Social-Emotional Learning Profiles of Preschoolers' Early School Success: A Person-Centered Approach

Susanne A. Denham, **Hideko H. Bassett**, **Melissa Mincic**, **Sara Kalb**, **Erin Way**, **Todd Wyatt**, and **Yana Segal**
Department of Psychology George Mason University MS3F5, Fairfax VA 22030

Abstract

Examined how aspects of social-emotional learning (SEL)—specifically, emotion knowledge, emotional and social behaviors, social problem-solving, and self-regulation—clustered to typify groups of children who differ in terms of their motivation to learn, participation in the classroom, and other indices of early school adjustment and academic success. 275 four-year-old children from private day schools and Head Start were directly assessed and observed in these areas, and preschool and kindergarten teachers provided information on social and academic aspects of their school success. Three groups of children were identified: SEL Risk, SEL Competent-Social/ Expressive, and SEL Competent-Restrained. Group members differed on demographic dimensions of gender and center type, and groups differed in meaningful ways on school success indices, pointing to needed prevention/intervention programming. In particular, the SEL Risk group could benefit from emotion-focused programming, and the long-term developmental trajectory of the SEL Competent-Restrained group requires study.

Keywords

1. Introduction

Researchers have recently begun to focus on not only cognitive, but also social and emotional, aspects of preschoolers' school readiness, as crucial for concurrent and later well-being and mental health, as well as learning and early school success (Denham, 2006; Huffman, Mehlinger, & Kerivan, 2000; Peth-Pierce, 2000). As Zins, Bloodworth, Weissberg and Walberg (2007) have noted, "schools are social places, and learning is a social process" (p. 191). Even young students learn alongside and in collaboration with teachers and peers, and must be able to utilize their emotions to facilitate learning. During schooling, a child's

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

abilities to understand emotions of self and other, regulate emotion, attention, and behavior, make good decisions regarding social problems, express healthy emotions, and engage in a range of prosocial behaviors—their social-emotional learning (SEL) skills—all work together to grease the cogs of a successful school experience (Bodrova & Leong, 2006; Denham, Brown, & Domitrovich, 2010; Wesley & Buysse, 2003). But SEL success may not be easy for children just entering pre-academic and academic settings, because preschool and kindergarten contexts are taxing for them to navigate—they are often required to sit still, attend, follow directions, and approach and enter group play, all of which may challenge their nascent abilities. Unfortunately, many children have deficits in these skills by school entry (Buscemi, Bennett, Thomas, & Deluca, 1996; Rimm-Kaufman, Pianta & Cox, 2000).

Thus, SEL is vital to individual children's early school success; but the combination of all SEL components into *types* of children (which are, after all, the way parents and teachers see children—as entities, not as discrete skills, however important these specific skills may be) has not been studied. There are important advantages of investigating children's individual differences in SEL from a person-centered approach. Variable-centered approaches (e.g., regression analyses) typically emphasize universal explanations for developmental outcomes by enumerating outcomes for the "average" child. In contrast, person-centered approaches allow identification of subgroups, whose constellations vary in meaningful ways (Bergman & Magnusson, 1997; Richters, 1997). Such results provide a more holistic—and at the same time more individualized—approach to child development.

Concentration on variable-centered models thus creates a gap in our understanding of young children and our abilities to promote their successful development. To remedy this problem, we examined how aspects of SEL *clustered into profiles of children,* to promote early school success in social and academic domains. We sought to identify subgroups of children characterized by specific SEL profiles, and were particularly interested in understanding how these subgroups varied in their later social and academic adjustment to preschool and kindergarten classroom settings.

1.1 Theoretical Approach

It is important to ground our work theoretically and definitionally. An adaptation of Rose-Krasnor's (1997) theorizing helps in constructing a detailed working definition of SEL (see Figure 1). Hence, we put forward the definition of the construct at the model's topmost level, as *effectiveness in social interaction*, the result of organized behaviors that assure success at central developmental tasks. The SEL tasks specific to early childhood center on maintaining positive engagement in the physical, social, and cognitive/attentional environment, as well as managing emotional arousal (Howes, 1987; Parker & Gottman, 1989). These developmental tasks are important benchmarks against which to evaluate a child's SEL success; all components of SEL are operative in their service. That is, the more microanalytic elements of SEL, at the model's lowest level—all of which are primarily individual—are vital contributors to a child's ultimate successful, effective interaction with other people and associated age-appropriate tasks. We focus on four of the five core SEL competencies at this level, to be examined in this investigation: self-regulation, social awareness, responsible decision-making, and relationship/social skills (Payton et al., 2000; Zins et al., 2007).

1.2 Relations of SEL to School Success

Each core SEL competency has its own theoretical traditions and voluminous empirical literatures. We briefly define each and review how it is related to social and academic success in school. We center our thinking on developmentally appropriate conceptions of such success: (1) teachers' views of children's overall social competence (e.g., the middle

tier of Figure 1; see LaFreniere & Dumas, 1996); (2) teachers' views of classroom learning behaviors and feelings about school (e.g., cooperative or independent participation in the classroom, comfort with teacher, school liking; see Ladd, Birch, & Buhs, 1999; Ladd, Buhs, & Seid, 2000); (3) children's approaches to learning (e.g., competence motivation, attention/persistence, attitudes toward learning; see Fantuzzo, Perry, & McDermott, 2004); and (4) "harder" data, including achievement, particularly in pre-literary, pre-numeracy, reading, and mathematics, as well as grades and other aspects of the school experience (e.g., retentions, number of disciplinary referrals).

1.2.1 Self-regulation—Self-regulation includes: (1) the ability to handle one's emotions in productive ways, being aware of feelings, monitoring them, and modifying them when necessary so that they aid rather than impede the child's ability to cope with varying situations; and (2) *expressing* emotions appropriately. At the same time, important non-emotional aspects of self-regulation are paramount to success in the preschool to primary years; these include executive function regulatory skills (e.g., working memory, attention, and inhibitory control), used in the service of regulating SEL and both social and academic behavior.

Children's ability to regulate emotion, attention, and behavior has been found to be related to their school/classroom adjustment and academic achievement (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008; Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003; McClelland et al., 2007). In terms of emotion regulation, children who have difficulties dealing with negative emotions—who are irritable and emotionally inflexible—may not have the personal resources to focus on learning, whereas those who can maintain a positive emotional tone might be able to remain positively engaged with classroom tasks (Graziano, Reavis, Keane, & Calkins, 2007; Miller, Seifer, Stroud, Sheinkopf, & Dickstein, 2006; Shields et al., 2001). In the long run, school success may be thwarted for children who have trouble regulating emotions (Howse et al.; Trentacosta & Izard, 2007). Our own earlier work suggests that maternal and teacher reports of preschoolers' constructive modes of emotion regulatory coping are associated with their social effectiveness (Blair, Denham, Kochanoff, & Whipple, 2004; Denham, 1998; Denham et al., 2003; see also Smith-Donald, Raver, Hayes, & Richardson, 2007 for evidence of relations with academic success).

More cognitive/behavioral forms of regulation—for example, inhibitory control—are also related to young children's academic success. Liew, McTigue, Barrois, and Hughes (2008) found that, after controlling for numerous covariates, first grade inhibitory control (i.e., being able to walk on a line and trace a star) predicted third grade reading scores (see also McClelland et al., 2007; Ponitz, McClelland, Mathews, & Morrison, 2009; Smith-Donald et al., 2007; Valiente, Lemery-Chalfant, & Castro, 2007, and Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008, for concurrent and predictive relations).

Other researchers examining behavioral aspects of regulation have focused even more simply on young children's ability to carry out complex directions, finish tasks, concentrate, ask questions, seek help when necessary, and enjoy challenging tasks. Howse and colleagues (2003) found a direct relation between this form of regulation and kindergarten achievement. In sum, various aspects of regulation enhance children's early academic success across the age range considered here both predictively and concurrently, while accounting for many covariates, such as age, sex, socioeconomic status, and earlier social/academic success and/or earlier SEL.

1.2.2 Social awareness—This aspect of SEL includes ability to take others' perspectives, understand and empathize with their feelings, and appreciate others' similarities and differences. Children constantly attempt to understand their own and others'

behavior, and emotions convey crucial interpersonal information that enhance such understanding while guiding interaction (Dodge, Laird, Lochman, & Zelli, 2002). Inability to interpret emotions can make the classroom a confusing, overwhelming place (Raver, Garner, & Smith-Donald, 2007).

Young children's emotion knowledge contributes to their overall social competence; it is related to their positive peer status and prosocial reactions to peers' and adults' emotions (Denham, 1986; Denham et al., 2003; Denham, McKinley, Couchoud, & Holt, 1990; Smith, 2001). Thus, children who apply their more substantial emotion knowledge in emotionally charged situations have an advantage in peer interaction. Lack of emotion knowledge puts the preschooler at risk for aggression (Denham, Blair, Schmidt, & DeMulder, 2002; Denham et al., 2002). Research by Izard and colleagues (e.g., Izard et al., 2001; Schultz, Izard, Ackerman, & Youngstrom, 2001) corroborates these assertions: Head Start children's emotion knowledge predicted both contemporaneous and later teacher reports of social functioning. In particular, misattributing anger was related to peer rejection and boys' aggression.

Increasingly, researchers are also confirming a link between early academic success and young children's understanding of emotion. For example, Leerkes, Paradise, O'Brien, Calkins, and Lange (2008) showed that emotion knowledge—but not emotion regulation—was related to preschoolers' pre-academic achievement (see also Garner & Waajid, 2008, and Shields et al., 2001, for relations between low income preschoolers' emotion knowledge and both classroom adjustment and achievement). Similarly, Izard and colleagues (2001; see also Izard, 2002) found strong evidence that 5-year-olds' emotion knowledge predicted both their age 9 social and academic competence. Thus, it is evident that children's ability to understand emotions, especially in context, plays an important role in their concurrent and later academic success, often accounting for many important covariates (e.g., age, sex, race/ethnicity, earlier competence).

In research with the dataset used in the current study, we have found that preschool emotion knowledge is related, concurrently and predictively, to all of our indices of early academic success, even kindergarten teachers' evaluations of mathematics, literacy, and general knowledge. In fact, we have found an *indirect* path from emotion knowledge to an aggregate of teachers' views of children's early academic success, via self-regulation, emotional expressiveness, and social skills (Denham et al., 2009).

1.2.3 Responsible decision-making and social problem-solving—As the everyday social interactions of preschoolers increase in frequency and complexity, young children must learn to make good decisions in their social milieu, to solve social problems—taking in social situations, setting prosocial goals, and determining effective ways to solve differences that arise among peers. In an early meta-analysis of interventions focusing on such social problem-solving, we found that children's use of such skills is in fact related to their improved social behavior (Denham & Almeida, 1987). Various specific aspects of social problem-solving also are related to preschoolers' social competence and behavior problems (Capage & Watson, 2001; Coy, Speltz, DeKlyen, & Jones, 2001).

