.1207/s1532480xads0903_2)
- Poulou, M., & Norwich, B. (2002). Cognitive, emotional and behavioural responses to students with emotional and behavioural difficulties: A model of decision-making. *British Educational Research Journal, 28*(1), 111–138. <https://doi.org/10.1080/01411920120109784>
- Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R., & Hensley, M. (2011). Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health and Mental Health Services Research, 38*(2), 65–76. <https://doi.org/10.1007/s10488-010-0319-7>
- Ransford, C. R., Greenberg, M. T., Domitrovich, C. E., Small, M., & Jacobson L. (2009). The role of teachers' psychological experiences and perceptions of curriculum supports on implementation of a social and emotional learning curriculum. *School Psychology Review, 38*(4), 510-532.
- Reinke, W. M., Stormont, M., Herman, K. C., Puri, R., & Goel, N. (2011). *School Psychology Quarterly, 26*(1), 1-13. <http://doi.org/10.1037/a0022714>
- Reyna, C., & Weiner, B. (2001). Justice and utility in the classroom: An attributional analysis of the goals of teachers' punishment and intervention strategies. *Journal of Educational Psychology, 93*(2), 309–319. <https://doi.org/10.1037/0022-0663.93.2.309>

- Rimm-Kaufman, S. E., & Sawyer, B. E. (2004). Primary-grade teachers' self-efficacy beliefs, attitudes toward teaching, and discipline and teaching practice priorities in relation to the Responsive Classroom approach. *The Elementary School Journal*, *104*(4), 321–341. <http://www.jstor.org/stable/3202945>
- Rimm-Kaufman, S. E., Storm, M. D., Sawyer, B. E., Pianta, R. C., & LaParo, K. M. (2006). The Teacher Belief Q-Sort: A measure of teachers' priorities in relation to disciplinary practices, teaching practices, and beliefs about children. *Journal of School Psychology*, *44*, 141-165. <https://doi.org/10.1016/j.jsp.2006.01.003>
- Roberts, A. M., LoCasale-Crouch, DeCoster, J., Hamre, B. K., Downer, J. T., Williford, A. P., & Pianta, R. C. (2015). Individual and contextual factors associated with pre-kindergarten teachers' responsiveness to the MyTeachingPartner coaching intervention. *Prevention Science*, *16*(8), 1004-1053. <https://doi.org/10.1007/s11121-014-0533-8>
- Rogers, E. M. (2003). *Diffusion of innovations* (5<sup>th</sup> ed.). The Free Press.
- Rohrbach, L. A., Graham, J. W., & Hansen, W. B. (1993). Diffusion of a school-based substance abuse program: Predictors of implementation. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, *22*(2), 237–260. <https://doi.org/10.1006/pmed.1993.1020>
- Sanetti, L. M. H., & Collier-Meek, M. A. (2019). Increasing implementation science literacy to address the research-to-practice gap in school psychology. *Journal of School Psychology*, *76*, 33-47. <https://doi.org/10.1016/j.jsp.2019.07.008>
- Sanetti, L. M. H., & Kratochwill, T. R. (2009). Toward developing a science of treatment integrity: Introduction to the special series. *School Psychology Review*, *38*(4), 445–459.



- Schaefer, E. S., & Edgerton, M. (1985). Parent and child correlates of parental modernity. In I. E. Sigel (Ed.), *Parental belief systems* (pp. 287–318). Erlbaum.
- Schonert-Reichl, K. A. (2017). Social and emotional learning and teachers. *The Future of Children*, 27(1), 137-155. <https://www.jstor.org/stable/44219025>
- Schultz, D., Ambike, A., Stapleton, L. M., Domitrovich, C. E., Schaeffer, C. M., & Bartels, B. (2010). Development of a questionnaire assessing teacher perceived support for and attitudes about social and emotional learning. *Early Education and Development*, 21(6), 865–885. <https://doi.org/10.1080/10409280903305708>
- Social and Character Development Research Consortium. (2010). *Efficacy of schoolwide programs to promote social and character development and reduce problem behavior in elementary school children* (NCER 2011-2001). National Center for Education Research, Institute of Education, U.S. Department of Education. <https://ies.ed.gov/ncer/pubs/20112001/>
- Stith, S., Pruitt, I., Dees, J., Fronce, M., Green, N., Som, A., & Linkh, D. (2006). Implementing community-based prevention programming: A review of the literature. *Journal of Primary Prevention*, 27(6), 599-617. <https://doi.org/10.1007/s10935-006-0062-8>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multi-variate statistics* (6<sup>th</sup> ed.). Allyn & Bacon.
- Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting positive youth development through school-based social and emotional learning interventions: A meta-analysis of follow-up effects, *Child Development*, 88(4), 1156–1171. <https://doi.org/10.1111/cdev.12864>

- Torres, M. M., Domitrovich, C. E., & Bierman, K. L. (2015). Preschool interpersonal relationships predict kindergarten achievement: Mediated by gains in emotion knowledge. *Journal of Applied Developmental Psychology, 39*, 44–52.  
<https://doi.org/10.1016/j.appdev.2015.04.008>
- U.S. Department of Education. (2019). *Number and percentage distribution of teachers in public elementary and secondary schools, by instructional level and selected teacher and school characteristics: 1999-2000 and 2017-18*. National Center for Education Statistics, Institute of Education Science.  
[https://nces.ed.gov/programs/digest/d19/tables/dt19\\_209.22.asp](https://nces.ed.gov/programs/digest/d19/tables/dt19_209.22.asp)
- Wandersman, A., Duffy, J., Flaspohler, P., Noonan, R., Lubell, K., Stillman, L., Blachman, M., Dunville, R., & Saul, J. (2008). Bridging the gap between prevention research and practice: The interactive systems framework for dissemination and implementation. *American Journal of Community Psychology, 41* (3–4), 171–181.  
<https://doi.org/10.1007/s10464-008-9174-z>
- Wanless, S. B., Patton, C. L., Rimm-Kaufman, S. E., & Deutsch, N. L. (2013). Setting-level influences on implementation of the Responsive Classroom approach. *Prevention Science, 14*(1), 40–51. <https://doi.org/10.1007/s11121-012-0294-1>
- Wanless, S. B., & Domitrovich C. E. (2015). Readiness to implement school-based social-emotional learning interventions: Using research on factors related to implementation to maximize quality. *Prevention Science, 16*, 1037-1043. <https://doi.org/10.1007/s11121-015-0612-5>
- Wanless, S. B., Rimm-Kaufmann, S. E., Abry, T., Larsen, R. A., & Patton, C. L. (2015). Engagement in training as a mechanism to understanding fidelity of implementation of

- the Responsive Classroom approach. *Prevention Science*, 16, 1107-1116.  
<https://doi.org/10.1007/s11121-014-0519-6>
- Watkins, M. W. (2006). Determining parallel analysis criteria. *Journal of Modern Applied Statistical Methods*, 5(2), 344–346. <https://doi.org/10.22237/jmasm/1162354020>
- Weiner, B. (1985). An attribution theory of achievement, motivation, and emotion. *Psychological Review*, 92(4), 548–573. <https://doi.org/10.1037/0033-295X.92.4.548>
- Wigelsworth, M., Lendrum, A., Oldfield, J., Scott, A., ten Bokkel, I., Tate, K., & Emery, C. (2016). The impact of trial stage, developer involvement and international transferability on universal social and emotional learning programme outcomes: A meta-analysis. *Cambridge Journal of Education*, 46(3), 347-376.  
<https://doi.org/10.1080/0305764X.2016.1195791>
- Wollersheim Shervey, S. W., Sandilos, L. E., DiPerna, J. C., & Lei, P. (2017). Social validity of the Social Skills Improvement System-Classwide Intervention Program (SSIS-CIP) in the primary grades. *School Psychology Quarterly*, 32(3), 414-421.  
<https://doi.org/10.1037/spq0000203>
- Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis for recommendations for best practices. *The Counseling Psychologist*, 34(6), 806–838.  
<https://doi.org/10.1177/0011000006288127>
- Yeager, D. S. (2017). Social-emotional learning programs for adolescents. *The Future of Children*, 27(1), 73-94. <https://www.jstor.org/stable/44219022>

## Appendix A

### Pilot version of the Assumptions Supporting Social-Emotional Teaching (ASSET) Scale

CONSENT FOR RESEARCH – The Pennsylvania State University

*You are being invited to volunteer to participate in a research study. This summary explains information about the research:*

#### Why is this research study being done?

We are asking you to be in this research because you are currently a K – 12 teacher in the United States. This research is being done to understand teacher perspectives about student social-emotional learning.

#### What will happen in this research study?

You will respond to an online questionnaire. You will also be asked for some brief demographic information. At the end of the questionnaire, you can elect to take a portion of the questionnaire again in 3 weeks. After completing the questionnaire(s), you will have the option of being entered into a drawing for Amazon.com gift cards.

#### How will your confidentiality be protected if you decide to take part in this research study?

No personally identifying information will be connected to your responses. Although no guarantees can be made regarding the interception of data sent via the Internet by any third parties, data will be stored without any identifying information and responses will be kept confidential to the full extent permitted by the technology used.

If you have questions or concerns, you should contact Susan Crandall Hart at 814-863-2485 or susan.hart@psu.edu. If you have questions regarding your rights as a research subject or concerns regarding your privacy, you may contact the Office for Research Protections at 814-865-1775. Your participation is voluntary and you may decide to stop at any time. You do not have to answer any questions that you do not want to answer.

**Your participation implies your voluntary consent to participate in the research. Please keep or print a copy of this form for your records. To continue, click on your response below.**

- I consent to participate in the survey.
- I do not consent to participate in the survey.

We are interested in learning about teachers' perspectives on students' **social and emotional skills** including self-awareness, self-management, Social-Awareness, Relationship Skills, and Responsible Decision-Making. There are no right or wrong answers. We are simply interested in your perspective based on your own beliefs and experiences. To participate in this survey, you must currently be a K – 12 teacher in the United States. Are you currently a K-12 teacher in the United States?

- Yes
- No

**Self-awareness** is accurately recognizing one's own emotions, thoughts, and behaviors.

- *Example skills/behaviors include:* recognizing when sad or frustrated; understanding the impact of thoughts/attitudes on feelings/actions.

**Self-management** is defined as regulating one's emotions, thoughts, & behaviors.

- *Example skills/behaviors include:* following the rules; paying attention; staying calm with others; setting and working toward goals.

**Social-awareness** is defined as taking the perspective of and empathizing with others.

- *Example skills/behaviors include:* understanding how others feel; doing nice things for others; standing up for others; showing empathy and compassion.

**Relationship skills** are defined as establishing and maintaining healthy relationships with others.

- *Example skills/behaviors include:* getting along with peers and adults; making compromises; taking turns in conversation; resolving conflicts.

**Responsible decision-making** is defined as making constructive choices about behavior and interactions.

- *Example skills/behaviors include:* doing the right thing when unsupervised; identifying problems and solutions; taking responsibility for one's behaviors; thinking about the consequences before acting.

**Student Self-awareness, Self-management, Social-awareness, Relationship skills, and Responsible Decision-Making...**

	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>Prefer not to answer</b>
...is influenced by their <b>genetics</b> .						
...is <b>changeable</b> over time.						
...is influenced by their <b>experiences</b> .						
...is <b>under student's control</b> .						
...is influenced by <b>my classroom instruction</b> .						
...should be <b>taught to all students</b> as part of core instruction (similar to academic skills such as reading or math) at the grade level I teach.						
...is <b>important to explicitly teach</b> (i.e., through formal lessons) in my classroom.						
...is <b>feasible to explicitly teach</b> (i.e., through formal lessons) in my classroom.						
...impacts my students' <b>classroom behavior</b> .						
...impacts my students' <b>academic achievement</b> .						
...will impact my students' <b>future educational progress</b> .						
...will impact my student's <b>future job success</b> .						

If there were any questions above that were unclear or difficult to answer, please provide feedback here:

## Appendix B

### Teacher Demographic Items

What is your age?

What is your gender?

- Male
- Female
- Transgender
- Gender-queer/Non-conforming
- Other
- Prefer not to answer

Are you Hispanic or Latino? (Select all that apply.)

- No, I am not Hispanic or Latino(a), or Spanish origin
- Yes, I am Mexican, Mexican American, or Chicano(a)
- Yes, I am Puerto Rican
- Yes, I am Cuban or Cuban American
- Yes, I am from some other Hispanic or Latino(a) background
- Prefer not to answer

Which of the following best describes you? (Select all that apply.)