Others (e.g., Greenberg, Kusché, & Riggs, 2001; Youngstrom et al., 2000) have found links between social problem-solving and academic success, as well as the advantages of learning specifically *prosocial* problem solutions. We have found that children's emotional and behavioral responses to hypothetical peer dilemmas were related to teachers' concurrent and later assessments of school adjustment and their kindergarten academic progress, even with age, gender, and earlier school adjustment held constant (Denham, , Way, Kalb, Warren-Khot, & Bassett, 2010; see also Bierman, Domitrovich, et al., 2008). Thus, again, there is

evidence that young children's social problem-solving processes are implicated in their early school success.

1.2.4 Relationship skills—The goal in this aspect of SEL is positive and effective exchanges with others, and, ultimately, satisfying relationships that last over time. Numerous component skills are crucial, including positive overtures to join others in play, initiating and maintaining conversations, cooperating, listening, taking turns, seeking help, expressing appreciation, negotiating, and giving feedback. In addition, assertion, resolving conflict, and negotiating, develop during the preschool-to-primary period.

Children with poorer social skills are more likely to have difficulties with peer relationships, and thus, indirectly, with school adjustment (Buhs & Ladd, 2001; Deković & Gerris, 1994; Hernandez, 2003; Keane & Calkins, 2004; Newcomb, Bukowski, & Pattee, 1993; Warden & Mackinnon, 2003). Unpacking this indirect relation, Normandeau and Guay (1998) have found that kindergartners' prosocial behavior predicts their cognitive self-control in 1st grade, which then predicts 1st grade achievement. Prevention/intervention results also show social skills to be associated with school adjustment (e.g., Bierman & Greenberg, 1996).

Numerous researchers have found that the social skills constituting this component of SEL are even more directly related to early academic success. In a sophisticated structural model examining an amalgam of social skills, Elias and Haynes (2008; see also Welsh, Nix, Blair, Bierman, & Nelson, 2010) showed that initial social competence and improvements in social competence (i.e., cooperation, self-control, and assertion) predicted third graders' end-of-year grades in reading and mathematics.

Specifically examining prosocial behavior (e.g., cooperating, sharing, and helping), Caprara, Barbaranelli, Pastorelli, Bandura, and Zimbardo (2000) found that self-, peer-, and teacher-rated prosocial behavior in third grade predicted children's grades five years later, even with earlier academic achievement held constant. Finally, social skills play significant roles in predicting promotion and retention after 1st grade (Agostin & Bain, 1997). In fact, children with poor social skills/peer relationships are at increased risk of eventually dropping out of school (Jimerson et al., 2006; Reschly & Christenson, 2006). Thus, social behaviors appear to form a solid foundation for early school success.

1.3 Goals of This Study

Despite the strength of SEL skills' accumulated associations with early school success, almost all the findings already cited emanated from variable-centered analyses. Although variable-centered analysis is useful in mapping observed relations among the variables, they are difficult to translate into properties characterizing individuals (Bergman, Andershed, L., & Andershed, A-K., 2009). In contrast with earlier variable-centered analyses, applications of knowledge about preschoolers' social-emotional learning (SEL) require understanding how its components, as demonstrated in profiles of individual children, promote or deter optimal development across domains. In the present study, then, our goals are to (1) take a person-centered approach to create preschoolers' SEL profiles; (2) determine demographic differences among these profiles (to determine whether moderation may exist, wherein profiles of SEL skills are important for one gender, or one SES group rather than another); and (3) examine how these profiles relate to teacher reports of their school-related success at two assessment points.

2. Method

2.1 Participants

Data for the current study are part of a larger investigation focused on developing a portable assessment battery for measuring the social and emotional aspects of school readiness. Participants were recruited at Head Start and private childcare centers in the greater Northern Virginia area. Parental consent was received for a total of 396 children, and 364 children were administered at least one part of the battery. We observed and tested these 364 children at recruitment (Wave 1), approximately four months later (Wave 2), and 1 year later (Wave 3). Among these original 364 children, 231 children were 4-year olds and 133 were 3-year olds at the beginning of the school year when our data collection started. For the current study, we pooled data from the first and third wave of data collection, to ensure that all SEL data emanated from children around the same age (approximately 4 ½ years old). Thus, the total sample included in the present study was 275 children who completed the battery (192 from Wave 1, mean age = 55.45 mos, sd = 3.71, and 83 from Wave 3, mean age = 53.16 mos, sd = 3.87).

Of this subsample, approximately half of the children were female (50.9%), with a majority of children identified by their parent as either Caucasian or African American (45.3% Caucasian, 37.2% African-American, and 17.5% other); overall, approximately 15% of children were Latino/a. A little over half of the children attended private childcare (52.7%), and the remaining children attended Head Start (47.3%).

Of children attending private childcare, 68% were Caucasian, with 16% African-American; in Head Start, approximately 61% were African-American and 20% Caucasian).The associations of race and center type were nonrandom, χ^2 (2, $N = 275$) = 81.64, $p < .001$, with African-Americans overrepresented in Head Start, and Caucasians overrepresented in private childcare. Over 40% of mothers of children in private childcare and approximately 5% of mothers of Head Start children had undergraduate or higher level of education (median = associate degree for the former, high school education for the latter); these associations of maternal education and center type were also nonrandom, χ^2 (5, N = 275) = 62.17, $p < .001$, with lower levels of maternal education overrepresented for Head Start children, and the converse for children attending private childcare. Because of this last association, center type was taken as a marker for socioeconomic risk.

2.1.1 Procedures—Children's SEL measures were collected in fall to early spring of the year before kindergarten; with each direct assessment performed on different days within an approximately three-month period, and observations made on four separate days within this period. Preschool teacher measures were collected at the end of the school year. Kindergarten data were collected for the subsample of children ($n = 106$) who were still in the area and in schools that gave consent for research. Attrition analyses show that children who stayed in the study and those who could not be followed over time differed on none of the Wave 1 measures.

For each participating child in their classroom, preschool teachers were paid $15 in compensation for their time in the completion of the questionnaires; kindergarten teachers were paid $25 per child because they completed a greater number of questionnaires, most of which are not the focus of this study. Children received stickers for their participation.

2.2 Measures of Preschoolers' Social and Emotional Competence

2.2.1 Affect Knowledge Test (AKT; Denham, 1986)—The AKT assesses two types of preschoolers' emotion knowledge, recognition of emotion expression and understanding of

emotion-eliciting situations, using puppets with felt detachable faces that depict happy, sad, angry, and afraid expressions. Recognition is measured expressively (i.e., verbally by naming the emotion on the felt faces) and receptively (i.e., non-verbally by pointing one of the felt faces for each emotion). For the situation knowledge portion of the measure, 20 vignettes were enacted using the puppets. Each was accompanied by vocal and visual affective cues emitted by the puppet/experimenter. For eight of these vignettes, the puppet depicted the same emotion most people would feel (e.g., happiness in receiving an ice cream cone, fear when awakening from a nightmare), as an index of children's stereotypical emotion knowledge. In the remaining twelve vignettes, the puppet depicted a different emotion from what each child's mother had reported, on a questionnaire, that their child would probably feel, as an index of nonstereotypical emotion knowledge (e.g., happy or sad to come to preschool, angry at or afraid of his/her sibling for hitting him/her). Children received two points for correct identification of emotion in any section of the measure, one point for identifying the correct valence but not the correction emotion (e.g., sad for afraid).

Validity of the measure has been demonstrated in extensive previous research (e.g., Denham, 1986; Denham et al., 1990, 2003; Leerkes et al., 2008). In the present study, recognition and situation knowledge items were aggregated to create an overall index of total emotion knowledge for use in the current analyses. Its Cronbach's alpha was .87.

2.2.2 Preschool Self-Regulation Assessment (PSRA; Smith-Donald et al., 2007)—The PSRA was utilized to capture children's strengths and weaknesses in preschoolers' self-regulation. The PSRA consists of 10 structured tasks to tap inhibition and behavioral regulation. As inhibition tasks, three tasks requiring children to activate a subdominant response while suppressing a prepotent (or dominant) response (Pencil Tap, Balance Beam, Tower Task Turn Taking), and four delay tasks (Toy Wrap, Toy Wait, Snack Delay and Tongue Task) were included (Blair, 2002; Diamond & Taylor, 1996; Murray & Kochanska, 2002). In addition, the PSRA includes latency to complete three "do" tasks to assess children's compliance (Tower Clean-Up, Toy Sort, and Toy Return; Brumfield & Roberts, 1998), as an added measure of behavioral self-regulation. Previous research (Denham et al., 2009; Smith-Donald et al., 2007) has demonstrated validity of the measure.

Cronbach's alpha for the inhibition and noncompliance aggregates used in our analyses were .90 and .51, respectively. Considering that only three items were included in the noncompliance aggregate, the alpha of .51 is acceptable with an average inter-item intercorrelation of .25, $p < .001$ (Spiliotopoulou, 2009).

2.2.3 Social problem-solving: Challenging Situations Task (Denham, Bouril, & Belouad, 1994)—Children's choices of their own behaviors and emotions in response to three problematic peer provocation situations were assessed using the CST, a pictorial forced choice measure. Three unambiguous hypothetical peer-oriented scenarios were presented to the child via a picture and a short description of the transgression situation (see Appendix A). Children were then asked how they would feel about the situation and were presented four emotion choices using schematic drawings and verbal labels of 'happy,' 'sad,' 'angry,' and 'just okay.' Children were then asked what they would do and were presented with four behavioral response choices (prosocial, aggressive, avoidant, and manipulative/crying). Previous studies have utilized adaptations of this measure with preschoolers, demonstrating its validity in understanding social cognitive processes underlying behavioral disorders (Coy et al., 2001; Zahn-Waxler et al., 1994), cross-cultural comparisons (Cole & Tamang, 1998), and examinations of Head Start intervention effects (Bierman, Domitrovich et al., 2008).

In the present study, we sought to integrate these emotion and behavior responses, based on theoretical assumption and empirical findings. We chose to focus on sad and angry emotion responses, because of negative emotions' role in SIP (e.g., Orobio de Castro et al., 2003a, 2003b). For behavior response choices, we chose to focus on prosocial and aggressive, based on the longstanding literature linking selection of such strategies and behavioral adjustment (e.g., Dodge, 2003). Moreover, following Orobio de Castro's (2004) dual processing model, we considered sad and prosocial responses the more reflective set of choices, and angry and aggressive responses the more automatic, impulsive set of choices. Findings from our larger investigation lend empirical support to these pairings—for example, sad and prosocial response choices were often related to concurrent and later school success (Denham et al., 2010). Thus, 'sad' emotion and 'prosocial' response choices were summed to represent competent social problem solving; 'angry' emotion and 'aggressive' response choices were summed as less competent social problem solving. Cronbach's alpha for each six-item scale (i.e., 'sad-prosocial' and 'angry-aggressive', as used in the current analyses) were .49 and .55, respectively, with significant inter-item correlations (Spiliotopoulou, 2009).