- Asian
- American Indian/Alaska Native
- Black/African-American
- Native Hawaiian or Other Pacific Islander
- White
- Other:
- Prefer not to answer

What is the approximate racial/ethnic composition of your students? Enter approximate percentages below that sum up to 100.

- Asian
- American Indian/Alaska Native
- Black/African-American
- Native Hawaiian or Other Pacific Islander
- White, Not Hispanic or Latino(a)
- Hispanic or Latino(a)
- Other

What grade level do you currently teach? \_\_\_\_\_

Please select what best describes your current role:

- General education teacher (self-contained)
- Special education teacher (self-contained)
- Special education teacher (pull-out)
- Subject area teacher – please specify:
- Other – please describe:
- Prefer not to answer

In what type of school do you currently teach?

- Traditional public school
- Charter school
- Private school
- Other – please describe:
- Prefer not to answer

In which date do you currently teach? \_\_\_\_\_

In what type of community do you each?

- Urban
- Suburban
- Rural
- Other – please specify:
- Prefer not to answer

Excluding student teaching how many years have you been teaching, counting this year? \_\_\_\_\_

Do you currently hold a regular or standard certificate that is valid in the state in which you are currently teaching?

- Yes, I hold a permanent certificate
- Yes, I hold a temporary certificate (this type of certificate may require additional coursework, student teaching, etc.)
- No, but I am currently working toward certification
- No, and I am not currently working toward certification
- Prefer not to answer

Did you enter teaching through an alternative route to certification program? (An alternative route to certification program is a program that was designed to expedite the transition of non-teachers to a teaching career, for example, a state, district, or university alternative to certification program)

- Yes
- No
- Prefer not to answer



What is the highest level of education you have completed?

- Less than high school
- High school diploma or equivalent
- Associate degree/vocational certification
- Bachelor's degree
- Master's degree
- Education specialist or professional diploma based on at least one year's work past master's degree
- Doctorate
- Professional degree (e.g., M.D., L.L.B., J.D., D.D.)

Your random ID number is: XXXXX. Please write down this number now. You will need it on the next page. On the next page, you will be redirected to a link to have the option of entering into a gift card drawing.

## Appendix C

### Researcher-Developed Items Assessing SEL Experience

Please rate the extent to which you...

	Not At All	Very Little	Somewhat	To a Great Extent	Prefer Not to Answer
...are familiar with social-emotional learning.					
...have read about social-emotional learning.					
...have used social-emotional learning approaches in your classroom.					
...learned about student social-emotional development in your preservice training.					
...were taught social-emotional learning practices in your preservice training.					

How do you teach social-emotional skills in your classroom?

- Formal lessons (i.e., explicit/direct instruction, modeling, practice, feedback)
- Informal lessons (i.e., teachable moments, reinforcement)
- Other (please explain):
- I do not teach social-emotional skills in my classroom.
- Prefer not to answer

Which of the following social-emotional skills do you teach/emphasize in your classroom?  
(Select all that apply.)

- Self-awareness
- Self-management
- Social-awareness
- Relationship skills
- Responsible decision-making
- Other (please explain):
- Prefer not to answer

Have you ever used a social-emotional program?

- Yes
- No
- Prefer not to answer

When have you taught a social-emotional learning program?

- Within the last year
- Within the past 3 years
- Withing the past 5 years
- Other:
- Prefer not to answer

For how many years have you taught a social-emotional learning program? \_\_\_\_\_

Which social-emotional learning programs have you used? (Select all that apply.)

- PATHS
- Second Step
- SSIS-CIP
- Responsive Classroom
- Incredible Years
- Positive Action
- Other:
- Prefer not to answer

## Appendix D

### Teacher SEL Beliefs Scale (Brackett et al., 2012)

	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
I feel confident in my ability to provide instruction on social and emotional learning.					
I am comfortable providing instruction on social and emotional skills to my students.					
Taking care of my students' social and emotional needs comes naturally to me.					
Informal lessons in social and emotional learning are part of my regular teaching practice.					
I would like to attend a workshop to learn how to develop my students' social and emotional skills.					
I would like to attend a workshop to learn how to develop my own social and emotional skills.					
I want to improve my ability to teach social and emotional skills to students.					
All teachers should receive training on how to teach social and emotional skills to students.					
My principal creates an environment that promotes social and emotional learning for our students.					
The culture in my school supports the development of children's social and emotional skills.					
My principal does not encourage the teaching of social and emotional skills to students.					
My school expects teachers to address children's social and emotional needs.					

## Appendix E

### *Teacher Feedback about ASSET Pilot Items*

Teachers in the online sample provided a total of 33 qualitative comments on the questionnaire. About half of these comments (16) did not focus on providing feedback on specific items, but instead stated teachers' general perspectives about teaching SEL in schools. Many teachers shared thoughts on whether instruction of social-emotional skills has a place in the school setting with several mentioning that they felt they should primarily be taught at home. Several teachers brought up concerns about students who live in poverty or lack access to outside services and how the burden for supporting students falls on schools. Others mentioned that they have concerns about student mental health.

The remaining 17 comments provided specific feedback on items. Of these, 59% of the comments provided critical feedback on the *own control* items. Teachers indicated that this question was difficult to answer because it seemed to be dependent on developmental level and other characteristics of students. In addition, teachers commented that this item was difficult to understand and interpret. One representative comment was, "... I was conflicted between "agree" and "disagree" for the '...under my student's control' questions. They [students] make a choice, but they must be taught how to appropriately make that choice. They are only in control when they are aware of their options, otherwise it is their past experiences that will be reflected in their decisions."

Another 24% of the comments focused on the Feasibility items. Teacher comments focused on the difference between their own personal perspectives about feasibility relative to the feasibility at their grade level or within their school setting. For example, "...[It is] unclear if that is referring to my personal ability to teach it, or do I have the time and resources to teach it

in current conditions, or is it allowed for by administration...lots of ways to interpret this one.”

Lastly, 18% of the comments focused on Genetics items being difficult to answer. For example, one teacher stated, “Don’t totally agree with the genetics statements, and there isn’t an area to ask for clarification.”

## Appendix F

### Inter-Item Correlation Tables for ASSET Pilot Items

**Table F1**

*Inter-Item Correlations between Genetics Items and all ASSET Pilot Items*

	Genetics (SeA)	Genetics (SeM)	Genetics (SoA)	Genetics (RS)	Genetics (RD)
Genetics (SeA)	-	-	-	-	-
Genetics (SeM)	.56	-	-	-	-
Genetics (SoA)	.55	.54	-	-	-
Genetics (RS)	.49	.54	.67	-	-
Genetics (RD)	.53	.55	.63	.71	-
Change (SeA)	-.05	.03	-.02	-.04	-.05
Change (SeM)	-.08	-.07	-.06	-.03	-.05
Change (SoA)	-.04	.03	-.07	-.01	.00
Change (RS)	-.05	-.04	-.07	-.07	-.02
Change (RD)	.04	-.02	.03	-.04	.01
Experience (SeA)	-.01	.02	-.08	.00	.00
Experience (SeM)	.00	.08	.00	.05	.01
Experience (SoA)	-.04	.11	-.01	.04	.03
Experience (RS)	.03	.09	.04	.03	.09
Experience (RD)	.03	.05	.05	.06	.11
Own Control (SeA)	-.02	.00	.00	.01	.00
Own Control (SeM)	-.02	-.02	.00	.03	.03
Own Control (SoA)	-.06	.06	-.02	.01	.04
Own Control (RS)	.00	.06	.01	.01	.05
Own Control (RD)	.09	.11	.04	.00	-.02
Instruction (SeA)	.00	.03	-.01	.00	.01
Instruction (SeM)	.11	.17	.08	.16	.11
Instruction (SoA)	-.02	.14	.03	.08	.09
Instruction (RS)	-.04	.09	.06	.16	.14
Instruction (RD)	.11	.08	.15	.13	.11
Universal (SeA)	.04	.03	.11	.09	.11
Universal (SeM)	.04	-.05	.14	.10	.07
Universal (SoA)	.05	.01	.01	.05	.11
Universal (RS)	.06	.03	.08	.14	.12
Universal (RD)	.09	.01	.10	.09	.10

Important (SeA)	-.06	-.02	.06	.07	.05
Important (SeM)	-.03	.00	.05	.11	.09
Important (SoA)	.00	.05	.08	.07	.10
Important (RS)	-.05	-.01	.01	.04	.07
Important (RD)	-.03	-.03	.02	-.01	.03
Feasible (SeA)	-.05	-.01	-.02	.05	.04
Feasible (SeM)	-.03	-.05	-.02	.01	.00
Feasible (SoA)	-.05	-.03	-.03	-.03	.02
Feasible (RS)	-.08	-.06	-.04	-.04	.04
Feasible (RD)	-.01	-.04	.05	-.01	.02
Behavior (SeA)	-.03	.04	.07	.03	-.01
Behavior (SeM)	-.01	.00	.04	.03	.01
Behavior (SoA)	-.05	-.02	.01	.06	.03
Behavior (RS)	.02	-.01	.01	.04	.03
Behavior (RD)	-.01	-.06	.01	-.03	.00
Academic (SeA)	-.05	.06	.03	.06	-.03
Academic (SeM)	.01	.06	.03	.04	.01
Academic (SoA)	.05	.10	.12	.15	.12
Academic (RS)	-.01	.04	.08	.09	.10
Academic (RD)	-.03	-.02	.03	.00	.04
Education (SeA)	.02	.09	.04	.09	.07
Education (SeM)	.02	.06	.08	.09	.08
Education (SoA)	.02	.05	.09	.11	.09
Education (RS)	.01	.02	.04	.05	.08
Education (RD)	.00	-.03	.02	.01	.06
Job (SeA)	-.02	.08	.03	.06	.03
Job (SeM)	.01	.05	.07	.07	.01
Job (SoA)	.02	.02	.06	.03	.07
Job (RS)	-.06	.01	.02	.02	.03
Job (RD)	.02	-.02	.03	-.01	.04

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above .60.



**Table F2***Inter-Item Correlations between Change Items and all ASSET Pilot Items*

	Change (SeA)	Change (SeM)	Change (SoA)	Change (RS)	Change (RD)
Genetics (SeA)	-.05	-.08	-.04	-.05	.04
Genetics (SeM)	.03	-.07	.03	-.04	-.02
Genetics (SoA)	-.02	-.06	-.07	-.07	.03
Genetics (RS)	-.04	-.03	-.01	-.07	-.04
Genetics (RD)	-.05	-.05	.00	-.02	.01
Change (SeA)	-	-	-	-	-
Change (SeM)	.59	-	-	-	-
Change (SoA)	.44	.52	-	-	-
Change (RS)	.39	.46	.56	-	-
Change (RD)	.43	.48	.55	.57	-
Experience (SeA)	.32	.23	.29	.14	.23
Experience (SeM)	.33	.44	.40	.36	.33
Experience (SoA)	.30	.37	.52	.31	.36
Experience (RS)	.33	.39	.37	.46	.38
Experience (RD)	.29	.35	.36	.42	.51
Own Control (SeA)	.15	.19	.10	.10	.05
Own Control (SeM)	.14	.20	.15	.16	.11
Own Control (SoA)	.11	.18	.29	.22	.18
Own Control (RS)	.09	.18	.17	.19	.11
Own Control (RD)	.07	.08	.10	.10	.17
Instruction (SeA)	.26	.29	.15	.17	.14
Instruction (SeM)	.28	.37	.26	.26	.31
Instruction (SoA)	.30	.34	.37	.31	.23
Instruction (RS)	.24	.30	.26	.32	.18
Instruction (RD)	.21	.22	.22	.25	.33
Universal (SeA)	.04	.09	.10	.13	.13
Universal (SeM)	.07	.20	.15	.22	.19
Universal (SoA)	.14	.16	.26	.27	.23
Universal (RS)	.11	.23	.20	.28	.23
Universal (RD)	.12	.20	.15	.25	.26
Important (SeA)	.12	.20	.17	.20	.15
Important (SeM)	.14	.12	.12	.13	.16
Important (SoA)	.17	.14	.17	.17	.16
Important (RS)	.20	.21	.21	.26	.22

Important (RD)	.22	.23	.21	.32	.27
Feasible (SeA)	.12	.13	.08	.08	.12
Feasible (SeM)	.10	.14	.13	.14	.14
Feasible (SoA)	.15	.17	.23	.18	.13
Feasible (RS)	.20	.17	.14	.15	.15
Feasible (RD)	.13	.16	.15	.16	.19
Behavior (SeA)	.33	.33	.25	.22	.27
Behavior (SeM)	.21	.38	.29	.27	.30
Behavior (SoA)	.24	.30	.33	.34	.35
Behavior (RS)	.25	.33	.28	.34	.33
Behavior (RD)	.25	.29	.25	.33	.42
Academic (SeA)	.27	.27	.20	.19	.25
Academic (SeM)	.20	.32	.27	.25	.28
Academic (SoA)	.17	.22	.26	.21	.27
Academic (RS)	.18	.25	.18	.27	.31
Academic (RD)	.28	.31	.28	.35	.40
Education (SeA)	.23	.20	.20	.18	.22
Education (SeM)	.18	.30	.25	.24	.24
Education (SoA)	.16	.20	.23	.23	.25
Education (RS)	.18	.25	.19	.27	.26
Education (RD)	.26	.32	.31	.35	.38
Job (SeA)	.22	.18	.17	.15	.16
Job (SeM)	.20	.32	.23	.23	.27
Job (SoA)	.20	.21	.24	.24	.29
Job (RS)	.22	.28	.25	.28	.26
Job (RD)	.26	.30	.30	.35	.38

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS= Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above .60.