2.2.4 Observed affect and behavior: Minnesota Preschool Affect Checklist-Revised and Shortened (MPAC-R/S) (Denham et al., 2009)—This observational means of assessing children's emotional expression, emotion regulation, and social behavior (MPAC; Sroufe, Schork, Motti, Lawroski, & LaFreniere, 1984) was adapted by Denham and colleagues (MPAC-R; Denham & Burton, 1996; Denham, Zahn-Waxler, Cummings, & Iannotti, 1991). In using the MPAC-R, children's behavior is observed and coded for a 5-minute interval across four different days. Observations can occur in differing contexts, although coders are encouraged to observe during less structured periods (i.e. center time, outside recess, gym, where play and peer interaction take place), as opposed to teacher-led instructional time.

The MPAC-R includes 66 items, which are organized into scales for positive and negative affect, inappropriate affect, positive and negative involvement in age-appropriate activities (negative involvement includes, e.g., impulsivity, aggression, wandering), positive and negative reactions to frustration (e.g. emotion regulation versus aggression), peer skills (e.g., leading, joining), and empathy/prosocial behaviors (e.g., sharing, cooperating with peers, taking turns), and unusual behaviors (e.g., social isolation, hostility). Thus, the MPAC-R taps important elements of SEL in four short observations.

The MPAC-R's concurrent validity was established by showing interpretable age changes and associations with both maternal affect and success in preschool (Denham et al., 1991; Sroufe et al., 1984). Second, Denham and Burton (1996) showed changes on the MPAC-R between pre-intervention and post-intervention, with children who showed the greatest SEL deficits benefiting maximally from the intervention. In training on the MPAC-R for the current study, all scales showed excellent inter-observer reliability, with intraclass correlations > .84, $ps < .001$.

Examination of item score distributions and item-to-total correlations for the MPAC-R, in our original dataset of 364, however, led to retention of 18 of the 66 original items. Using just these 18 items from the MPAC-R-Shortened (MPAC-R/S), three identical components emerged across three waves of data—emotionally positive/productive, emotionally negative/aggressive, and emotionally regulated/prosocial-peer oriented. These components accounted for between 63 and 66 percent of variability in their associated scales. Moreover, the emotionally negative/aggressive, and, to a lesser extent, the emotionally positive/productive and emotionally regulated/prosocial-peer oriented components were associated concurrently

and predictively with teachers' ratings of children's social competence, learning behaviors, and preschool and kindergarten achievement (Denham et al., 2009).

In the current study, then, summed scores for the emotionally positive/productive, emotionally negative/aggressive, and emotionally regulated/prosocial-peer oriented components were used. Cronbach's alphas for the current study's seven-item positive/ productive, five-item negative/aggressive, and six-item emotionally regulated/prosocial-peer oriented components were .53, .63, and .69, respectively.

2.3. Teacher Measures: Preschool and Kindergarten School Adjustment

2.3.1 Preschool Learning Behavior Scale (PLBS; McDermott, Leigh, & Perry, 2002)—The PLBS is a 29-item teacher rating instrument assessing preschool children's approaches to learning. Teachers rated children's specific, observable behaviors that occurred during classroom learning activities over the previous two months on a 3-point Likert scale. Content focuses on attentiveness, responses to novelty and correction, observed problem-solving strategy, flexibility, reflectivity, initiative, self-direction, and cooperative learning. The instrument yields three reliable learning behavior dimensions: (a) competence motivation (i.e., reluctant to tackle a new activity); (b) attention/persistence (i.e., tries hard, but concentration soon fades); and (c) attitudes toward learning (i.e., doesn't achieve anything constructive when in a sulky mood). Multi-method, multi-source validity analyses substantiated the PLBS dimensions for preschool children, and reliability estimates were similar for both White and non-White portions of the sample (Fantuzzo et al., 2004).

In the present study, as in standardization samples, the separate PLBS scales demonstrated adequate internal consistency (α = .79 to .89), and the total score showed excellent internal consistency (α = .92). The total score was used in subsequent analyses.

2.3.2 Social Competence and Behavior Evaluation (SCBE-30; LaFreniere & Dumas, 1996)—The 30-item version of the SCBE is designed to measure 3- to 6-year-olds' SEL. Teachers provide ratings on child behaviors such as "easily frustrated" (Angry/ Aggressive scale), "avoids new situations" (Anxious/Withdrawn scale), and "comforts or assists children in difficulty" (Sensitive/Cooperative scale). LaFreniere and Dumas (1996) demonstrated construct and convergent validity for the measure in a representative sample, via moderate associations with measures of anxiety-withdrawal and conduct disorder (see also Denham et al., 2003, for further evidence of SCBE-30's psychometric adequacy). Finally, in a multi-national study, the SCBE-30 demonstrated structural equivalence across diverse demographic groups including children in U.S. urban areas (LaFreniere et al., 2002).

In the present sample, as in LaFreniere and Dumas' (1996) standardization samples, SCBE-30 subscales demonstrated adequate to high internal consistency (α = .87 to .95). In the current study, the SCBE scales are examined separately, despite their substantial intercorrelations (p < .001) at both time periods, because of their potentially different values across children's profiles.

2.4. Teacher Measures: School Adjustment Kindergarten Only

2.4.1 Academic success: ECLS-K Academic Rating Scale (ARS, U.S. Department of Education, National Center for Education Statistics, 2002-2005)—Kindergarten teachers completed the ECLS-K ARS, which includes teacher ratings of kindergarteners' academic level in (1) Language and Literacy (e.g., "reads simple books independently"), (2) General Knowledge (e.g., "forms explanations based on observations and explorations"), and (3) Mathematical Thinking (e.g., "solves problems involving numbers using concrete objects"). The ARS is intended to indirectly assess the process and

products or children's learning in school. Teachers compare each child to their same age peers on 1 – 5 point scales, in the spring of their kindergarten year. Internal consistency reliability for the three scales in this sample ranged from .85 to .93; a Kindergarten Academic Success aggregate was created by summing the standard score for each scale (α = .96).

2.4.2 Student-Teacher Relationship Scale (STRS; Pianta & Nimetz, 1991)— Teachers rated their relationships with each target child via the STRS, a 28-item teacher-report instrument that uses a 5-point Likert-type scale to assess a teacher's perceptions of his/her relationship with a child, the child's interactive behavior with the teacher, and the teacher's beliefs about the student's feelings towards the teacher. It includes three scales, Closeness, Conflict, and Dependency. A representative item from the closeness subscale is, "I share an affectionate, warm relationship with this child." The conflict subscale contains items such as, "This child and I always seem to be struggling with each other." The dependency subscale contains items such as, "This child reacts strong to separation from me."

Excellent test-retest and internal consistency reliability have been reported for the measure (Saft & Pianta, 2001). Teacher-child relationship qualities as measured by the STRS persist across time and to some extent across teachers. In terms of validity, STRS scores are concurrently associated with and predict, for example, academic and social functioning in pre-kindergarten through the elementary grades (Hamre & Pianta, 2001; Ramos-Marcuse & Arsenio, 2001; Pianta, 1997; Pianta, Hamre, & Stuhlman, 2003; Pianta & Stuhlman, 2004). The STRS has also been validated with low-income and minority samples (Hamre & Pianta, 2001). In the current study, a total score was created by summing Closeness, reflected Conflict, and reflected Dependency scores; Cronbach's alphas for the Conflict, Closeness, and Dependency scales were .94, 83, and.78, respectively, and for the total score aggregate was .91. In subsequent analyses, the total score aggregate was used.

3. Results

To reiterate, our study goals are to (1) take a person-centered approach to create preschoolers' SEL profiles; (2) determine demographic differences among these profiles (to determine whether moderation may exist, wherein profiles of SEL skills are important for one gender, one race, or one SES group rather than another); and (3) examine how these profiles relate to teacher reports of their school-related success at two assessment points.

Descriptive information for all variables is presented in Table 1. To ensure equality of the pooled data, first, we examined mean differences between data from Waves 1 and 3. As seen in Table 1, although there were a few trend level differences, no significant differences were found on any variables included in the present study. Distribution of the variables was also examined prior to analyses. Levels of skewness and kurtosis were acceptable such that no transformations of data or elimination of measures were required.

3.1 Goal 1: Creation of SEL typologies

Clustering methods are used to discover person-centered structure in data that is not readily apparent by visual inspection or via theory. Specifically, cluster analysis is a multivariate technique for grouping individuals who exhibit similar profiles of scores across a variety of different measures, into relatively homogenous groups (Aldenderfer & Blashfield, 1984). Thus, it provides a means of focusing upon patterns of behavior that vary systematically within individuals, in this case SEL skills.

Prior to conducting cluster analyses, we standardized all SEL indices (i.e., emotion knowledge aggregate, self-regulation inhibition and compliance, sad/prosocial and angry/aggressive social problem-solving solutions, and emotionally positive/productive, emotionally negative/aggressive, and emotionally regulated/prosocial-peer oriented observed behavior). Next, we used the k-means clustering method to assign each participant to the cluster "closest" to his/her profile values, via an iterative process using squared Euclidean distances from initial cluster centers. This process continued until the observations remained stable within a given cluster.

We examined analyses yielding two to five clusters, according to two statistical criteria and one conceptual criterion. The first statistical criterion is to maximize distance between cluster centers; this criterion did not assist us in determining our choice because these distances did not vary across analyses with varying numbers of clusters. The second statistical criterion was finding an adequate n in each cluster for subsequent analyses, including kindergarten analyses, in which cell sizes were of necessity smaller. The cluster analyses yielding four or five clusters did not meet this criterion.

Finally, to decide between analyses yielding two and three clusters, we used a conceptual criterion—how did the clusters we found "make sense"? A key to using cluster analysis is judging when groups are "real", not merely imposed on the data by the method (Aldenderfer & Blashfield, 1984). In this case, we found the three-cluster solution to have the better conceptual fit than a two-cluster solution which yielded only "SEL Competent" and "SEL Noncompetent" children. According to oneway analyses of variance, the members of these three groups differed significantly from each other in all social and emotional competence variables (Table 2). Mean profile configurations for the resulting three cluster solutions are illustrated in Figure 2. Based on the profile for each cluster, we named Cluster 1 "SEL Risk", Cluster 2 "SEL Competent-Social/Expressive", and Cluster 3 "SEL Competent-Restrained".

3.1.1 Cluster profile characteristics—Children in the SEL Risk group (n = 118; 42.9%) showed significantly lower emotion knowledge and self-regulation compared to the other groups. The children in this group had significantly lower sad-prosocial and significantly higher angry-aggressive choices to hypothetical peer provocation compared to children in the other groups, indicating lower skills in social problem solving. Although positive/productive observed behaviors were significantly higher compared to children in the SEL Competent-Restrained group, SEL Risk children showed significantly higher negative/aggressive behaviors than SEL Competent-Restrained children, and significantly lower emotionally regulated/prosocial-peer oriented component than SEL Competent-Social/Expressive children.

The SEL Competent-Social/Expressive (n = 80; 29.0% of the total sample) and SEL Competent-Restrained groups (n = 77; 28.0%) showed similar competence levels on emotion knowledge and self-regulation. The differences between these two groups were seen in social problem solving and observed social and emotional behaviors. Specifically, SEL Competent-Social/Expressive children showed significantly more adaptive social problem solving, and greater evidence of social and emotional behaviors, including the negative/aggressive component, compared to SEL Competent-Restrained children.

3.2 Goal 2: Moderation of Group Membership by Demographic Characteristics

Children's average demographic information for each group is also provided in Table 2. To examine whether groups differed in gender and center type composition, a chi square was separately calculated for demographic categories, with follow-up examination of adjusted standardized residuals (race is not examined separately because it is conflated with center

type, the proxy for family income). Regarding gender, the percentages of boys assigned to the groups were significantly different from the percentages of girls' assignments; the percentage of boys in the SEL Risk group was significantly higher than the percentage of girls, whereas the percentage of boys in the SEL Competent-Restrained was significantly lower than the percentage of girls. There was no significant difference on the percentage of boys and girls in the SEL Competent-Social/Expressive group.

Center Type was also significantly related to children's group assignment. Children enrolled in Head Start had a significantly higher percentage in the SEL Risk group compared to children in private childcare, whereas the percentage of Head Start children in the SEL Competent-Social/Expressive was significantly lower than the percentage of children in private childcare. SEL Competent-Restrained group membership did not vary by center type.

3.3 Goal 3: Group Differences in School Success

Next, we examined whether children's social and emotional profiles were differentially related to teacher-rated preschoolers' school readiness, and kindergarten adjustment. Because of significant relations between group membership and child characteristics (e.g., gender and center type), we first examined whether there were any significant interaction effects of the group membership and child characteristics, using GLM univariate analysis on each child outcome measure. The results indicated that there were no significant interaction effects; thus, we used oneway ANOVAs to examine the relations between the group membership and each teacher report of child outcome measure. The results of these analyses are shown in Table 3.

3.3.1 Group differences in preschool school success indexed by teacher ratings—For the preschool teacher measures, significant group differences were found for PLBS total scores and the sensitive/cooperative scale of SCBE. No significant difference was found on the angry/aggressive or anxious/withdrawn scales of SCBE. Tukey's post hoc analyses revealed that SEL Risk group showed significantly lower PLBS total and SCBE sensitive/cooperative scores, compared to both SEL Competent groups.

3.3.2 Profile Differences in Kindergarten School Success Indexed by Teacher Ratings—A similar pattern to that found for preschool measures was identified for kindergarten measures. That is, significant mean differences were found between the SEL Risk group and the two SEL Competent groups, with the SEL Risk scoring lower than either SEL Competent group on the ARS, PLBS, and STRS.

Kindergarten SCBE scores showed somewhat different results from their preschool counterparts. In preschool teacher reports, only the sensitive/cooperative scale showed a significant difference across groups, but in kindergarten teacher reports, significant group differences were found on all three SCBE scales. According to Tukey's post hoc analyses, children in the SEL Risk group showed a significantly higher angry/aggressive score compared to the two SEL competent groups. On the sensitive/cooperative scale, all three groups showed significant differences from each other. Specifically, children in the SEL Risk group had the lowest sensitive/cooperative score, the children in the SEL Competent-Social/Expressive the next highest, and children in the SEL Competent-Restrained the highest score compared to children in either other groups. As for the anxious/withdrawn SCBE scale, children in the SEL Risk group scored significantly higher compared to children in the SEL Competent-Social/Expressive group.

4. Discussion

4.1 Overview

In the current study we examined SEL skills that promote school readiness, from a holistic view— that is, focusing on four-year-olds' individual differences. Our first goal was to distinguish groups of children based on their emotion knowledge, self-regulation, social problem-solving patterns, and observed social and emotional behavior; we wished to see, in our second goal, whether specific demographic groups were predominant in any of the SEL groups. Finally, our major goal was to see whether these groups of children differed in later (preschool/kindergarten) school success, on a number of dimensions. Consonant with our person-centered focus, in our consideration of the meaning of our results, we consider how we met each of these three goals while describing each group in turn.

4.2 SEL Risk Group

Three groups were identified—SEL Risk, SEL Competent-Social/Expressive, and SEL Competent-Restrained—meeting our first goal. It was clear that the SEL Risk group understood emotions less well, had more trouble effortfully controlling their behavior and complying with the examiner, and already used angry-aggressive social problem-solving patterns, along with only moderate emotional positivity and productive play. Moreover, they were marked by relatively high negative emotion and aggression and lack of emotion regulation and prosocial peer interaction.

These children clearly have needs that should be addressed to maximize their success in school. In fact, these children were already seen by preschool teachers as less persistent and motivated to learn, sensitive, and cooperative, than children in either SEL Competent group. By kindergarten, teachers thought this group was still showing these problems, but also demonstrating less language, literacy, mathematical, and general knowledge acquisition, more angry/aggressive behavior, and less positive relationships with teachers, in comparison to at least one of the SEL Competent groups. Knowing the full profile of this typology—in fact, adequately assessing all preschool children's SEL skills—would help us make better decisions about how to facilitate children's functioning (Denham, 2006). After all, "what gets measured gets treasured" —so that a goal emanating from this research would be for our field to continue in its efforts toward creating excellent *batteries* of SEL assessment tools, usable for applied purposes.

Boys and children attending Head Start were overrepresented in the SEL Risk group (especially in comparison with the SEL Competent-Social/Expressive group). It is important to consider these demographic characteristics when attending to these children's needs. Keenan and Shaw (1997) posit that both socialization and the pace of biological and social-emotional development differ for boys and girls during the preschool age-range. For example, boys are already seen as more angry/aggressive, and less empathic and prosocial, than girls during this age range (Keenan & Shaw, 1997; LaFreniere & Dumas, 1996). Some investigators also find differences favoring girls in understanding emotions (McClure, 2000). Boys represent a vulnerable subgroup that, according to our findings, needs careful attention to its SEL needs.

Furthermore, children living in poverty and inequity already demonstrate a significant achievement gap as early as kindergarten (e.g., Campbell & Stauffenberg, 2008; Raver & Knitzer, 2002; Ryan, Fauth, & Brooks-Gunn, 2006). Thus, maximizing instructional effectiveness in preschool programs, including those serving children growing up in poverty (e.g., Bierman, Domitrovich, et al., 2008a) must be a priority.

Importantly, the current findings suggest that one way in which the deleterious effects of such conditions may be played out is in a cluster of SEL skills which amplify risk in both academic and social worlds of early childhood. Thus, early childhood programming should also target SEL. Specifically, our analyses suggested that difficulty in understanding and identifying emotions, an angry-aggressive pattern of social problem-solving, and negative emotional expressiveness were three features characterizing children in the SEL Risk group.

So, in particular, programs that focus on *emotions* and their effective utilization, as well as social problem-solving, are called for. In answer to this challenge, Izard's Emotion-Based Program, the Preschool PATHS program, and Dinosaur School have variously shown positive effects on children's emotional expressiveness, emotion knowledge, and emotion regulation, as well as social problem-solving, over time periods of one academic year, with weekly or biweekly lessons (Domitrovich, Cortes, & Greenberg, 2007; Izard et al., 2008; Webster-Stratton & Reid, 2003; Webster-Stratton, Reid, & Stoolmiller, 2008). In fact, Webster-Stratton and colleagues (2008) found that children who initially demonstrated the fewest school readiness skills and most significant behavior problems benefitted most. As Izard and colleagues note, teaching children about emotion utilization—"the use of techniques and strategies that harness the energy of emotion arousal in constructive thought and action (Izard, Stark, Trentacosta, & Schultz, 2008; p. 156)" is of utmost importance.

4.3 SEL Competent Groups

Our detection of two SEL Competent groups was of great interest. The SEL Competent-Social/Expressive and SEL Competent-Restrained group did not differ on certain aspects of SEL, but did differ in terms of their social problem-solving patterns, which the SEL Competent-Restrained group choosing fewer sad/prosocial responses and more angry/aggressive responses than the other SEL Competent group. Moreover, they were observed to be less emotional and less interactive, in any way, with their peers than the other SEL Competent group. These differences clearly evoke a group of children who, despite their difference from the SEL Risk group and their relative strengths in emotion knowledge and self-regulation, present as relatively unemotional and noninteractive in the preschool classroom setting. In contrast, children in the SEL Competent-Social/Expressive group appear relatively more emotional than the other groups, but may have made up for their emotionality with their productive social problem-solving patterns, emotion regulation, and positive social behavior.

Despite these rather striking cognitive and behavioral differences in the two "SEL Competent" groups, preschool and kindergarten teachers did not judge SEL Competent-Restrained children as less successful in the classroom than SEL Competent-Social/Expressive children. In fact, kindergarten teachers found them as *more* sensitive and cooperative than the SEL Competent-Social/Expressive group. The first thing to note about this pattern of findings is that it appears to be an example of equifinality (Bergman et al., 2009), with a similar end state (i.e., preschool and teacher evaluations in this case) achieved via different SEL foundations. There are differing routes to early success in school.

The differences between the two SEL Competent groups also highlight the role of emotion —reminiscent of the conception of "ego over-control", which is characterized by self-regulated inhibition of actions and affect, and insulation from the environment (Block & Block, 1980). The children in the SEL Competent-Restrained group fit such a description, highlighting especially the diminution of emotion. Perhaps teachers in preschool and kindergarten see them, especially the girls overrepresented in this group, as quietly compliant. It also might be important, in future research, to examine their tendency to play productively, separate from their expression of positive emotions; because these behaviors

covaried in one factor in this study, we cannot say whether this group engages in high level nonsocial play or not, which would mitigate their lack of social interaction (Rubin, 1982).

It is hard to predict whether such an emotional strategy, paired as it was here with a lack of peer affiliation, could remain successful in a school culture where friendship with peers—doing things together, sharing positive emotions, and reasoning about social interactions prosocially–becomes increasingly important (Denham et al., 2011). It remains to be seen whether children fitting the profile of the SEL Competent-Restrained group during preschool were profitably observing the peer world and learning (but not necessarily demonstrating) social behaviors, which could stand them in good stead at a later date. This possibility suggests another arena for future research.