**Table F3***Inter-Item Correlations between Experience Items and all ASSET Pilot Items*

	Experience (SeA)	Experience (SeM)	Experience (SoA)	Experience (RS)	Experience (RD)
Genetics (SeA)	-.01	.00	-.04	.03	.03
Genetics (SeM)	.02	.08	.11	.09	.05
Genetics (SoA)	-.08	.00	-.01	.04	.05
Genetics (RS)	.00	.05	.04	.03	.06
Genetics (RD)	.00	.01	.03	.09	.11
Change (SeA)	.32	.33	.30	.33	.29
Change (SeM)	.23	.44	.37	.39	.35
Change (SoA)	.29	.40	.52	.37	.36
Change (RS)	.14	.36	.31	.46	.42
Change (RD)	.23	.33	.36	.38	.51
Experience (SeA)	-	-	-	-	-
Experience (SeM)	.43	-	-	-	-
Experience (SoA)	.36	.52	-	-	-
Experience (RS)	.30	.52	.60	-	-
Experience (RD)	.29	.43	.49	.59	-
Own Control (SeA)	.01	.06	-.02	.05	-.02
Own Control (SeM)	-.03	.09	-.01	.06	.01
Own Control (SoA)	.03	.11	.18	.12	.04
Own Control (RS)	.02	.08	.05	.09	.05
Own Control (RD)	-.03	.04	.02	.04	.05
Instruction (SeA)	.17	.26	.20	.20	.12
Instruction (SeM)	.05	.26	.23	.22	.24
Instruction (SoA)	.17	.25	.33	.21	.26
Instruction (RS)	.07	.20	.24	.25	.20
Instruction (RD)	.14	.17	.22	.21	.27
Universal (SeA)	.07	.14	.12	.12	.11
Universal (SeM)	.05	.17	.20	.21	.22
Universal (SoA)	.12	.17	.23	.21	.28
Universal (RS)	.11	.22	.26	.30	.31
Universal (RD)	.08	.20	.23	.29	.34
Important (SeA)	.07	.12	.22	.24	.23
Important (SeM)	.06	.03	.13	.10	.11
Important (SoA)	.05	.08	.17	.14	.20
Important (RS)	.09	.15	.21	.28	.31

Important (RD)	.09	.22	.21	.30	.33
Feasible (SeA)	.01	.08	.15	.09	.16
Feasible (SeM)	.07	.06	.14	.13	.22
Feasible (SoA)	.02	.07	.19	.14	.17
Feasible (RS)	.05	.07	.16	.18	.18
Feasible (RD)	.02	.13	.14	.19	.19
Behavior (SeA)	.23	.28	.41	.38	.30
Behavior (SeM)	.21	.35	.41	.46	.41
Behavior (SoA)	.19	.29	.41	.42	.43
Behavior (RS)	.19	.34	.42	.45	.43
Behavior (RD)	.18	.30	.39	.42	.46
Academic (SeA)	.17	.26	.33	.34	.28
Academic (SeM)	.20	.33	.39	.40	.39
Academic (SoA)	.08	.17	.27	.29	.30
Academic (RS)	.11	.21	.28	.32	.38
Academic (RD)	.18	.30	.38	.38	.43
Education (SeA)	.23	.30	.30	.36	.30
Education (SeM)	.22	.36	.35	.42	.39
Education (SoA)	.14	.20	.23	.26	.28
Education (RS)	.14	.25	.26	.36	.35
Education (RD)	.21	.33	.37	.43	.47
Job (SeA)	.22	.29	.28	.34	.29
Job (SeM)	.20	.33	.31	.37	.33
Job (SoA)	.20	.25	.26	.36	.34
Job (RS)	.20	.29	.32	.46	.34
Job (RD)	.24	.36	.36	.47	.42

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .

**Table F4***Inter-Item Correlations between Own Control Items and all ASSET Pilot Items*

	Own Control (SeA)	Own Control (SeM)	Own Control (SoA)	Own Control (RS)	Own Control (RD)
Genetics (SeA)	-.02	-.02	-.06	.00	.09
Genetics (SeM)	.00	-.02	.06	.06	.11
Genetics (SoA)	.00	.00	-.02	.01	.04
Genetics (RS)	.01	.03	.01	.01	.00
Genetics (RD)	.00	.03	.04	.05	-.02
Change (SeA)	.15	.14	.11	.09	.07
Change (SeM)	.19	.20	.18	.18	.08
Change (SoA)	.10	.15	.29	.17	.10
Change (RS)	.10	.16	.22	.19	.10
Change (RD)	.05	.11	.18	.11	.17
Experience (SeA)	.01	-.03	.03	.02	-.03
Experience (SeM)	.06	.09	.11	.08	.04
Experience (SoA)	-.02	-.01	.18	.05	.02
Experience (RS)	.05	.06	.12	.09	.04
Experience (RD)	-.02	.01	.04	.05	.05
Own Control (SeA)	-	-	-	-	-
Own Control (SeM)	.61	-	-	-	-
Own Control (SoA)	.43	.53	-	-	-
Own Control (RS)	.45	.58	.55	-	-
Own Control (RD)	.45	.56	.54	.63	-
Instruction (SeA)	.26	.14	.15	.17	.08
Instruction (SeM)	.25	.24	.20	.23	.19
Instruction (SoA)	.17	.15	.34	.21	.18
Instruction (RS)	.16	.11	.20	.22	.08
Instruction (RD)	.10	.14	.23	.19	.22
Universal (SeA)	.05	-.01	.01	.04	-.02
Universal (SeM)	.00	.00	.04	.05	-.03
Universal (SoA)	-.04	-.07	.09	.00	-.07
Universal (RS)	-.01	-.01	.03	.04	-.03
Universal (RD)	.04	.00	.05	.07	.01
Important (SeA)	.06	.11	.12	.13	.05
Important (SeM)	.07	.07	.16	.11	.04
Important (SoA)	.05	.04	.18	.07	.05
Important (RS)	.06	.10	.13	.12	.04

Important (RD)	.11	.12	.13	.09	.09
Feasible (SeA)	.10	.06	.08	.08	.02
Feasible (SeM)	.11	.13	.12	.14	.08
Feasible (SoA)	.07	.07	.21	.12	.05
Feasible (RS)	.07	.09	.17	.16	.05
Feasible (RD)	.09	.08	.17	.14	.09
Behavior (SeA)	.13	.08	.17	.19	.02
Behavior (SeM)	.00	.00	.09	.11	.02
Behavior (SoA)	.03	-.03	.12	.05	.04
Behavior (RS)	.08	.02	.12	.12	.09
Behavior (RD)	.13	.10	.17	.14	.13
Academic (SeA)	.08	.07	.18	.17	.07
Academic (SeM)	.04	.09	.10	.14	.07
Academic (SoA)	.10	.02	.14	.07	.03
Academic (RS)	.13	.06	.09	.09	.04
Academic (RD)	.12	.08	.17	.13	.09
Education (SeA)	.09	.08	.20	.17	.04
Education (SeM)	.03	.03	.09	.10	.02
Education (SoA)	.11	.03	.15	.09	.04
Education (RS)	.10	.07	.09	.10	.01
Education (RD)	.09	.08	.14	.12	.09
Job (SeA)	.11	.09	.19	.21	.09
Job (SeM)	.08	.06	.08	.11	.02
Job (SoA)	.07	-.01	.10	.07	.01
Job (RS)	.08	.06	.10	.12	.08
Job (RD)	.10	.10	.17	.18	.12

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .

**Table F5***Inter-Item Correlations between Instruction Items and all ASSET Pilot Items*

	Instruction (SeA)	Instruction (SeM)	Instruction (SoA)	Instruction (RS)	Instruction (RD)
Genetics (SeA)	.00	.11	-.02	-.04	.11
Genetics (SeM)	.03	.17	.14	.09	.08
Genetics (SoA)	-.01	.08	.03	.06	.15
Genetics (RS)	.00	.16	.08	.16	.13
Genetics (RD)	.01	.11	.09	.14	.11
Change (SeA)	.26	.28	.30	.24	.21
Change (SeM)	.29	.37	.34	.30	.22
Change (SoA)	.15	.26	.37	.26	.22
Change (RS)	.17	.26	.31	.32	.25
Change (RD)	.14	.31	.23	.18	.33
Experience (SeA)	.17	.05	.17	.07	.14
Experience (SeM)	.26	.26	.25	.20	.17
Experience (SoA)	.20	.23	.33	.24	.22
Experience (RS)	.20	.22	.21	.25	.21
Experience (RD)	.12	.24	.26	.20	.27
Own Control (SeA)	.26	.25	.17	.16	.10
Own Control (SeM)	.14	.24	.15	.11	.14
Own Control (SoA)	.15	.20	.34	.20	.23
Own Control (RS)	.17	.23	.21	.22	.19
Own Control (RD)	.08	.19	.18	.08	.22
Instruction (SeA)	-	-	-	-	-
Instruction (SeM)	.55	-	-	-	-
Instruction (SoA)	.42	.58	-	-	-
Instruction (RS)	.39	.51	.58	-	-
Instruction (RD)	.40	.47	.49	.49	-
Universal (SeA)	.25	.28	.23	.31	.24
Universal (SeM)	.25	.28	.16	.27	.27
Universal (SoA)	.21	.26	.33	.33	.29
Universal (RS)	.24	.25	.25	.37	.31
Universal (RD)	.26	.26	.23	.26	.36
Important (SeA)	.26	.24	.24	.27	.23
Important (SeM)	.29	.23	.27	.36	.24
Important (SoA)	.25	.24	.31	.32	.25
Important (RS)	.22	.24	.24	.36	.27
Important (RD)	.24	.26	.30	.31	.29

Feasible (SeA)	.26	.28	.32	.31	.21
Feasible (SeM)	.24	.26	.25	.30	.22
Feasible (SoA)	.25	.27	.37	.37	.27
Feasible (RS)	.26	.24	.30	.42	.25
Feasible (RD)	.25	.32	.32	.35	.33
Behavior (SeA)	.27	.26	.27	.29	.28
Behavior (SeM)	.17	.27	.22	.27	.28
Behavior (SoA)	.19	.21	.26	.37	.32
Behavior (RS)	.19	.27	.25	.34	.34
Behavior (RD)	.20	.23	.26	.26	.37
Academic (SeA)	.19	.24	.26	.26	.24
Academic (SeM)	.17	.28	.19	.21	.24
Academic (SoA)	.19	.28	.29	.36	.34
Academic (RS)	.20	.36	.30	.40	.37
Academic (RD)	.22	.28	.31	.36	.42
Education (SeA)	.21	.25	.32	.23	.21
Education (SeM)	.15	.29	.23	.23	.26
Education (SoA)	.21	.29	.32	.38	.30
Education (RS)	.23	.32	.27	.42	.40
Education (RD)	.18	.26	.30	.32	.41
Job (SeA)	.15	.25	.30	.21	.21
Job (SeM)	.20	.27	.21	.21	.21
Job (SoA)	.18	.25	.29	.32	.30
Job (RS)	.14	.24	.23	.36	.24
Job (RD)	.17	.26	.27	.26	.33

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .



**Table F6***Inter-Item Correlations between Universal Items and all ASSET Pilot Items*

	Universal (SeA)	Universal (SeM)	Universal (SoA)	Universal (RS)	Universal (RD)
Genetics (SeA)	.04	.04	.05	.06	.09
Genetics (SeM)	.03	-.05	.01	.03	.01
Genetics (SoA)	.11	.14	.01	.08	.10
Genetics (RS)	.09	.10	.05	.14	.09
Genetics (RD)	.11	.07	.11	.12	.10
Change (SeA)	.04	.07	.14	.11	.12
Change (SeM)	.09	.20	.16	.23	.20
Change (SoA)	.10	.15	.26	.20	.15
Change (RS)	.13	.22	.27	.28	.25
Change (RD)	.13	.19	.23	.23	.26
Experience (SeA)	.07	.05	.12	.11	.08
Experience (SeM)	.14	.17	.17	.22	.20
Experience (SoA)	.12	.20	.23	.26	.23
Experience (RS)	.12	.21	.21	.30	.29
Experience (RD)	.11	.22	.28	.31	.34
Own Control (SeA)	.05	.00	-.04	-.01	.04
Own Control (SeM)	-.01	.00	-.07	-.01	.00
Own Control (SoA)	.01	.04	.09	.03	.05
Own Control (RS)	.04	.05	.00	.04	.07
Own Control (RD)	-.02	-.03	-.07	-.03	.01
Instruction (SeA)	.25	.25	.21	.24	.26
Instruction (SeM)	.28	.28	.26	.25	.26
Instruction (SoA)	.23	.16	.33	.25	.23
Instruction (RS)	.31	.27	.33	.37	.26
Instruction (RD)	.24	.27	.29	.31	.36
Universal (SeA)	-	-	-	-	-
Universal (SeM)	.62	-	-	-	-
Universal (SoA)	.59	.65	-	-	-
Universal (RS)	.49	.67	.66	-	-
Universal (RD)	.53	.75	.68	.72	-
Important (SeA)	.48	.68	.53	.53	.64
Important (SeM)	.64	.54	.57	.50	.52
Important (SoA)	.46	.51	.71	.57	.55
Important (RS)	.41	.54	.59	.72	.59
Important (RD)	.44	.59	.59	.58	.75

Feasible (SeA)	.38	.30	.37	.34	.38
Feasible (SeM)	.25	.34	.28	.29	.35
Feasible (SoA)	.29	.37	.50	.42	.42
Feasible (RS)	.21	.34	.36	.44	.38
Feasible (RD)	.28	.42	.41	.38	.50
Behavior (SeA)	.44	.39	.39	.35	.41
Behavior (SeM)	.25	.43	.36	.39	.38
Behavior (SoA)	.39	.40	.50	.43	.47
Behavior (RS)	.26	.39	.40	.49	.46
Behavior (RD)	.23	.35	.35	.39	.46
Academic (SeA)	.36	.33	.34	.30	.33
Academic (SeM)	.16	.30	.28	.29	.27
Academic (SoA)	.33	.37	.48	.38	.42
Academic (RS)	.26	.38	.39	.50	.43
Academic (RD)	.23	.32	.39	.36	.43
Education (SeA)	.37	.27	.37	.28	.33
Education (SeM)	.24	.37	.36	.36	.38
Education (SoA)	.34	.37	.47	.36	.37
Education (RS)	.31	.40	.41	.47	.45
Education (RD)	.24	.30	.37	.37	.41
Job (SeA)	.36	.28	.28	.24	.29
Job (SeM)	.22	.35	.26	.31	.32
Job (SoA)	.26	.31	.43	.31	.35
Job (RS)	.23	.33	.30	.36	.31
Job (RD)	.19	.26	.32	.30	.36

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .

**Table F7***Inter-Item Correlations between Important Items and all ASSET Pilot Items*

	Important (SeA)	Important (SeM)	Important (SoA)	Important (RS)	Important (RD)
Genetics (SeA)	-.06	-.03	.00	-.05	-.03
Genetics (SeM)	-.02	.00	.05	-.01	-.03
Genetics (SoA)	.06	.05	.08	.01	.02
Genetics (RS)	.07	.11	.07	.04	-.01
Genetics (RD)	.05	.09	.10	.07	.03
Change (SeA)	.12	.14	.17	.20	.22
Change (SeM)	.20	.12	.14	.21	.23
Change (SoA)	.17	.12	.17	.21	.21
Change (RS)	.20	.13	.17	.26	.32
Change (RD)	.15	.16	.16	.22	.27
Experience (SeA)	.07	.06	.05	.09	.09
Experience (SeM)	.12	.03	.08	.15	.22
Experience (SoA)	.22	.13	.17	.21	.21
Experience (RS)	.24	.10	.14	.28	.30
Experience (RD)	.23	.11	.20	.31	.33
Own Control (SeA)	.06	.07	.05	.06	.11
Own Control (SeM)	.11	.07	.04	.10	.12
Own Control (SoA)	.12	.16	.18	.13	.13
Own Control (RS)	.13	.11	.07	.12	.09
Own Control (RD)	.05	.04	.05	.04	.09
Instruction (SeA)	.26	.29	.25	.22	.24
Instruction (SeM)	.24	.23	.24	.24	.26
Instruction (SoA)	.24	.27	.31	.24	.30
Instruction (RS)	.27	.36	.32	.36	.31
Instruction (RD)	.23	.24	.25	.27	.29
Universal (SeA)	.48	.64	.46	.41	.44
Universal (SeM)	.68	.54	.51	.54	.59
Universal (SoA)	.53	.57	.71	.59	.59
Universal (RS)	.53	.50	.57	.72	.58
Universal (RD)	.64	.52	.55	.59	.75
Important (SeA)	-	-	-	-	-
Important (SeM)	.70	-	-	-	-
Important (SoA)	.69	.68	-	-	-
Important (RS)	.65	.64	.71	-	-
Important (RD)	.70	.59	.69	.74	-

Feasible (SeA)	.45	.52	.46	.42	.46
Feasible (SeM)	.55	.40	.43	.39	.46
Feasible (SoA)	.47	.48	.67	.53	.52
Feasible (RS)	.42	.43	.50	.62	.52
Feasible (RD)	.51	.43	.53	.52	.64
Behavior (SeA)	.37	.42	.36	.33	.35
Behavior (SeM)	.42	.25	.35	.37	.35
Behavior (SoA)	.38	.38	.47	.41	.45
Behavior (RS)	.37	.30	.37	.46	.43
Behavior (RD)	.34	.28	.35	.40	.49
Academic (SeA)	.32	.40	.35	.29	.30
Academic (SeM)	.32	.20	.26	.32	.27
Academic (SoA)	.44	.44	.49	.46	.39
Academic (RS)	.36	.32	.38	.46	.38
Academic (RD)	.35	.31	.37	.38	.44
Education (SeA)	.30	.41	.34	.28	.29
Education (SeM)	.37	.28	.32	.38	.36
Education (SoA)	.41	.42	.45	.42	.36
Education (RS)	.35	.32	.36	.47	.40
Education (RD)	.30	.25	.31	.33	.41
Job (SeA)	.27	.30	.24	.25	.27
Job (SeM)	.35	.23	.27	.28	.29
Job (SoA)	.35	.33	.40	.42	.38
Job (RS)	.31	.23	.31	.41	.38
Job (RD)	.26	.20	.26	.29	.39

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .

**Table F8***Inter-Item Correlations between Feasible Items and all ASSET Pilot Items*

	Feasible (SeA)	Feasible (SeM)	Feasible (SoA)	Feasible (RS)	Feasible (RD)
Genetics (SeA)	-.05	-.03	-.05	-.08	-.01
Genetics (SeM)	-.01	-.05	-.03	-.06	-.04
Genetics (SoA)	-.02	-.02	-.03	-.04	.05
Genetics (RS)	.05	.01	-.03	-.04	-.01
Genetics (RD)	.04	.00	.02	.04	.02
Change (SeA)	.12	.10	.15	.20	.13
Change (SeM)	.13	.14	.17	.17	.16
Change (SoA)	.08	.13	.23	.14	.15
Change (RS)	.08	.14	.18	.15	.16
Change (RD)	.12	.14	.13	.15	.19
Experience (SeA)	.01	.07	.02	.05	.02
Experience (SeM)	.08	.06	.07	.07	.13
Experience (SoA)	.15	.14	.19	.16	.14
Experience (RS)	.09	.13	.14	.18	.19
Experience (RD)	.16	.22	.17	.18	.19
Own Control (SeA)	.10	.11	.07	.07	.09
Own Control (SeM)	.06	.13	.07	.09	.08
Own Control (SoA)	.08	.12	.21	.17	.17
Own Control (RS)	.08	.14	.12	.16	.14
Own Control (RD)	.02	.08	.05	.05	.09
Instruction (SeA)	.26	.24	.25	.26	.25
Instruction (SeM)	.28	.26	.27	.24	.32
Instruction (SoA)	.32	.25	.37	.30	.32
Instruction (RS)	.31	.30	.37	.42	.35
Instruction (RD)	.21	.22	.27	.25	.33
Universal (SeA)	.38	.25	.29	.21	.28
Universal (SeM)	.30	.34	.37	.34	.42
Universal (SoA)	.37	.28	.50	.36	.41
Universal (RS)	.34	.29	.42	.44	.38
Universal (RD)	.38	.35	.42	.38	.50
Important (SeA)	.45	.55	.47	.42	.51
Important (SeM)	.52	.40	.48	.43	.43
Important (SoA)	.46	.43	.67	.50	.53
Important (RS)	.42	.39	.53	.62	.52
Important (RD)	.46	.46	.52	.52	.64

Feasible (SeA)	-	-	-	-	-
Feasible (SeM)	.68	-	-	-	-
Feasible (SoA)	.65	.67	-	-	-
Feasible (RS)	.64	.67	.72	-	-
Feasible (RD)	.63	.71	.75	.74	-
Behavior (SeA)	.35	.28	.31	.26	.29
Behavior (SeM)	.20	.29	.28	.24	.27
Behavior (SoA)	.30	.31	.41	.31	.34
Behavior (RS)	.26	.30	.35	.39	.37
Behavior (RD)	.25	.29	.31	.34	.39
Academic (SeA)	.26	.23	.28	.21	.26
Academic (SeM)	.12	.22	.19	.13	.18
Academic (SoA)	.33	.31	.43	.33	.36
Academic (RS)	.26	.29	.33	.38	.35
Academic (RD)	.26	.29	.32	.29	.36
Education (SeA)	.27	.19	.24	.17	.21
Education (SeM)	.15	.20	.22	.18	.23
Education (SoA)	.32	.30	.38	.30	.35
Education (RS)	.24	.28	.32	.35	.34
Education (RD)	.24	.26	.28	.24	.33
Job (SeA)	.23	.21	.19	.19	.22
Job (SeM)	.14	.19	.16	.14	.18
Job (SoA)	.28	.25	.34	.29	.31
Job (RS)	.16	.23	.25	.32	.28
Job (RD)	.20	.23	.25	.24	.29

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above .60.

**Table F9***Inter-Item Correlations between Behavior Items and all ASSET Pilot Items*

	Behavior (SeA)	Behavior (SeM)	Behavior (SoA)	Behavior (RS)	Behavior (RD)
Genetics (SeA)	-.03	-.01	-.05	.02	-.01
Genetics (SeM)	.04	.00	-.02	-.01	-.06
Genetics (SoA)	.07	.04	.01	.01	.01
Genetics (RS)	.03	.03	.06	.04	-.03
Genetics (RD)	-.01	.01	.03	.03	.00
Change (SeA)	.33	.21	.24	.25	.25
Change (SeM)	.33	.38	.30	.33	.29
Change (SoA)	.25	.29	.33	.28	.25
Change (RS)	.22	.27	.34	.34	.33
Change (RD)	.27	.30	.35	.33	.42
Experience (SeA)	.23	.21	.19	.19	.18
Experience (SeM)	.28	.35	.29	.34	.30
Experience (SoA)	.41	.41	.41	.42	.39
Experience (RS)	.38	.46	.42	.45	.42
Experience (RD)	.30	.41	.43	.43	.46
Own Control (SeA)	.13	.00	.03	.08	.13
Own Control (SeM)	.08	.00	-.03	.02	.10
Own Control (SoA)	.17	.09	.12	.12	.17
Own Control (RS)	.19	.11	.05	.12	.14
Own Control (RD)	.02	.02	.04	.09	.13
Instruction (SeA)	.27	.17	.19	.19	.20
Instruction (SeM)	.26	.27	.21	.27	.23
Instruction (SoA)	.27	.22	.26	.25	.26
Instruction (RS)	.29	.27	.37	.34	.26
Instruction (RD)	.28	.28	.32	.34	.37
Universal (SeA)	.44	.25	.39	.26	.23
Universal (SeM)	.39	.43	.40	.39	.35
Universal (SoA)	.39	.36	.50	.40	.35
Universal (RS)	.35	.39	.43	.49	.39
Universal (RD)	.41	.38	.47	.46	.46
Important (SeA)	.37	.42	.38	.37	.34
Important (SeM)	.42	.25	.38	.30	.28
Important (SoA)	.36	.35	.47	.37	.35
Important (RS)	.33	.37	.41	.46	.40
Important (RD)	.35	.35	.45	.43	.49

Feasible (SeA)	.35	.20	.30	.26	.25
Feasible (SeM)	.28	.29	.31	.30	.29
Feasible (SoA)	.31	.28	.41	.35	.31
Feasible (RS)	.26	.24	.31	.39	.34
Feasible (RD)	.29	.27	.34	.37	.39
Behavior (SeA)	-	-	-	-	-
Behavior (SeM)	.55	-	-	-	-
Behavior (SoA)	.52	.58	-	-	-
Behavior (RS)	.46	.56	.58	-	-
Behavior (RD)	.45	.58	.58	.64	-
Academic (SeA)	.73	.43	.47	.42	.44
Academic (SeM)	.43	.78	.53	.51	.58
Academic (SoA)	.35	.42	.61	.46	.46
Academic (RS)	.29	.44	.50	.61	.53
Academic (RD)	.43	.54	.55	.60	.76
Education (SeA)	.63	.44	.42	.43	.44
Education (SeM)	.41	.74	.50	.53	.58
Education (SoA)	.30	.36	.54	.46	.43
Education (RS)	.29	.43	.48	.56	.52
Education (RD)	.44	.53	.54	.56	.71
Job (SeA)	.57	.47	.39	.44	.45
Job (SeM)	.38	.64	.42	.49	.51
Job (SoA)	.34	.46	.55	.44	.50
Job (RS)	.38	.53	.47	.69	.58
Job (RD)	.41	.52	.52	.56	.71

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .



**Table F10***Inter-Item Correlations between Academic Items and all ASSET Pilot Items*

	Academic (SeA)	Academic (SeM)	Academic (SoA)	Academic (RS)	Academic (RD)
Genetics (SeA)	-.05	.01	.05	-.01	-.03
Genetics (SeM)	.06	.06	.10	.04	-.02
Genetics (SoA)	.03	.03	.12	.08	.03
Genetics (RS)	.06	.04	.15	.09	.00
Genetics (RD)	-.03	.01	.12	.10	.04
Change (SeA)	.27	.20	.17	.18	.28
Change (SeM)	.27	.32	.22	.25	.31
Change (SoA)	.20	.27	.26	.18	.28
Change (RS)	.19	.25	.21	.27	.35
Change (RD)	.25	.28	.27	.31	.40
Experience (SeA)	.17	.20	.08	.11	.18
Experience (SeM)	.26	.33	.17	.21	.30
Experience (SoA)	.33	.39	.27	.28	.38
Experience (RS)	.34	.40	.29	.32	.38
Experience (RD)	.28	.39	.30	.38	.43
Own Control (SeA)	.08	.04	.10	.13	.12
Own Control (SeM)	.07	.09	.02	.06	.08
Own Control (SoA)	.18	.10	.14	.09	.17
Own Control (RS)	.17	.14	.07	.09	.13
Own Control (RD)	.07	.07	.03	.04	.09
Instruction (SeA)	.19	.17	.19	.20	.22
Instruction (SeM)	.24	.28	.28	.36	.28
Instruction (SoA)	.26	.19	.29	.30	.31
Instruction (RS)	.26	.21	.36	.40	.36
Instruction (RD)	.24	.24	.34	.37	.42
Universal (SeA)	.36	.16	.33	.26	.23
Universal (SeM)	.33	.30	.37	.38	.32
Universal (SoA)	.34	.28	.48	.39	.39
Universal (RS)	.30	.29	.38	.50	.36
Universal (RD)	.33	.27	.42	.43	.43
Important (SeA)	.32	.32	.44	.36	.35
Important (SeM)	.40	.20	.44	.32	.31
Important (SoA)	.35	.26	.49	.38	.37
Important (RS)	.29	.32	.46	.46	.38
Important (RD)	.30	.27	.39	.38	.44

Feasible (SeA)	.26	.12	.33	.26	.26
Feasible (SeM)	.23	.22	.31	.29	.29
Feasible (SoA)	.28	.19	.43	.33	.32
Feasible (RS)	.21	.13	.33	.38	.29
Feasible (RD)	.26	.18	.36	.35	.36
Behavior (SeA)	.73	.43	.35	.29	.43
Behavior (SeM)	.43	.78	.42	.44	.54
Behavior (SoA)	.47	.53	.61	.50	.55
Behavior (RS)	.42	.51	.46	.61	.60
Behavior (RD)	.44	.58	.46	.53	.76
Academic (SeA)	-	-	-	-	-
Academic (SeM)	.44	-	-	-	-
Academic (SoA)	.46	.44	-	-	-
Academic (RS)	.33	.48	.64	-	-
Academic (RD)	.47	.57	.57	.55	-
Education (SeA)	.74	.49	.48	.37	.50
Education (SeM)	.42	.82	.46	.50	.58
Education (SoA)	.41	.40	.86	.63	.57
Education (RS)	.34	.46	.60	.84	.55
Education (RD)	.47	.57	.48	.52	.88
Job (SeA)	.63	.49	.34	.35	.44
Job (SeM)	.39	.69	.41	.45	.53
Job (SoA)	.37	.49	.67	.50	.54
Job (RS)	.37	.52	.38	.59	.54
Job (RD)	.39	.53	.39	.47	.73

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .

**Table F11***Inter-Item Correlations between Education Items and all ASSET Pilot Items*

	Education (SeA)	Education (SeM)	Education (SoA)	Education (RS)	Education (RD)
Genetics (SeA)	.02	.02	.02	.01	.00
Genetics (SeM)	.09	.06	.05	.02	-.03
Genetics (SoA)	.04	.08	.09	.04	.02
Genetics (RS)	.09	.09	.11	.05	.01
Genetics (RD)	.07	.08	.09	.08	.06
Change (SeA)	.23	.18	.16	.18	.26
Change (SeM)	.20	.30	.20	.25	.32
Change (SoA)	.20	.25	.23	.19	.31
Change (RS)	.18	.24	.23	.27	.35
Change (RD)	.22	.24	.25	.26	.38
Experience (SeA)	.23	.22	.14	.14	.21
Experience (SeM)	.30	.36	.20	.25	.33
Experience (SoA)	.30	.35	.23	.26	.37
Experience (RS)	.36	.42	.26	.36	.43
Experience (RD)	.30	.39	.28	.35	.47
Own Control (SeA)	.09	.03	.11	.10	.09
Own Control (SeM)	.08	.03	.03	.07	.08
Own Control (SoA)	.20	.09	.15	.09	.14
Own Control (RS)	.17	.10	.09	.10	.12
Own Control (RD)	.04	.02	.04	.01	.09
Instruction (SeA)	.21	.15	.21	.23	.18
Instruction (SeM)	.25	.29	.29	.32	.26
Instruction (SoA)	.32	.23	.32	.27	.30
Instruction (RS)	.23	.23	.38	.42	.32
Instruction (RD)	.21	.26	.30	.40	.41
Universal (SeA)	.37	.24	.34	.31	.24
Universal (SeM)	.27	.37	.37	.40	.30
Universal (SoA)	.37	.36	.47	.41	.37
Universal (RS)	.28	.36	.36	.47	.37
Universal (RD)	.33	.38	.37	.45	.41
Important (SeA)	.30	.37	.41	.35	.30
Important (SeM)	.41	.28	.42	.32	.25
Important (SoA)	.34	.32	.45	.36	.31
Important (RS)	.28	.38	.42	.47	.33
Important (RD)	.29	.36	.36	.40	.41

Feasible (SeA)	.27	.15	.32	.24	.24
Feasible (SeM)	.19	.20	.30	.28	.26
Feasible (SoA)	.24	.22	.38	.32	.28
Feasible (RS)	.17	.18	.30	.35	.24
Feasible (RD)	.21	.23	.35	.34	.33
Behavior (SeA)	.63	.41	.30	.29	.44
Behavior (SeM)	.44	.74	.36	.43	.53
Behavior (SoA)	.42	.50	.54	.48	.54
Behavior (RS)	.43	.53	.46	.56	.56
Behavior (RD)	.44	.58	.43	.52	.71
Academic (SeA)	.74	.42	.41	.34	.47
Academic (SeM)	.49	.82	.40	.46	.57
Academic (SoA)	.48	.46	.86	.60	.48
Academic (RS)	.37	.50	.63	.84	.52
Academic (RD)	.50	.58	.57	.55	.88
Education (SeA)	-	-	-	-	-
Education (SeM)	.56	-	-	-	-
Education (SoA)	.50	.48	-	-	-
Education (RS)	.41	.56	.65	-	-
Education (RD)	.50	.61	.52	.57	-
Job (SeA)	.78	.57	.39	.41	.49
Job (SeM)	.49	.81	.44	.49	.56
Job (SoA)	.49	.59	.78	.57	.55
Job (RS)	.40	.63	.45	.66	.59
Job (RD)	.44	.60	.43	.50	.79

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .

**Table F12***Inter-Item Correlations between Job Items and all ASSET Pilot Items*

	Job (SeA)	Job (SeM)	Job (SoA)	Job (RS)	Job (RD)
Genetics (SeA)	-.02	.01	.02	-.06	.02
Genetics (SeM)	.08	.05	.02	.01	-.02
Genetics (SoA)	.03	.07	.06	.02	.03
Genetics (RS)	.06	.07	.03	.02	-.01
Genetics (RD)	.03	.01	.07	.03	.04
Change (SeA)	.22	.20	.20	.22	.26
Change (SeM)	.18	.32	.21	.28	.30
Change (SoA)	.17	.23	.24	.25	.30
Change (RS)	.15	.23	.24	.28	.35
Change (RD)	.16	.27	.29	.26	.38
Experience (SeA)	.22	.20	.20	.20	.24
Experience (SeM)	.29	.33	.25	.29	.36
Experience (SoA)	.28	.31	.26	.32	.36
Experience (RS)	.34	.37	.36	.46	.47
Experience (RD)	.29	.33	.34	.34	.42
Own Control (SeA)	.11	.08	.07	.08	.10
Own Control (SeM)	.09	.06	-.01	.06	.10
Own Control (SoA)	.19	.08	.10	.10	.17
Own Control (RS)	.21	.11	.07	.12	.18
Own Control (RD)	.09	.02	.01	.08	.12
Instruction (SeA)	.15	.20	.18	.14	.17
Instruction (SeM)	.25	.27	.25	.24	.26
Instruction (SoA)	.30	.21	.29	.23	.27
Instruction (RS)	.21	.21	.32	.36	.26
Instruction (RD)	.21	.21	.30	.24	.33
Universal (SeA)	.36	.22	.26	.23	.19
Universal (SeM)	.28	.35	.31	.33	.26
Universal (SoA)	.28	.26	.43	.30	.32
Universal (RS)	.24	.31	.31	.36	.30
Universal (RD)	.29	.32	.35	.31	.36
Important (SeA)	.27	.35	.35	.31	.26
Important (SeM)	.30	.23	.33	.23	.20
Important (SoA)	.24	.27	.40	.31	.26
Important (RS)	.25	.28	.42	.41	.29
Important (RD)	.27	.29	.38	.38	.39

Feasible (SeA)	.23	.14	.28	.16	.20
Feasible (SeM)	.21	.19	.25	.23	.23
Feasible (SoA)	.19	.16	.34	.25	.25
Feasible (RS)	.19	.14	.29	.32	.24
Feasible (RD)	.22	.18	.31	.28	.29
Behavior (SeA)	.57	.38	.34	.38	.41
Behavior (SeM)	.47	.64	.46	.53	.52
Behavior (SoA)	.39	.42	.55	.47	.52
Behavior (RS)	.44	.49	.44	.69	.56
Behavior (RD)	.45	.51	.50	.58	.71
Academic (SeA)	.63	.39	.37	.37	.39
Academic (SeM)	.49	.69	.49	.52	.53
Academic (SoA)	.34	.41	.67	.38	.39
Academic (RS)	.35	.45	.50	.59	.47
Academic (RD)	.44	.53	.54	.54	.73
Education (SeA)	.78	.49	.49	.40	.44
Education (SeM)	.57	.81	.59	.63	.60
Education (SoA)	.39	.44	.78	.45	.43
Education (RS)	.41	.49	.57	.66	.50
Education (RD)	.49	.56	.55	.59	.79
Job (SeA)	-	-	-	-	-
Job (SeM)	.54	-	-	-	-
Job (SoA)	.47	.55	-	-	-
Job (RS)	.52	.61	.59	-	-
Job (RD)	.48	.60	.59	.66	-

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Light-shaded cells indicate correlation is  $\pm .15 - .29$ . Medium-shaded cells indicate correlation is  $\pm .30 - .60$ . Dark-shaded cells indicate correlation is above  $.60$ .