4.4 Limitations

A number of issues exist in the current study that, if given attention, might allow us to isolate even stronger findings. The first limitation of the current findings is that internal consistency reliabilities for CST emotion and behavior response scales, and to some extent the MPAC scales, were low according to conventional standards; given the small number of items per CST scale and significant inter-item correlations (Knapp & Brown, 1995), however, as well as the potentially differing play contexts in which MPAC observations were made across days, we consider our results to be a good beginning in assessing emotion and behavior responses within preschoolers' social problem-solving, as well as their day-to-day social-emotional functioning. In future studies, in contrast to the goal of our overarching project to create short measures for use in early childhood classrooms, longer CST scales could be created.

A second limitation was our inability to access information on, or assess, children's verbal ability or cognitive ability, in order to partial out the contribution of such abilities prior to examining how variability specifically in SEL was related to teacher ratings of school adjustment. However, a search of social information processing, social problem-solving, and self-regulation literatures shows that rarely, if ever, is verbal ability, IQ, or cognitive ability *partialled from* these constructs' contributions to early school success. Possibly both social problem-solving and self-regulation are considered inherently cognitive constructs (e.g., Goulden & Silver, 2009, consider verbal ability inherently related to self-regulation, but do not measure it), so that investigators do not routinely control for such redundant constructs. Nonetheless, it would be helpful to know whether SEL abilities uniquely contribute to early school adjustment over and above other central developmental attainments in language and cognition, and in future research, such information should be gathered.

A third limitation is inherent in using cluster analysis. It is true that sample size is an issue in cluster analysis, and that a larger sample might have uncovered a greater number interpretable groups (Aldenderfer & Blashfield, 1984), particularly including specifically behaviorally inhibited (shy) children; further, our group distributions are somewhat arbitrary, especially in that we used cluster analyses instead of latent class analyses (LCA). However, LCA was not used because we do not yet have a model of how the preschool SEL abilities should group as individual profiles; as such, although these results are somewhat exploratory, they do show us interpretable groups of children whose SEL abilities are related to their school adjustment during their last preschool, and their kindergarten, years. Further research should be done with larger groups of participants, and as models of SEL performance are developed, more sophisticated, flexible statistical methods should be used. These models could promote even further our understanding of the SEL foundations of early school success.

Finally, such larger samples could be profitably accompanied by inclusion of indices of behavioral inhibition and shyness in our observational coding (see, e.g., Rubin, Hastings, Stewart, & Henderson, 1997). The MPAC-R/S did not include any direct measurement of this important aspect of SEL functioning.

4.5 Conclusions

A theme in the depiction of all the groups we identified is that of emotion—its expression, knowledge, regulation, and *utilization* within social problem-solving and interaction. The strong relation between this emotional theme and early school success is a second crucial motif in the story that we tell here. In looking at the whole child and the picture of SEL skills painted by our analyses, we have suggested several areas for continued research and applied work. Our focus on early childhood puts a much-needed spotlight on an age period in which the interplay of emerging cognitive, emotional, social, and regulatory mechanisms is of paramount importance.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

5. References

Agostin TM, Bain SK. Predicting early school success with developmental and social skills screeners. Psychology in the Schools. 1997; 34:219–228. doi:10.1002/ (SICI)1520-6807(199707)34:3<219::AID-PITS4>3.0.CO;2-J.

Aldenderfer, MS.; Blashfield, RK. Cluster Analysis. Sage Publications; Beverly Hills, CA: 1984.

Bergman LR, Andershed H, Andershed A. Types and continua in developmental psychopathology: Problem behaviors in school and their relationship to later antisocial behavior. Development and Psychopathology. 2009; 21(3):975–992. doi:10.1017/S0954579409000522. [PubMed: 19583893]

Bergman LR, Magnusson D. A person-oriented approach in research on developmental psychopathology. Development and Psychopathology. 1997; 9:291–319. doi:10.1017/ S095457949700206X. [PubMed: 9201446]

Bierman KL, Domitrovich CE, Nix RL, Gest SD, Welsh JA, Greenberg MT, Blair C, et al. Promoting academic and social-emotional school readiness: The Head Start REDI program. Child Development. 2008; 79:1802–1817. doi:10.1111/j.1467-8624.2008.01227.x. [PubMed: 19037951]

Bierman, KL.; Greenberg, MT. Social skills training in the Fast Track Program.. In: Peters, RD.; McMahon, RJ., editors. Preventing childhood disorders, substance abuse, and delinquency. Sage; Thousand Oaks, CA: 1996. p. 65-89.

Bierman KL, Nix RL, Greenberg MT, Blair C, Domitrovich CE. Executive functions and school readiness intervention: Impact, moderation, and mediation in the Head Start REDI program. Development and Psychopathology. 2008; 20:821–843. doi:10.1017/S0954579408000394. [PubMed: 18606033]

Blair C. School readiness: Integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry. American Psychologist. 2002; 57:111–127. doi: 10.1037/0003-066X.57.2.111. [PubMed: 11899554]

Blair KA, Denham SA, Kochanoff A, Whipple B. Playing it cool: Temperament, emotion regulation, and social behavior in preschoolers. Journal of School Psychology. 2004; 42:419–443. doi:10.1016/j.jsp.2004.10.002.

Block, JH.; Block, J. The role of ego-control and ego-resiliency in the organization of behavior.. In: Collins, WA., editor. Development of cognition, affect and social relations. The Minnesota Symposia on Child Psychology. Vol. 13. Erlbaum; Hillsdale, NJ: 1980. p. 39-101.

Bodrova, E.; Leong, DJ. Self-regulation as a key to school readiness: How early childhood teachers can promote this critical competency.. In: Zaslow, M.; Martinez-Beck, I., editors. Critical issues in early childhood professional development. Paul H Brookes Publishing; Baltimore, MD, US: 2006. p. 203-224.

Brumfield BD, Roberts MW. A comparison of two measurements of child compliance with normal preschool children. Journal of Clinical Child Psychology. 1998; 27:109–116. doi:10.1207/s15374424jccp2701_12. [PubMed: 9561943]

Buhs ES, Ladd GW. Peer rejection as antecedent of young children's school adjustment: An examination of mediating processes. Developmental Psychology. 2001; 37:550–560. doi:10.1037/0012-1649.37.4.550. [PubMed: 11444490]

Buscemi L, Bennett T, Thomas D, Deluca DA. Head Start: Challenges and training needs. Journal of Early Intervention. 1996; 20:1–13. doi:10.1177/ 105381519602000101.

Campbell, S.; Stauffenberg, CV. Child characteristics and family processes that predict behavioral readiness for school.. In: Booth, A.; Crouter, AC., editors. Disparities in school readiness: How families contribute to transitions in school. Taylor & Francis Group/Lawrence Erlbaum Associates; New York, NY: 2008. p. 225-258.

Capage L, Watson AC. Individual differences in theory of mind, aggressive behavior, and social skills in young children. Early Education and Development. 2001; 12:613–628. doi:10.1207/s15566935eed1204_7.

Caprara GV, Barbaranelli C, Pastorelli C, Bandura A, Zimbardo PG. Prosocial foundations of children's academic achievement. Psychological Science. 2000; 11:302–306. doi:10.1111/1467-9280.00260. [PubMed: 11273389]

Cole PM, Tamang BL. Nepali children's ideas about emotional displays in hypothetical challenges. Developmental Psychology. 1998; 34:640–646. doi:10.1037/0012-1649.34.4.640. [PubMed: 9681255]

Coy K, Speltz ML, DeKlyen M, Jones K. Social-cognitive processes in preschool boys with and without oppositional defiant disorder. Journal of Abnormal Child Psychology. 2001; 29:107–119. doi:10.1023/A:1005279828676. [PubMed: 11321626]

Deković M, Gerris JRM. Developmental analysis of social cognitive and behavioral differences between popular and rejected children. Journal of Applied Developmental Psychology. 1994; 15:367–386. doi:10.1016/0193-3973(94)90038-8.

Denham SA. Social cognition, prosocial behavior, and emotion in preschoolers: Contextual validation. Child Development. 1986; 57:194–201. doi:10.2307/1130651.

Denham, SA. Emotional development in young children. Guilford Press; New York: 1998.

Denham SA. Social-emotional competence as support for school readiness: What is it and how do we assess it? Early Education and Development, Special Issue: Measurement of School Readiness. 2006; 17:57–89. doi: 10.1207/s15566935eed1701_4.

Denham SA, Almeida MC. Children's social problem-solving skills, behavioral adjustment, and interventions: A meta-analysis evaluating theory and practice. Journal of Applied Developmental Psychology. 1987; 8:391–409. doi:10.1016/0193-3973(87)90029-3.

Denham S, Bassett HH, Kalb SC, Mincic M, Wyatt T, Graling K, Warren HK. How preschoolers' social and emotional competence predicts their school-readiness: Development of competency-based assessments. Advances in SEL Research Newsletter. 2009; 3:11–13.

Denham SA, Blair KA, DeMulder E, Levitas J, Sawyer K, Auerbach-Major S, Queenan P. Preschool emotional competence: Pathway to social competence. Child Development. 2003; 74:238–256. doi:10.1111/1467-8624.00533. [PubMed: 12625448]

Denham SA, Blair KA, Schmidt M, DeMulder E. Compromised emotional competence: Seeds of violence sown early? American Journal of Orthopsychiatry. 2002; 72:70–82. doi: 10.1037/0002-9432.72.1.70. [PubMed: 14964596]

Denham SA, Bouril B, Belouad F. Preschoolers' affect and cognition about challenging peer situations. Child Study Journal. 1994; 24

Denham SA, Brown CA, Domitrovich CE. Teglasi H. "Plays nice with others": Social-emotional learning and academic success. Overlaps between socio-emotional and academic development, Early Education and Development. 2010; 21 special issue.

Denham SA, Burton R. A social-emotional intervention for at-risk 4-year-olds. Journal of School Psychology. 1996; 34:225–245. doi:10.1016/0022-4405(96)00013-1.

Denham SA, McKinley M, Couchoud EA, Holt R. Emotional and behavioral predictors of preschool peer ratings. Child Development. 1990; 61:1145–1152. doi:10.2307/1130882. [PubMed: 2209184]

Denham, SA.; Warren, HK.; von Salisch, M.; Benga, O.; Chin, J-C.; Geangu, E. Emotions and peer relationships.. In: Hart, C.; Smith, PK., editors. Wiley/Blackwell Handbook of childhood social development. 2nd. Blackwell Publishers; NY: 2011. p. 413-433.

Denham SA, Way E, Kalb SC, Warren-Khot HK, Bassett HH. Preschoolers' social information processing and school readiness: Validity of Challenging Situations Task. 2010 Submitted.