## Appendix G

### Exploratory Factor Analysis for 60-Item ASSET Pilot Scale

**Table G1**

*Variance Explained from Initial and Eight-Factor Solutions for ASSET Pilot Scale (60 Items)*

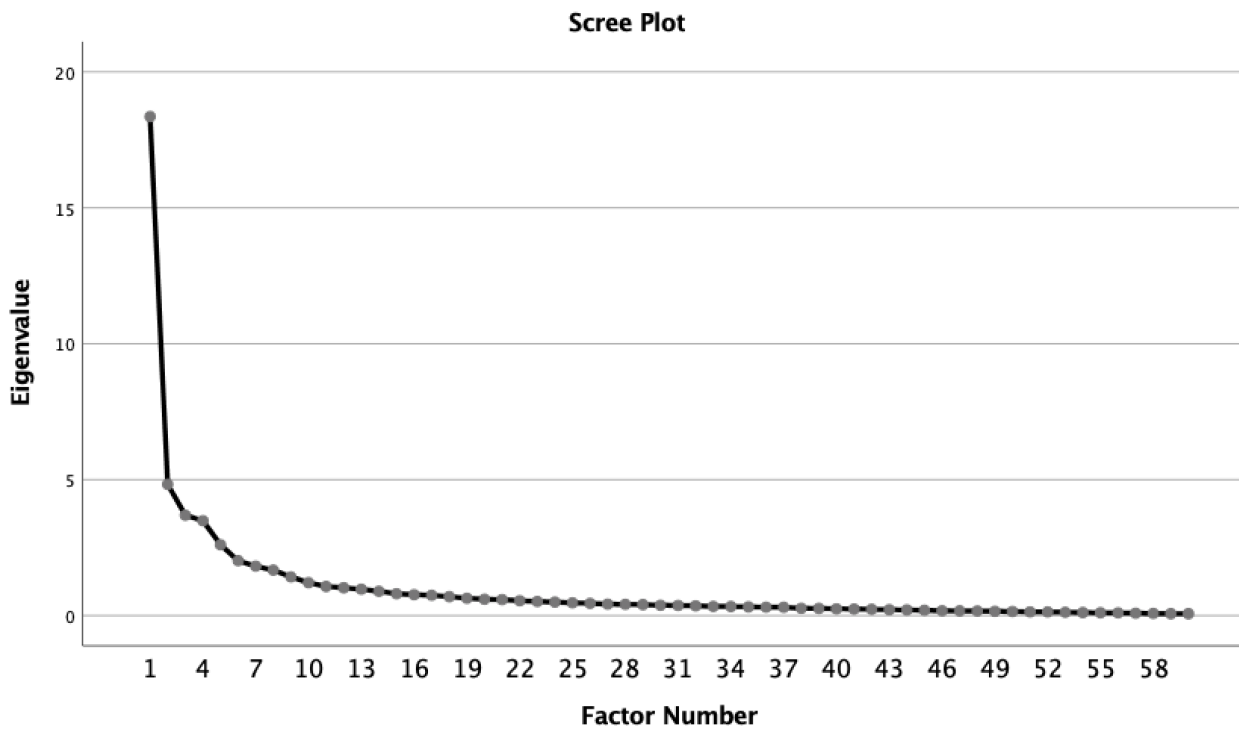
Factor	Initial Eigen Values			Extraction Sums of Squares Loadings			Rotated Sums of Squares Loadings
	Total	% Variance	% Cumulative	Total	% Variance	% Cumulative	
1	18.30	30.50	30.50	17.92	29.87	29.87	14.73
2	4.82	8.04	38.55	4.45	7.41	37.28	12.60
3	3.71	6.17	44.72	3.26	5.42	42.71	8.37
4	3.49	5.82	50.54	3.08	5.14	47.84	9.13
5	2.62	4.37	54.90	2.16	3.60	51.44	3.11
6	2.03	3.38	58.29	1.68	2.79	54.23	3.49
7	1.82	3.04	61.32	1.44	2.39	56.62	5.92
8	1.68	2.80	64.12	1.28	2.13	58.75	7.22
9	1.41	2.35	66.47				
10	1.21	2.01	68.48				
11	1.08	1.80	70.28				
12	1.03	1.71	71.98				
13	.98	1.63	73.61				
14	.89	1.48	75.09				
15	.81	1.34	76.43				
16	.77	1.28	77.71				
17	.74	1.23	78.93				
18	.70	1.16	80.09				
19	.64	1.07	81.16				
20	.60	1.00	82.16				
21	.59	.98	83.14				
22	.55	.91	84.05				
23	.52	.87	84.92				
24	.50	.83	85.75				
25	.47	.78	86.53				
26	.45	.75	87.28				
27	.42	.70	87.98				
28	.41	.69	88.68				

29	.40	.67	89.34
30	.38	.63	89.98
31	.37	.62	90.60
32	.36	.60	91.20
33	.34	.56	91.76
34	.34	.56	92.32
35	.32	.53	92.85
36	.31	.51	93.36
37	.30	.50	93.86
38	.27	.45	94.31
39	.27	.44	94.75
40	.25	.42	95.16
41	.24	.40	95.56
42	.23	.39	95.95
43	.21	.36	96.30
44	.21	.34	96.65
45	.20	.33	96.97
46	.18	.30	97.27
47	.17	.29	97.56
48	.17	.28	97.84
49	.16	.26	98.10
50	.15	.25	98.35
51	.14	.23	98.58
52	.13	.21	98.79
53	.12	.19	98.98
54	.11	.19	99.17
55	.10	.17	99.34
56	.10	.16	99.50
57	.09	.15	99.65
58	.08	.13	99.77
59	.07	.12	99.89
60	.07	.11	100.00

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*Note.* 8 Factors extracted using Principal Axis Factoring. Rotation method was Promax with Kaiser Normalization.



**Figure G1***Scree Plot for 60-Item Pilot Scale*

**Table G2***Initial and Extracted Communalities from Eight-Factor Solution (60 items)*

	Initial	Extraction
Genetics (SeA)	.54	.48
Genetics (SeM)	.56	.53
Genetics (SoA)	.64	.63
Genetics (RS)	.67	.65
Genetics (RD)	.65	.65
Change (SeA)	.53	.38
Change (SeM)	.58	.49
Change (SoA)	.62	.50
Change (RS)	.57	.49
Change (RD)	.63	.45
Experience (SeA)	.36	.22
Experience (SeM)	.53	.44
Experience (SoA)	.62	.49
Experience (RS)	.65	.52
Experience (RD)	.58	.49
Own Control (SeA)	.53	.44
Own Control (SeM)	.62	.64
Own Control (SoA)	.57	.48
Own Control (RS)	.59	.59
Own Control (RD)	.61	.57
Instruction (SeA)	.51	.31
Instruction (SeM)	.65	.46
Instruction (SoA)	.64	.54
Instruction (RS)	.62	.50
Instruction (RD)	.56	.37
Universal (SeA)	.68	.57
Universal (SeM)	.77	.68
Universal (SoA)	.77	.66
Universal (RS)	.77	.66
Universal (RD)	.82	.72
Important (SeA)	.76	.67
Important (SeM)	.81	.65
Important (SoA)	.82	.66
Important (RS)	.83	.67
Important (RD)	.83	.72

Feasible (SeA)	.68	.62
Feasible (SeM)	.73	.65
Feasible (SoA)	.79	.73
Feasible (RS)	.80	.74
Feasible (RD)	.79	.75
Behavior (SeA)	.74	.66
Behavior (SeM)	.76	.61
Behavior (SoA)	.68	.54
Behavior (RS)	.71	.58
Behavior (RD)	.74	.65
Academic (SeA)	.72	.63
Academic (SeM)	.80	.62
Academic (SoA)	.84	.63
Academic (RS)	.82	.66
Academic (RD)	.87	.67
Education (SeA)	.80	.75
Education (SeM)	.85	.71
Education (SoA)	.87	.70
Education (RS)	.83	.69
Education (RD)	.87	.67
Job (SeA)	.74	.66
Job (SeM)	.74	.58
Job (SoA)	.78	.60
Job (RS)	.78	.59
Job (RD)	.77	.65

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*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Principal Axis Factoring was extraction method. Shading indicates a communality less than .40.

**Table G3***Rotated Pattern Matrix of Eight-Factor Solution for 60-Item ASSET Scale*

	1	2	3	4	5	6	7	8
Education (SeM)	<b>.79</b>	.04	-.01	-.09	.05	.01	.20	-.14
Job (RS)	<b>.79</b>	-.04	.01	.02	-.03	.03	.00	-.03
Job (RD)	<b>.78</b>	-.13	.13	.05	.00	.09	.02	-.08
Education (RD)	<b>.78</b>	-.09	.09	.04	-.02	.03	.04	.02
Education (RS)	<b>.76</b>	.08	-.12	-.08	-.04	-.02	-.15	.30
Academic (RD)	<b>.75</b>	-.06	.06	.06	-.04	.04	.02	.07
Academic (SeM)	<b>.73</b>	-.04	.06	-.06	.02	.05	.21	-.15
Job (SeM)	<b>.72</b>	.00	.00	-.11	.02	.04	.20	-.10
Behavior (RD)	<b>.72</b>	.01	.10	.13	-.04	.09	-.01	-.13
Academic (RS)	<b>.72</b>	.06	-.09	-.03	.00	-.02	-.18	.30
Job (SoA)	<b>.70</b>	-.06	-.10	.01	-.03	-.09	.06	.25
Education (SoA)	<b>.62</b>	.02	-.21	-.05	-.03	-.07	.03	<b>.47</b>
Behavior (RS)	<b>.59</b>	.09	.14	.10	.00	-.01	-.01	-.04
Behavior (SeM)	<b>.56</b>	.11	.17	.03	.01	-.03	.20	-.20
Academic (SoA)	<b>.55</b>	.08	-.16	.01	.03	-.08	.04	<b>.39</b>
Behavior (SoA)	<b>.44</b>	.18	.14	.05	-.04	-.11	.10	.08
Universal (SeM)	.00	<b>.93</b>	.00	-.15	.02	.00	.02	-.08
Universal (RD)	.07	<b>.87</b>	.05	-.04	.05	.01	-.06	-.10
Universal (RS)	.07	<b>.80</b>	.11	-.08	.05	-.06	-.12	.00
Universal (SoA)	-.01	<b>.77</b>	.05	-.09	-.03	-.13	.04	.14
Universal (SeA)	-.18	<b>.75</b>	-.07	-.18	.01	-.04	.29	.16
Important (SeM)	.00	<b>.74</b>	-.06	.16	-.01	.08	.07	-.11
Important (RD)	.06	<b>.70</b>	.08	.23	-.03	.09	-.11	-.13
Important (SeA)	-.17	<b>.70</b>	-.16	.09	-.03	.04	.25	.14
Important (RS)	.12	<b>.66</b>	.00	.18	-.03	.04	-.13	-.03
Important (SoA)	-.01	<b>.62</b>	-.10	.23	.01	.00	.06	.07
Change (SoA)	-.08	.01	<b>.70</b>	-.04	-.05	.03	-.05	.21
Change (SeM)	-.04	.01	<b>.65</b>	-.05	-.10	.06	.00	.20
Experience (SoA)	.08	-.06	<b>.62</b>	.05	.05	-.14	.13	.04
Change (RS)	.05	.16	<b>.61</b>	-.13	-.09	.08	-.19	.15
Experience (SeM)	.06	-.03	<b>.61</b>	-.08	.04	-.06	.11	.04
Change (RD)	.11	.07	<b>.60</b>	-.08	-.02	.03	-.14	.12
Change (SeA)	-.11	-.09	<b>.59</b>	.03	-.06	-.01	.08	.22
Experience (RS)	.27	-.01	<b>.56</b>	.01	.09	-.06	.04	-.07