Denham SA, Zahn-Waxler C, Cummings EM, Iannotti RJ. Social competence in young children's peer relations: Patterns of development and change. Child Psychiatry and Human Development. 1991; 22(1):29–44. doi:10.1007/BF00706057. [PubMed: 1748014]

Diamond A, Taylor C. Development of an aspect of executive control: Development of the abilities to remember what I said and to 'Do as I say, not as I do.'. Developmental Psychobiology. 1996; 29:315–334. doi:10.1207/s15326942dn2802_7. [PubMed: 8732806]

Dodge, KA. Do social information processing patterns mediate aggressive behavior?. In: Lahey, BB.; Moffitt, TE.; Caspi, A., editors. Causes of conduct disorder and juvenile delinquency. The Guilford Press; New York: 2003. p. 254-274.

Dodge KA, Laird R, Lochman JE, Zelli A. Multidimensional latent-construct analysis of children's social information processing patterns: Correlations with aggressive behavior problems. Psychological Assessment. 2002; 14:60–73. doi:10.1037/1040-3590.14.1.60. [PubMed: 11911050]

Domitrovich CE, Cortes RC, Greenberg MT. Improving young children's social and emotional competence: A randomized trial of the preschool "PATHS" curriculum. The Journal of Primary Prevention. 2007; 28:67–91. doi:10.1007/s10935-007-0081-0. [PubMed: 17265130]

Elias MJ, Haynes NM. Social competence, social support, and academic achievement in minority, low-income, urban elementary school children. School Psychology Quarterly. 2008; 23:474–495. doi: 10.1037/1045-3830.23.4.474.

Fantuzzo J, Perry MA, McDermott P. Preschool approaches to learning and their relationship to other relevant classroom competencies for low-income children. School Psychology Quarterly. 2004; 19:212–230. doi:10.1521/scpq.19.3.212.40276.

Garner PW, Waajid B. The associations of emotion knowledge and teacher-child relationships to preschool children's school-related developmental competence. Journal of Applied Developmental Psychology. 2008; 29:89–100. doi:10.1016/j.appdev.2007.12.001.

Goulden LG, Silver CH. Concordance of the Children's Executive Functions Scale with established tests and parent rating scales. Journal of Psychoeducational Assessment. 2009; 27:439–451.

Graziano PA, Reavis RD, Keane SP, Calkins SD. The role of emotion regulation in children's early academic success. Journal of School Psychology. 2007; 45:3–19. doi:10.1016/j.jsp.2006.09.002. [PubMed: 21179384]

Greenberg MT, Kusché CA, Riggs N. The P(romoting) A(lternative) TH(inking) S(trategies) Curriculum: Theory and research on neurocognitive and academic development. The CEIC Review. 2001; 10:22–23. 26.

Hamre BK, Pianta RC. Early teacher–child relationships and the trajectory of children's school outcomes through eighth grade. Child Development. 2001; 72:625–638. doi: 10.1111/1467-8624.00301. [PubMed: 11333089]

Hernandez MJ. Caracteristicas emocionales y comportamentales de los grupos sociometricos desde una perspectiva multiple. [A multiperspective of emotional and behavioral correlates of sociometric groups.]. Psicologia Conductual. 2003; 11:41–60.

Howes C. Social competence with peers in young children: Developmental sequences. Developmental Review. 1987; 2:252–272.

Howse RB, Calkins SD, Anastopoulos AD, Keane SP, Shelton TL. Regulatory contributors to children's kindergarten achievement. Early Education and Development. 2003; 14:101–119. doi: 10.1207/s15566935eed1401_7.

Huffman, LC.; Mehlinger, SL.; Kerivan, AS. Off to a good start: Research on the risk factors for early school problems and selected federal policies affecting children's social and emotional development and their readiness for school. University of North Carolina FPG Child Development Center; Chapel Hill, NC: 2000. Risk factors for academic and behavioral problems at the beginning of school..

Izard CE. Translating emotion theory and research into preventive interventions. Psychological Bulletin. 2002; 128:796–824. doi:10.1037/0033-2909.128.5.796. [PubMed: 12206195]

Izard C, Fine S, Schultz D, Mostow A, Ackerman B, Youngstrom E. Emotion knowledge as a predictor of social behavior and academic competence in children at risk. Psychological Science. 2001; 12:18–23. doi:10.1111/1467-9280.00304. [PubMed: 11294223]

Izard CE, King KA, Trentacosta CJ, Laurenceau JP, Morgan JK, Krauthamer-Ewing ES, FInlon KJ. Accelerating the development of emotion competence in Head Start children. Development and Psychopathology. 2008; 20:369–397. DOI: 10.1017/S0954579408000175. [PubMed: 18211742]

Izard CE, Stark K, Trentacosta C, Schultz D. Beyond emotion regulation: Emotion utilization and adaptive functioning. Child Development Perspectives. 2008; 2:156–163. doi:10.1111/j. 1750-8606.2008.00058.x. [PubMed: 19956781]

Jimerson, SR.; Graydon, K.; Fletcher, SM.; Schnurr, B.; Kundert, D.; Nickerson, A. Grade retention and promotion.. In: Bear, GG.; Minke, KM., editors. Children's needs III: Development, prevention, and intervention. National Association of School Psychologists; Washington, DC, US: 2006. p. 601-613.

Keane SP, Calkins SD. Predicting kindergarten peer social status from toddler and preschool problem behavior. Journal of Abnormal Child Psychology. 2004; 32:409–423. doi:10.1023/B:JACP. 0000030294.11443.41. [PubMed: 15305546]

Knapp TR, Brown JK. Ten measurement commandments that often should be broken. Research in Nursing & Health. 1995; 18:465–469. [PubMed: 7676079]

Keenan K, Shaw D. Developmental and social influences on young girls' early problem behavior. Psychological Bulletin. 1997; 121:95–113. doi:10.1037/0033-2909.121.1.95. [PubMed: 9000893]

Ladd GW, Birch SH, Buhs ES. Children's social and scholastic lives in kindergarten: Related spheres of influence? Child Development. 1999; 70:1373–1400. doi:10.1111/1467-8624.00101. [PubMed: 10621962]

Ladd GW, Buhs ES, Seid M. Children's initial sentiments about kindergarten: Is school liking an antecedent of early classroom participation and achievement? Merrill-Palmer Quarterly. 2000; 46:255–279.

LaFreniere PJ, Dumas JA. Social Competence and Behavior Evaluation in children aged three to six: The Short Form (SCBE-30). Psychological Assessment. 1996; 8:369–37. doi: 10.1037/1040-3590.8.4.369.

LaFreniere P, Masataka N, Butovskaya M, Chen Q, Dessen MA, Atwanger K, Schreiner S, Montirosso R, Frigerio A. Cross-cultural analysis of social competence and behavior problems in preschoolers. Early Education and Development. 2002; 13:201–219. doi:10.1207/s15566935eed1302_6.

Leerkes EM, Paradise M, O'Brien M, Calkins SD, Lange G. Emotion and cognition processes in preschool children. Merrill-Palmer Quarterly. 2008; 54:102–124. doi:10.1353/mpq.2008.0009.

Liew J, McTigue EM, Barrois L, Hughes JN. Adaptive and effortful control and academic self-efficacy beliefs on achievement: A longitudinal study of 1st through 3rd graders. Early Childhood Research Quarterly. 2008; 23:515–526. doi:10.1016/j.ecresq.2008.07.003. [PubMed: 19169387]

McClelland MM, Cameron CE, Connor CM, Farris CL, Jewkes AM, Morrison FJ. Links between behavioral regulation and preschoolers' literacy, vocabulary, and math skills. Developmental Psychology. 2007; 43:947–959. doi:10.1037/0012-1649.43.4.947. [PubMed: 17605527]

McClure EB. A meta-analytic review of sex differences in facial expression processing and their development in infants, children, and adolescents. Psychological Bulletin. 2000; 126:424–453. doi: 10.1037/0033-2909.126.3.424. [PubMed: 10825784]

McDermott PA, Leigh NM, Perry MA. Development and validation of the Preschool Learning Behaviors Scale. Psychology in the Schools. 2002; 39:353–365. doi:10.1002/pits.10036.

Miller AL, Seifer R, Stroud L, Sheinkopf SJ, Dickstein S. Biobehavioral indices of emotion regulation relate to school attitudes, motivation, and behavior problems in a low-income preschool sample. Annals of the New York Academy of Science. 2006; 1094:325–329. doi: 10.1196/annals. 1376.043.

Murray K, Kochanska G. Effortful control: Factor structure and relation to externalizing and internalizing behavior. Journal of Abnormal Child Psychology. 2002; 30:414–503. doi:10.1023/A: 1019821031523.

Newcomb AF, Bukowski WM, Pattee L. Children's peer relations: A meta-analytic review of popular, rejected, neglected, controversial, and average sociometric status. Psychological Bulletin. 1993; 113:99–128. doi:10.1037/0033-2909.113.1.99. [PubMed: 8426876]

Normandeau S, Guay F. Preschool behavior and first-grade school achievement: The mediational role of cognitive self-control. Journal of Educational Psychology. 1998; 90:111–121. doi: 10.1037/0022-0663.90.1.111.

Orobio de Castro B. The development of social information processing and aggressive behavior: Current issues. European Journal of Developmental Psychology. 2004; 1:87–102. doi: 10.1080/17405620444000058.

Orobio de Castro B, Bosch JD, Veerman JW, Koops W. The effects of emotion regulation, attribution, and delay prompts on aggressive boys' social problem-solving. Cognitive Therapy and Research. 2003a; 2 7:153–166. doi: 10.1023/A:1023557125265.

Orobio de Castro B, Slot NW, Bosch JD, Koops W, Veerman JW. Negative feelings exacerbate hostile attributions of intent in highly aggressive boys. Journal of Clinical Child and Adolescent Psychology. 2003b; 32:56–65. doi: 10.1207/S15374424JCCP3201_06. [PubMed: 12611030]

Parker, JG.; Gottman, JM. Social and emotional development in a relational context: Friendship interaction from early childhood to adolescence.. In: Berndt, TJ.; Ladd, GW., editors. Peer relationships in child development. John Wiley and sons; Oxford, England: 1989. p. 95-131.

Payton JW, Wardlaw DM, Graczyk PA, Bloodworth MR, Tompsett CJ, Weissberg RP. Social and emotional learning: A framework for promoting mental health and reducing risk behaviors in children and youth. Journal of School Health. 2000; 70:179–185. doi:10.1111/j. 1746-1561.2000.tb06468.x. [PubMed: 10900594]

Peth-Pierce, R. A good beginning: Sending America's children to school with the social and emotional competence they need to succeed. The Child Mental Health Foundations and Agencies Network; Chapel Hill, NC: 2000.

Pianta RC. Adult-child relationship processes and early schooling. Early Education and Development. 1997; 8:11–26. doi: 10.1207/s15566935eed0801_2.

Pianta, RC.; Hamre, BK.; Stuhlman, MW. Relationships between teachers and children.. In: Reynolds, WM.; Miller, GE., editors. Handbook of psychology: Educational psychology. Vol. 7. John Wiley & Sons Inc.; Hoboken, NJ: 2003. p. 199-234.doi:10.1002/0471264385.wei0710

Pianta RC, Nimetz SL. The student-teacher relationship scale: Results of a pilot study. Journal of Applied Developmental Psychology. 1991; 12:379–393.