Experience (RD)	.28	.02	<b>.53</b>	.05	.10	-.11	-.08	-.04
Experience (SeA)	.02	-.09	<b>.42</b>	-.03	-.01	-.13	.16	.04
Feasible (SeM)	.04	-.06	-.06	<b>.84</b>	.02	.02	.04	-.02
Feasible (RS)	.05	-.01	-.02	<b>.84</b>	-.02	-.02	-.10	.07
Feasible (RD)	.06	.06	-.04	<b>.81</b>	.03	.02	-.07	.02
Feasible (SoA)	-.02	.06	-.03	<b>.77</b>	-.03	-.05	.01	.13
Feasible (SeA)	-.12	.02	-.07	<b>.74</b>	.01	-.08	.17	.13
Genetics (RD)	.00	.03	-.02	.04	<b>.80</b>	-.01	-.07	.06
Genetics (RS)	-.04	.04	-.04	-.02	<b>.79</b>	-.01	.03	.10
Genetics (SoA)	.03	.05	-.07	-.01	<b>.79</b>	.02	-.02	-.01
Genetics (SeM)	-.08	-.11	.05	.02	<b>.71</b>	.01	.08	.10
Genetics (SeA)	.00	.02	-.01	-.02	<b>.69</b>	.01	-.07	-.03
Own Control (SeM)	.00	.04	-.04	-.04	-.01	<b>.81</b>	-.02	.01
Own Control (RD)	.07	-.01	-.06	-.02	.06	<b>.77</b>	-.05	-.02
Own Control (RS)	.04	.00	-.05	.01	.02	<b>.75</b>	.08	.02
Own Control (SeA)	.03	-.03	-.08	-.05	-.04	<b>.64</b>	.03	.16
Own Control (SoA)	-.02	-.03	.05	.03	-.02	<b>.63</b>	.08	.14
Education (SeA)	.31	.00	-.06	-.05	.00	.01	<b>.69</b>	.12
Academic (SeA)	.17	.07	.04	.02	-.04	.02	<b>.64</b>	.07
Job (SeA)	<b>.40</b>	-.06	-.06	.00	.00	.07	<b>.61</b>	-.01
Behavior (SeA)	.03	.19	.19	.08	-.02	.01	<b>.60</b>	-.02
Instruction (SoA)	-.14	-.11	<b>.32</b>	.13	.03	.07	.11	<b>.61</b>
Instruction (RS)	.02	.00	.18	.11	.04	.02	-.02	<b>.58</b>
Instruction (SeM)	-.06	-.01	.26	.03	.10	.14	.05	<b>.52</b>
Instruction (SeA)	-.19	.08	.23	.05	-.03	.08	.11	<b>.42</b>
Instruction (RD)	.13	.04	.18	.02	.10	.10	-.07	<b>.41</b>

Note. SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Principal Axis Factoring with Promax with Kaiser Normalization. Rotation converged in 10 iterations. Primary loadings are bold. Light shading indicates a factor loading less than .30. Dark shading indicates an item with crossing loading of at least .32.

## Appendix H

### Exploratory Factor Analysis for 45-Item ASSET Pilot Scale

**Table H1**

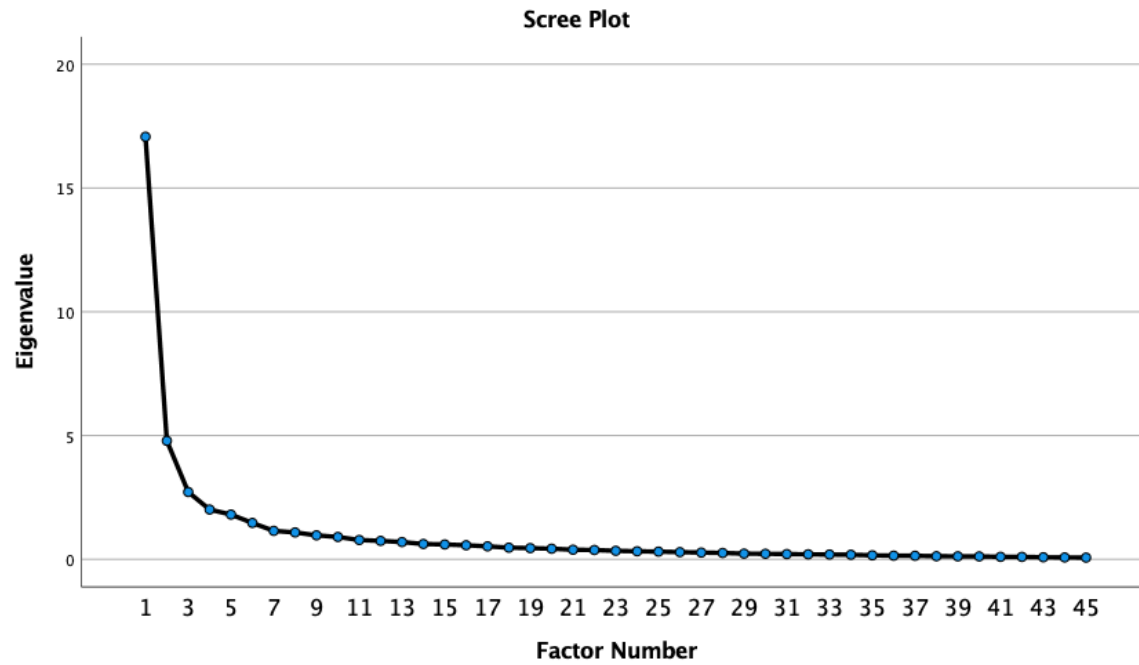
*Variance Explained from Initial and Five-Factor Solution for 45-Item ASSET Scale*

Factor	Initial Eigen Values			Extraction Sums of Squares Loadings			Rotated Sums of Squares Loadings
	Total	% Variance	% Cumulative	Total	% Variance	% Cumulative	
1	17.08	37.94	37.94	16.68	37.07	37.07	14.35
2	4.79	10.64	48.59	4.40	9.77	46.84	11.77
3	2.72	6.05	54.63	2.24	4.98	51.82	8.90
4	2.01	4.47	59.11	1.66	3.68	55.50	8.46
5	1.81	4.02	63.13	1.46	3.24	58.74	7.14
6	1.47	3.27	66.40				
7	1.15	2.56	68.96				
8	1.09	2.42	71.38				
9	.97	2.16	73.54				
10	.91	2.01	75.55				
11	.78	1.74	77.29				
12	.75	1.66	78.95				
13	.70	1.55	80.50				
14	.62	1.38	81.88				
15	.60	1.34	83.22				
16	.57	1.27	84.49				
17	.53	1.17	85.65				
18	.47	1.05	86.71				
19	.45	1.01	87.71				
20	.43	.96	88.67				
21	.39	.87	89.54				
22	.38	.84	90.38				
23	.35	.77	91.15				
24	.33	.73	91.87				
25	.31	.70	92.56				
26	.29	.65	93.21				
27	.28	.61	93.82				
28	.26	.58	94.40				
29	.23	.52	94.91				

30	.23	.50	95.42
31	.21	.47	95.89
32	.20	.45	96.34
33	.20	.43	96.78
34	.19	.41	97.19
35	.16	.36	97.56
36	.15	.33	97.89
37	.15	.32	98.21
38	.13	.28	98.49
39	.12	.27	98.77
40	.12	.27	99.03
41	.10	.23	99.26
42	.10	.22	99.48
43	.08	.19	99.67
44	.08	.17	99.84
45	.07	.16	100.00

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*Note.* Factors extracted using Principal Axis Factoring. Rotation method was Promax with Kaiser Normalization.

**Figure H1***Scree Plot for 45-Item ASSET Pilot Scale*



**Table H2***Initial and Extracted Communalities for 45-Item ASSET Scale*

	Initial	Five-Factors	Four-Factors	Three-Factors
Change (SeA)	.50	.38	.36	.36
Change (SeM)	.54	.46	.46	.46
Change (SoA)	.61	.50	.50	.50
Change (RS)	.55	.47	.44	.44
Change (RD)	.56	.47	.46	.46
Experience (SeA)	.31	.20	.19	.19
Experience (SeM)	.50	.43	.43	.41
Experience (SoA)	.59	.46	.45	.45
Experience (RS)	.63	.50	.50	.50
Experience (RD)	.56	.45	.45	.45
Universal (SeA)	.65	.55	.55	.36
Universal (SeM)	.75	.67	.62	.49
Universal (SoA)	.75	.65	.63	.55
Universal (RS)	.76	.65	.56	.52
Universal (RD)	.81	.69	.64	.58
Important (SeA)	.74	.65	.64	.58
Important (SeM)	.80	.63	.63	.60
Important (SoA)	.81	.66	.67	.66
Important (RS)	.82	.67	.63	.64
Important (RD)	.82	.68	.66	.66
Feasible (SeA)	.66	.62	.50	.44
Feasible (SeM)	.71	.62	.55	.40
Feasible (SoA)	.78	.73	.68	.57
Feasible (RS)	.77	.72	.71	.50
Feasible (RD)	.77	.73	.71	.55
Behavior (SeA)	.70	.66	.45	.39
Behavior (SeM)	.75	.55	.55	.55
Behavior (SoA)	.64	.53	.53	.53
Behavior (RS)	.69	.57	.56	.55
Behavior (RD)	.73	.61	.61	.58
Academic (SeA)	.71	.65	.43	.39
Academic (SeM)	.79	.59	.60	.60
Academic (SoA)	.83	.53	.52	.52
Academic (RS)	.80	.62	.54	.50
Academic (RD)	.86	.66	.66	.63

Education (SeA)	.79	.74	.52	.48
Education (SeM)	.83	.68	.69	.69
Education (SoA)	.87	.54	.53	.52
Education (RS)	.81	.64	.57	.54
Education (RD)	.86	.66	.66	.64
Job (SeA)	.72	.65	.48	.46
Job (SeM)	.72	.57	.58	.58
Job (SoA)	.77	.56	.56	.54
Job (RS)	.76	.59	.57	.55
Job (RD)	.76	.62	.62	.59

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*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Principal Axis Factoring was extraction method. Shading indicates a communality less than .40.

**Table H3***Rotated Pattern Matrix of Five-Factor Solution for 45-Item ASSET Scale*

	1	2	3	4	5
Education (RS)	<b>.87</b>	.13	-.13	-.01	-.18
Academic (RS)	<b>.83</b>	.12	-.10	.04	-.21
Job (RS)	<b>.80</b>	-.06	.00	.00	-.02
Education (SeM)	<b>.77</b>	.03	-.03	-.18	.20
Education (RD)	<b>.77</b>	-.12	.09	.05	.06
Academic (RD)	<b>.76</b>	-.08	.07	.09	.03
Job (RD)	<b>.76</b>	-.18	.13	.04	.04
Job (SoA)	<b>.75</b>	.00	-.10	.06	.05
Job (SeM)	<b>.71</b>	-.02	-.01	-.16	.19
Education (SoA)	<b>.70</b>	.12	-.19	.09	.02
Academic (SeM)	<b>.68</b>	-.07	.06	-.13	.21
Behavior (RD)	<b>.68</b>	-.05	.12	.10	.02
Academic (SoA)	<b>.61</b>	.17	-.14	.11	.03
Behavior (RS)	<b>.59</b>	.07	.14	.07	-.01
Behavior (SeM)	<b>.49</b>	.08	.16	-.07	.21
Behavior (SoA)	<b>.41</b>	.20	.15	.05	.11
Universal (SeM)	.00	<b>.91</b>	-.01	-.18	.02
Universal (RD)	.08	<b>.83</b>	.05	-.08	-.06
Universal (RS)	.11	<b>.82</b>	.09	-.12	-.14
Universal (SoA)	.03	<b>.82</b>	.03	-.07	.02
Universal (SeA)	-.17	<b>.78</b>	-.09	-.14	.30
Important (SeA)	-.16	<b>.69</b>	-.12	.18	.26
Important (SeM)	-.02	<b>.68</b>	-.03	.15	.07
Important (RS)	.13	<b>.63</b>	.04	.19	-.14
Important (SoA)	.01	<b>.63</b>	-.07	.26	.05
Important (RD)	.04	<b>.62</b>	.13	.22	-.10
Change (SoA)	-.12	.02	<b>.77</b>	.04	-.04
Change (SeM)	-.07	-.01	<b>.71</b>	.04	.02
Change (RS)	.02	.14	<b>.68</b>	-.04	-.18
Change (RD)	.05	.05	<b>.67</b>	.00	-.11
Change (SeA)	-.16	-.10	<b>.65</b>	.14	.11
Experience (SeM)	.02	-.01	<b>.61</b>	-.11	.11
Experience (SoA)	.03	-.02	<b>.61</b>	-.01	.13
Experience (RS)	.20	-.02	<b>.57</b>	-.06	.05
Experience (RD)	.23	.02	<b>.53</b>	-.02	-.06

Experience (SeA)	-.04	-.06	<b>.42</b>	-.05	.16
Feasible (RS)	.07	-.04	.03	<b>.85</b>	-.09
Feasible (SeM)	.03	-.11	-.01	<b>.83</b>	.06
Feasible (RD)	.06	.02	.02	<b>.82</b>	-.04
Feasible (SoA)	-.01	.06	.02	<b>.81</b>	.02
Feasible (SeA)	-.12	.02	-.04	<b>.77</b>	.19
Education (SeA)	.24	.02	-.06	.00	<b>.73</b>
Academic (SeA)	.06	.07	.06	.08	<b>.70</b>
Behavior (SeA)	-.09	.16	.20	.10	<b>.66</b>
Job (SeA)	<b>.32</b>	-.06	-.06	.00	<b>.65</b>

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Principal Axis Factoring and Promax with Kaiser Normalization. Rotation converged in 7 iterations. Primary loadings are bold. Dark shading indicates an item with crossing loading of at least .32.