Pianta RC, Stuhlman MW. Teacher-child relationships and children's success in the first years of school. School Psychology Review. 2004; 33:444–458.

Ponitz CC, McClelland MM, Matthews JS, Morrison FJ. A structured observation of behavioral self-regulation and its contribution to kindergarten outcomes. Developmental Psychology. 2009; 45:605–619. doi:10.1037/a0015365. [PubMed: 19413419]

Ramos-Marcuse F, Arsenio WF. Young children's emotionally-charged moral narratives: Relations with attachment and behavior problems. Early Education and Development. 2001; 12:165–184. doi: 10.1207/s15566935eed1202_1.

Raver, CC.; Garner, PW.; Smith-Donald, R. The roles of emotion regulation and emotion knowledge for children's academic readiness: Are the links causal?. In: Pianta, RC.; Cox, MJ.; Snow, KL., editors. School readiness and the transition to kindergarten in the era of accountability. Paul H Brookes Publishing; Baltimore, MD, US: 2007. p. 121-147.

Raver, CC.; Knitzer, J. Ready to enter: What research tells policymakers about strategies to promote social and emotional school readiness among three- and four-year-olds. National Center for Children in Poverty; New York, NY: 2002.

Reschly, A.; Christenson, SL. School completion.. In: Bear, GG.; Minke, KM., editors. Children's needs III: Development, prevention, and intervention. National Association of School Psychologists; Washington, DC, US: 2006. p. 103-113.

Richters J. The Hubble hypothesis and the developmentalist's dilemma. Development and Psychopathology. 1997; 9:193–229. doi: 10.1017/S0954579497002022. [PubMed: 9201442]

Rimm-Kaufman SE, Pianta RC, Cox MJ. Teachers' judgments of problems in the transition to kindergarten. Early Childhood Research Quarterly. 2000; 15:147–166. doi:10.1016/S0885-2006(00)00049-1.

Rose-Krasnor L. The nature of social competence: A theoretical review. Social Development. 1997; 6:111–135. doi:10.1111/j.1467-9507.1997.tb00097.x.

Rubin KH. Nonsocial play in preschoolers: Necessarily evil? Child Development. 1982; 53:651–657. doi: 10.2307/1129376.

Rubin KH, Hastings PD, Stewart SL, Henderson HA, Chen X. The consistency and concomitants of inhibition: Some of the children, all of the time. Child Development. 1997; 68:467–483. doi: 10.2307/1131672. [PubMed: 9249961]

Ryan, RM.; Fauth, RC.; Brooks-Gunn, J. Childhood poverty: Implications for school readiness and early childhood education.. In: Spodek, B.; Saracho, ON., editors. Handbook of research on the education of young children. 2nd ed.. Lawrence Erlbaum Associates; Mahwah, N.J.: 2006. p. 323-346.

Saft EW, Pianta RC. Teachers' perceptions of their relationships with student: Effects of child age, gender, and ethnicity of teachers and children. School Psychology Quarterly. 2001; 16:125–141. doi: 10.1521/scpq.16.2.125.18698.

Schultz D, Izard CE, Ackerman BP, Youngstrom EA. Emotion knowledge in economically disadvantaged children: Self-regulatory antecedents and relations to social difficulties and withdrawal. Development and Psychopathology. 2001; 13:53–67. doi:10.1017/S0954579401001043. [PubMed: 11346052]

Shields A, Dickstein S, Seifer R, Giusti L, Magee KD, Spritz B. Emotional competence and early school adjustment: A study of preschoolers at risk. Early Education & Development. 2001; 12:73–96. doi:10.1207/s15566935eed1201_5.

Smith M. Social and emotional competencies: Contributions to young African-American children's peer acceptance. Early Education and Development. 2001; 12:49–72. doi:10.1207/s15566935eed1201_4.

Smith-Donald R, Raver CC, Hayes T, Richardson B. Preliminary construct and concurrent validity of the Preschool Self-regulation Assessment (PSRA) for field-based research. Early Childhood Research Quarterly. 2007; 22:173–187. doi:10.1016/j. ecresq.2007.01.002.

Spiliotopoulou G. Reliability reconsidered: Cronbach's alpha and paediatric assessment in occupational therapy. Australian Occupational Therapy Journal. 2009; 56:150–155. doi: 10.1111/j. 1440-1630.2009.00785.x. [PubMed: 20854508]

Sroufe, LA.; Schork, E.; Motti, F.; Lawroski, N.; LaFreniere, P. The role of affect in social competence.. In: Izard, CE.; Kagan, J.; Zajonc, RB., editors. Emotions, cognition, & Behavior. Cambridge University Press; Cambridge, UK: 1984. p. 289-319.

Trentacosta CJ, Izard CE. Kindergarten children's emotion competence as a predictor of their academic competence in first grade. Emotion. 2007; 7:77–88. doi:10.1037/1528-3542.7.1.77. [PubMed: 17352565]

U.S. Department of Education. National Center for Education Statistics.. In: Rock, Donald A.; Pollack, Judith M., editors. Early Childhood Longitudinal Study-Kindergarten Class of 1998-99 (ECLS-K), Psychometric report for kindergarten through first grade, NCES 2002-05. Educational Testing Service, Elvira Germino Hausken; Washington, DC: 2002. project officer2002

Valiente C, Lemery-Chalfant K, Castro KS. Children's effortful control and academic competence. Mediation through school liking. Merrill-Palmer Quarterly. 2007; 53:1–25. doi:10.1353/mpq. 2007.0006.

Valiente C, Lemery-Chalfant K, Swanson J, Reiser M. Prediction of children's academic competence from their effortful control, relationships, and classroom participation. Journal of Educational Psychology. 2008; 100:67–77. doi:10.1037/0022-0663.100.1.67. [PubMed: 21212831]

Warden D, Mackinnon S. Prosocial children, bullies and victims: An investigation of their sociometric status, empathy and social problem-solving strategies. British Journal of Developmental Psychology. 2003; 21:367–385. doi:10.1348/026151003322277757.

Webster-Stratton C, Reid MJ. Treating conduct problems and strengthening social and emotional competence in young children: The dina dinosaur treatment program. Journal of Emotional and Behavioral Disorders. 2003; 11:130–143. doi:10.1177/10634266030110030101.

Webster-Stratton, Reid MJ, Stoolmiller M. Preventing conduct problems and improving school readiness: Evaluation of the Incredible Years Teacher and Child Training Programs in high-risk schools. Journal of Child Psychology and Psychiatry. 2008; 49(5):471–488. doi:10.1111/j. 1469-7610.2007.01861.x. [PubMed: 18221346]

Welsh JA, Nix RL, Blair C, Bierman KL, Nelson KE. The development of cognitive skills and gains in academic school readiness for children from low-income families. Journal of Educational Psychology. 2010; 102:43–53. doi:10.1037/a0016738. [PubMed: 20411025]

Wesley PW, Buysse V. Making meaning of school readiness in schools and communities. Early Childhood Research Quarterly. 2003; 18:351–375. doi:10.1016/S0885-2006(03)00044-9.

Youngstrom E, Wolpaw JM, Kogos JL, Schoff K, Ackerman B, Izard C. Interpersonal problem solving in preschool and first grade: Developmental change and ecological validity. Journal of Clinical Child Psychology. 2000; 29:589–602. doi:10.1207/S15374424JCCP2904_11. [PubMed: 11126636]

Zahn-Waxler C, Cole PM, Richardson DT, Friedman RJ. Social problem solving in disruptive preschool children: Reactions to hypothetical situations of conflict and distress. Merrill-Palmer Quarterly: Journal of Developmental Psychology, Children's emotions and social competence. 1994; 40:98–119.

Zins JE, Bloodworth MR, Weissberg RP, Walberg HJ. The scientific base linking social and emotional learning to school success. Journal of Educational and Psychological Consultation. 2007; 17(2/3):191–210. doi:10.1080/10474410701413145.

Research Highlights

➢ Preschooler's social-emotional learning can be described in a person-centered way.

➢ Groups described show sex, race, and/or poverty risk differences.

➢ Accounting for demographic differences, groups differ on current/later teacher reports of school success

➢ Person-centered analyses point toward emotion-based prevention/intervention programming.
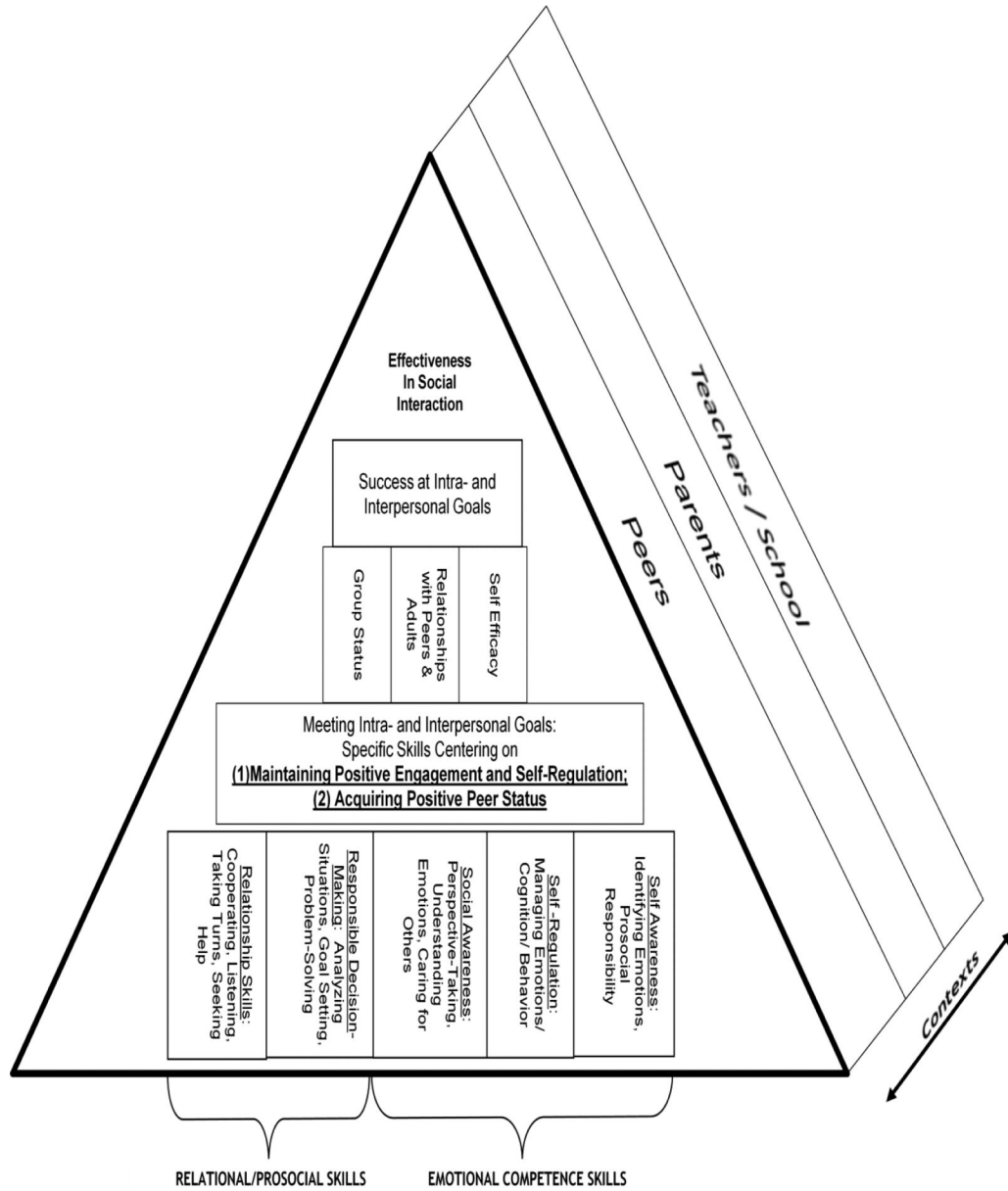
Denham et al.

Page 24

Figure 1.
Adaptation and integration of Rose-Krasnor's (1997) model of social competence and
Payton et al. (2000) model of SEL showing specific skills level with emotional competence
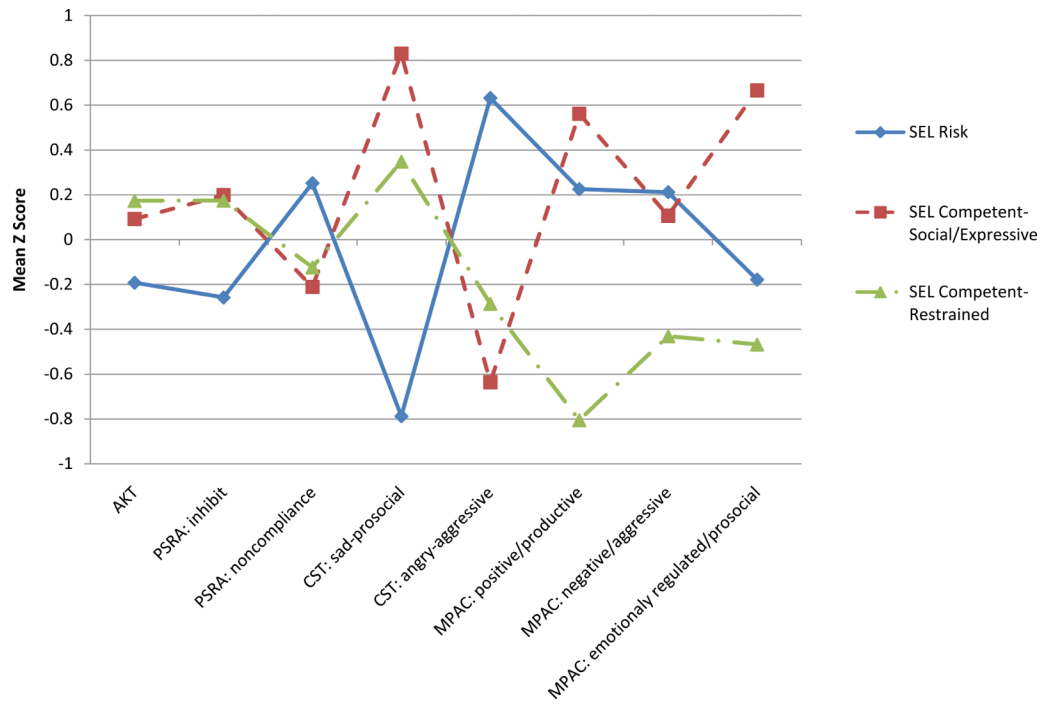and relational/prosocial skills specifically delineated.

Figure 2.
Mean *Z*-scores for children's social-emotional competence across the three profiles

Table 1

Descriptive Information and *T*-Tests for Between-Waves Comparisons

Child Measures	Wave 1 Mean N = 192	Wave 3 Mean N = 83	Total (Across Waves) N = 275	Min	Max	t	df
AKT	-.04 (.51)	.07 (.54)	-.01 (.52)	-2.06	.52	1.53	273
PSRA: inhibition	-.02 (.59)	.03 (.61)	-.00 (.59)	-1.94	1.12	.55	273
PSRA: noncompliance	.03 (.74)	-.03 (.65)	.01 (.71)	-1.43	2.60	-.65	273
CST: sad/prosocial	2.23 (1.61)	1.99 (1.41)	2.16 (1.55)	.00	6.00	-1.18	273
CST: angry/aggressive	1.49 (1.29)	1.28 (1.41)	1.43 (1.33)	.00	6.00	-1.22	273
MPAC: emotionally positive-productive	2.76 (.86)	2.77 (.84)	2.76 (.85)	-1.00	4.67	.09	273
MPAC: emotionally negative-aggressive	.48 (.51)	.59 (.46)	.51 (.50)	.00	2.50	1.76[+]	273
MPAC: emotionally regulated/prosocial-peer oriented	.68 (.68)	.86 (.71)	.74 (.69)	.00	3.33	1.90[+]	273

Preschool Measures	N = 184	N = 82	N = 266	Min	Max	t	df
PLBS	1.51 (.40)	1.53 (.33)	1.52 (.38)	.50	2.00	.36	187.39[a]
SCBE: angry/aggressive	2.03 (1.11)	2.05 (.92)	2.03 (1.05)	1.00	5.00	.19	186.77[a]
SCBE: sensitive/cooperative	3.54 (.81)	3.49 (.75)	3.52 (.79)	1.70	5.00	-.46	264
SCBE: anxious/withdrawn	1.81 (.76)	1.74 (.73)	1.79 (.75)	1.00	5.20	-.70	264

Kindergarten Measures	N = 67, 69	N = 26	N = 93, 95	Min	Max	t	df
ECLS-K	.27 (3.05)	-.69 (2.05)	.00 (2.83)	-6.50	4.46	-1.74[+]	67.38[a]
STRS	4.14 (.66)	4.14 (.55)	4.14 (.63)	2.00	4.96	-.01	93
PLBS	1.51 (.44)	1.56 (.35)	1.52 (.42)	.38	2.00	.66	56.48[a]
SCBE: angry/aggressive	1.84 (1.04)	1.85 (.91)	1.84 (1.00)	1.00	4.90	.03	93
SCBE: sensitive/cooperative	3.48 (.87)	3.36 (.66)	3.45 (.82)	1.60	4.90	-.73	59.30[a]
SCBE: anxious/withdrawn	1.84 (.69)	1.58 (.52)	1.77 (.66)	1.00	3.70	-1.96[+]	59.24[a]

Note: AKT and PSRA scores were created with z-scores.

[+] *p* < .10.

[a] Equal variance not assumed.

Table 2

Social-Emotional Competence Patterns (Standard Deviations), and Demographic Description of Profile Groups

	SEL Risk	SEL Competent-Social/Expressive	SEL Competent-Restrained	F (2, 272)
Social/emotional variables				
AKT	-.19 (.62)[a]	.09 (.45)[b]	.17 (.30)[b]	14.84
PSRA: inhibition	-.26 (.64)[a]	.20 (.44)[b]	.17 (.51)[b]	21.82
PSRA: noncompliance	.25 (.78)[a]	-.21 (.60)[b]	-.12 (.60)[b]	13.14
CST: sad/prosocial	-.79 (.55)[a]	.83 (.82)[b]	.35 (.85)[c]	129.86
CST: angry/aggressive	.63 (1.02)[a]	-.64 (.62)[b]	-.29 (.72)[c]	61.10
MPAC: emotionally positive-productive	.23 (.77)[a]	.56 (.77)[b]	-.81 (.86)[c]	63.88
MPAC: emotionally negative-aggressive	.21 (1.01)[a]	.11 (.97)[a]	-.43 (.59)[b]	12.72
MPAC: emotionally regulated/prosocial-peer oriented	-.18 (.80)[a]	.67 (1.17)[b]	-.47 (.61)[a]	36.19
				χ^2 (N = 275)
Child gender				6.03[*]
Boys	56.8%	47.5%	39.0%	(df=2)
Girls	43.2%	52.5%	61.0%	
Center types				16.33[***]
Private childcare	39.0%	66.3%	59.7%	(df = 2)
Head Start	61.0%	33.8%	40.3%	

Notes: Z-scores were used for the social-emotional competence variables. All F ratios are significant at $p < .001$. Groups with different subscripts are significantly different from each other at $p < .05$, Tukey's post hoc analyses.

[**] $p < .01$

[*] $p < .05$

[***] $p < .001$.

Table 3

Profile Group Differences in Preschool and Kindergarten School Success

Preschool Measures	SEL Risk (N = 114)	SEL Competent-Social/ Expressive (N = 78)	SEL Competent-Restrained (N = 74)	Group Differences F (2, 263)
PLBS Total	1.42 (.41)[a]	1.58 (.35)[b]	1.61 (.34)[b]	7.85[***]
SCBE Angry/Aggressive	2.18 (1.19)	1.99 (.96)	1.86 (.89)	2.14
SCBE Cooperative/Sensitive	3.34 (.77)[a]	3.63 (.73)[b]	3.69 (.82)[b]	5.53**
SCBE Anxious/Withdrawn	1.91 (.85)	1.70 (.62)	1.70 (.70)	2.54[+]

Kindergarten Measures	SEL Risk (N = 42)	SEL Competent-Social/ Expressive (N = 27[1]/28)	SEL Competent-Restrained (N = 24[1]/25)	Group Differences F (2, 90[1]/92)
ECLS-K Total	3.29 (.90)[a]	3.84 (.67)[b]	4.15 (.59)[b]	10.62[***]
STRS Total	-.50 (2.08)[a]	.85 (1.70)[b]	1.52 (.85)[b]	10.95[***]
PLBS Total	1.31 (.43)[a]	1.62 (.36)[b]	1.77 (.26)[b]	13.45[***]
SCBE Angry/Aggressive	2.29 (1.18)[a]	1.68 (.75)[b]	1.28 (.40)[b]	10.18[***]
SCBE Cooperative/Sensitive	3.01 (.79)[a]	3.56 (.71)[b]	4.06 (.50)[c]	18.27[***]
SCBE Anxious/Withdrawn	1.96 (.67)[a]	1.58 (.59)[b]	1.67 (.64)	3.46[*]

Note:

Different letters indicated a significant mean difference at $p < .05$ with Tukey's post hoc test

[+] $p < .10$

[*] $p < .05$

[***] p < .001.

[1] n and df for ECLS-K due to missing data.