**Table H4***Variance Explained from Initial and Four-Factor Solution for 45-Item ASSET Scale*

Factor	Initial Eigen Values			Extraction Sums of Squares Loadings			Rotated Sums of Squares Loadings
	Total	% Variance	% Cumulative	Total	% Variance	% Cumulative	
1	17.08	37.94	37.94	16.65	37.00	37.00	14.58
2	4.79	10.64	48.59	4.37	9.71	46.71	11.67
3	2.72	6.05	54.63	2.22	4.92	51.63	9.09
4	2.01	4.47	59.11	1.60	3.56	55.19	8.82
5	1.81	4.02	63.13				
6	1.47	3.27	66.40				
7	1.15	2.56	68.96				
8	1.09	2.42	71.38				
9	.97	2.16	73.54				
10	.91	2.01	75.55				
11	.78	1.74	77.29				
12	.75	1.66	78.95				
13	.70	1.55	80.50				
14	.62	1.38	81.88				
15	.60	1.34	83.22				
16	.57	1.27	84.49				
17	.53	1.17	85.65				
18	.47	1.05	86.71				
19	.45	1.01	87.71				
20	.43	.96	88.67				
21	.39	.87	89.54				
22	.38	.84	90.38				
23	.35	.77	91.15				
24	.33	.73	91.87				
25	.31	.70	92.56				
26	.29	.65	93.21				
27	.28	.61	93.82				
28	.26	.58	94.40				
29	.23	.52	94.91				
30	.23	.50	95.42				
31	.21	.47	95.89				
32	.20	.45	96.34				

33	.20	.43	96.78
34	.19	.41	97.19
35	.16	.36	97.56
36	.15	.33	97.89
37	.15	.32	98.21
38	.13	.28	98.49
39	.12	.27	98.77
40	.12	.27	99.03
41	.10	.23	99.26
42	.10	.22	99.48
43	.08	.19	99.67
44	.08	.17	99.84
45	.07	.16	100.00

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*Note.* Factors extracted using Principal Axis Factoring. Rotation method was Promax with Kaiser Normalization.

**Table H5***Rotated Pattern Matrix Four-Factor Solution for 45-Item ASSET Scale*

	1	2	3	4
Education (SeM)	<b>.89</b>	.05	-.04	-.18
Job (SeM)	<b>.82</b>	.01	-.02	-.18
Academic (SeM)	<b>.81</b>	-.03	.05	-.16
Education (RD)	<b>.80</b>	-.15	.09	.09
Job (RS)	<b>.79</b>	-.13	.00	.09
Job (RD)	<b>.78</b>	-.21	.13	.08
Academic (RD)	<b>.77</b>	-.13	.06	.15
Job (SoA)	<b>.77</b>	-.03	-.11	.12
Education (RS)	<b>.74</b>	-.03	-.12	.18
Education (SoA)	<b>.69</b>	.07	-.19	.17
Behavior (RD)	<b>.68</b>	-.10	.12	.17
Job (SeA)	<b>.68</b>	.20	-.06	-.24
Academic (RS)	<b>.68</b>	-.05	-.09	.24
Education (SeA)	<b>.64</b>	.31	-.05	-.27
Behavior (SeM)	<b>.61</b>	.12	.15	-.10
Academic (SoA)	<b>.61</b>	.13	-.14	.19
Behavior (RS)	<b>.57</b>	.01	.14	.15
Behavior (SoA)	<b>.46</b>	.19	.15	.07
Academic (SeA)	<b>.46</b>	<b>.34</b>	.06	-.19
Universal (SeA)	-.01	<b>.87</b>	-.09	-.18
Universal (SeM)	.00	<b>.82</b>	.00	-.05
Important (SeA)	-.03	<b>.77</b>	-.12	.13
Universal (SoA)	.02	<b>.74</b>	.03	.05
Universal (RD)	.02	<b>.70</b>	.06	.09
Important (SeM)	.00	<b>.67</b>	-.02	.20
Universal (RS)	.01	<b>.65</b>	.10	.09
Important (SoA)	.01	<b>.61</b>	-.07	<b>.32</b>
Important (RD)	-.05	<b>.52</b>	.14	<b>.36</b>
Important (RS)	.02	<b>.51</b>	.05	<b>.35</b>
Behavior (SeA)	<b>.30</b>	<b>.42</b>	.19	-.16
Change (SoA)	-.15	.00	<b>.78</b>	.05
Change (SeM)	-.07	-.01	<b>.71</b>	.03
Change (RS)	-.09	.02	<b>.68</b>	.07
Change (RD)	-.02	-.03	<b>.68</b>	.07
Change (SeA)	-.10	-.04	<b>.64</b>	.06

Experience (SeM)	.09	.02	<b>.62</b>	-.15
Experience (SoA)	.11	.03	<b>.61</b>	-.06
Experience (RS)	.23	-.03	<b>.58</b>	-.06
Experience (RD)	.19	-.04	<b>.54</b>	.04
Experience (SeA)	.06	.01	<b>.42</b>	-.13
Feasible (RS)	-.02	-.04	.03	<b>.87</b>
Feasible (RD)	.01	.04	.01	<b>.81</b>
Feasible (SoA)	-.03	.12	.01	<b>.76</b>
Feasible (SeM)	.04	-.01	-.02	<b>.74</b>
Feasible (SeA)	-.03	.17	-.05	<b>.62</b>

*Note.* SeA = Self-Awareness; SM = Self-Management; SoA = Social-Awareness; RS = Relationship Skills; RD = Responsible Decision-Making. Principal Axis Factoring and Promax with Kaiser Normalization. Rotation converged in 7 iterations. Primary loadings are bold. Dark shading indicates an item with crossing loading of at least .32 or less than .20 difference between next highest loading.



**Table H6***Variance Explained from Initial and Three-Factor Solution for 45-Item ASSET Scale*

Factor	Initial Eigen Values			Extraction Sums of Squares Loadings			Rotated Sums of Squares Loadings
	Total	% Variance	% Cumulative	Total	% Variance	% Cumulative	
1	17.08	37.94	37.94	16.61	36.92	36.92	14.67
2	4.79	10.64	48.59	4.32	9.60	46.51	12.45
3	2.72	6.05	54.63	2.20	4.90	51.41	8.88
4	2.01	4.47	59.11				
5	1.81	4.02	63.13				
6	1.47	3.27	66.40				
7	1.15	2.56	68.96				
8	1.09	2.42	71.38				
9	.97	2.16	73.54				
10	.91	2.01	75.55				
11	.78	1.74	77.29				
12	.75	1.66	78.95				
13	.70	1.55	80.50				
14	.62	1.38	81.88				
15	.60	1.34	83.22				
16	.57	1.27	84.49				
17	.53	1.17	85.65				
18	.47	1.05	86.71				
19	.45	1.01	87.71				
20	.43	.96	88.67				
21	.39	.87	89.54				
22	.38	.84	90.38				
23	.35	.77	91.15				
24	.33	.73	91.87				
25	.31	.70	92.56				
26	.29	.65	93.21				
27	.28	.61	93.82				
28	.26	.58	94.40				
29	.23	.52	94.91				
30	.23	.50	95.42				
31	.21	.47	95.89				
32	.20	.45	96.34				

33	.20	.43	96.78
34	.19	.41	97.19
35	.16	.36	97.56
36	.15	.33	97.89
37	.15	.32	98.21
38	.13	.28	98.49
39	.12	.27	98.77
40	.12	.27	99.03
41	.10	.23	99.26
42	.10	.22	99.48
43	.08	.19	99.67
44	.08	.17	99.84
45	.07	.16	100.00

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*Note.* Factors extracted using Principal Axis Factoring. Rotation method was Promax with Kaiser Normalization.

## Appendix I

### Post Hoc Analysis: ASSET Composite Score Comparisons by Teacher Demographic Group

To understand if ASSET scores differed by the teacher demographic group variables in Table 4, several one-way analyses of variance procedures (ANOVAs) were conducted as a post hoc analysis. Results indicated there were only two statistically significant differences. For Compatible scores, there were differences in teacher ratings based on their grade level taught,  $F(4, 375) = 2.82, p = .025$ , and teacher role,  $F(3, 373) = 4.47, p = .004$ . Tukey post-hoc tests revealed that elementary teachers ( $M = 4.09, SD = .65, p = .032$ ) had higher Compatible scores compared to high school teachers ( $M = 3.84, SD = .66$ ). Similarly, general education teachers ( $M = 4.07, SD = .61, p = .002$ ) and special education teachers ( $M = 4.07, SD = .68, p = .049$ ) had higher Compatible scores as compared to subject area teachers ( $M = 3.78, SD = .66$ ). Therefore, ASSET scores generally did not differ by teacher demographic and background characteristics; however, on average, high school teachers and subject area reported lower underlying assumptions about whether social-emotional skills should be taught by teachers in the school setting.

## Appendix J

### Post Hoc Analysis: ASSET Change Scores and Relationships with Implementation

As a post hoc analyses, paired samples *t*-tests compared pre-implementation and post-implementation ASSET and Teacher SEL Belief scores (Brackett et al., 2012). Results (Table J) indicated that teachers endorsed higher scores for underlying assumptions about Compatibility after implementation,  $t(38) = -2.20, p = .03$ ; however, this difference was no longer statistically significant after applying a Bonferroni correction to adjust for familywise error rate (i.e.,  $p < .007$ ). Teachers also reported more Comfort relative to SEL after implementation,  $t(38) = -3.65, p < .001$ , which was robust to correction for multiple comparisons. In contrast, teachers endorsed lower Influential scores after implementation,  $t(38) = -2.83, p = .007$ . To understand if the changes in teachers' beliefs were associated with implementation outcomes, correlations between change scores and implementation outcomes were calculated. There was only one statistically significant correlation, such that the increase in teachers' Compatibility beliefs was associated with greater lesson dosage,  $r = .47, p = .002$ . This finding may suggest that teachers who demonstrated increases in their underlying assumptions about whether universal SEL should be taught by teachers in the school setting across the implementation period were more likely to implement additional lessons in their classrooms.

**Table J***Paired Samples t tests between Pre- and Post-Implementation Teacher Belief Scores (N = 41)*

	Pre-implementation		Post-implementation		<i>t</i>	<i>p</i>
	Mean	SD	Mean	SD		
<u>ASSET</u>						
Malleable	4.43	.38	4.39	.46	.46	.65
Compatible	4.20	.62	4.40	.54	-2.20	.03*
Influential	4.52	.47	4.30	.51	2.83	.007*
Total ASSET	4.39	.41	4.34	.44	.79	.43
<u>Teacher SEL Beliefs Scale (Brackett et al., 2012)</u>						
SEL Comfort	3.96	.65	4.27	.44	-3.65	.001**
SEL Commitment	4.24	.55	4.22	.59	.30	.77
SEL Culture	3.80	.79	3.79	.78	.08	.94

\*  $p < .05$ . \*\*  $p < .007$  (Bonferroni correction applied).

## VITA

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- Hart, S. C., DiPerna, J. C., Lei, P., & Cheng, W. (2020). Nothing lost, something gained? Impact of a universal social skills program on future state test performance. *Educational Researcher*, 49, 5-19.
- DiPerna, J. C., Frey, J. R., & Hart, S. C. (2020). Social-emotional learning. In F. C. Worrell and T. L. Hughes (Eds.) *The Cambridge Handbook of Applied School Psychology* (428-449). Cambridge University Press.
- Hunter, L. J., DiPerna, J. C., Hart, S. C., & Crowley, M. (2018). At what cost? Examining the cost effectiveness of a universal social-emotional learning program. *School Psychology Quarterly*, 33(1), 147-154.
- DiPerna, J. C., Lei, P., Cheng, W., Hart, S. C., & Bellinger, J. (2018). A cluster randomized trial of the Social Skills Improvement System-Classwide Intervention Program (SSIS-CIP) in first grade. *Journal of Educational Psychology*, 110, 1-16.
- Hart, S. C., & DiPerna, J. C. (2017). Teacher responses and beliefs toward child misbehavior: Influence of cognitive skill deficits. *Journal of Applied School Psychology*, 33, 1-15.

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