Dialog, *16*(2), 18 - 33

ISSN: 1930-9325

RESEARCH ARTICLE

Head Start Preschoolers' Emotional Positivity and Emotion Regulation Predict their Social-Emotion Behavior, Classroom Adjustment, and Early School Success

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Children's abilities to express contextually useful emotions and regulate emotions are related to their school adjustment and academic achievement. In this study, we examined the specific contributions of emotional positivity and emotion regulation during a direct assessment to broader self-regulation, social-emotional behavior during play, school adjustment, and school readiness. We found that each construct made useful contributions to these important outcomes. Implications include the need to pay increased attention to emotional competence in Head Start research and classroom practice.

Keywords: Social and Emotional Development, School Readiness, Assessment, Emotion Regulation

In today's educational climate, preschoolers' literacy and numeracy have been main foci as indices of their school readiness and later academic success (Duncan et al., 2007). An emerging literature, however, has begun to emphasize the significance of young children's emotional competence on their school readiness (Denham, Brown, & Domitrovich, 2010; Raver, Garner, & Smith-Donald, 2001). During the early childhood years, emotional competence skills are organized around the social developmental tasks of positive engagement and managing emotional arousal within social interaction (Parker & Gottman, 1989). These tasks are not easy ones for children just entering school, where relationships with nonparental adults and peers, as well as learning new skills, become important. The preschool and kindergarten contexts can tax children's abilities to sit still, attend, follow directions, approach group play, complete preacademic tasks in an organized fashion, and get along with others in ways that challenge their nascent emotional competence (Denham, 2006).

Based on the core developmental tasks of this period, two aspects of emotional competence loom as particularly important for adapting to these contexts: emotional expressiveness and emotional regulation. These constructs are tightly related, for one must

experience and/or express emotions in order to regulate them, but they are sufficiently discernible to render them important, even necessary, to study separately (Bridges, Denham, & Ganiban, 2004; Cole, Martin, & Dennis, 2004). In the present study we address the separate contributions of emotional expressiveness and regulation to children's classroom adjustment and academic readiness.

For young children to successfully engage in interpersonal exchanges and form the relationships necessary for positive school experiences, they must learn to send and receive emotional messages in ways that are advantageous to both themselves and others (Halberstadt, Denham, & Dunsmore, 2001). The emotional information they convey can be a "game-changer" during social interaction. In this regard, positive emotion can be very important. It is important in the initiation and regulation of social exchanges; sharing positive affect may facilitate the formation of friendships, and render one more likable (Denham, McKinley, Couchoud, & Holt, 1990; Park, Lay, & Ramsay, 1993). Children who show relatively more frequent, long-lasting, and/or intense positive emotions in the preschool classroom are perceived as more socially competent by peers and teachers (Denham et al., 2003; Denham, McKinley, Couchoud, & Holt, 1990).

Positive emotional expressiveness contributes to more than the abilities to interact and form relationships with others, despite their importance. It can also help moderate negative emotions, facilitating recovery from arousal (Izard, Stark, Trentacosta, & Schultz, 2008). These contributions of positive emotional expressiveness to both social competence and recovery from negative arousal explain, in part, its relations with preschoolers' success at classroom tasks: Emotionally positive children are seen as better adjusted in the classroom (e.g., they demonstrate abilities to adjust to routines, comply with limits, participate with enthusiasm and focus in structured activities, along with forming positive relationships with teachers and peers; Shin et al., 2011).

When young children can maintain a positive emotional tone, they may be more able to remain engaged with classroom tasks. Analyses of the goals and motivations related to much older students' positive emotions in the classroom suggest that enjoyment of activities and the experience of joy are related to anticipations of task success and task engagement (Pekrun, 2006; Pekrun, Elliot, & Maier, 2009). Although it remains to be seen whether these processes are operative with preschoolers, it makes intuitive sense that even young children who anticipate succeeding at developmentally appropriate pre-academic tasks may enjoy these very tasks, and via this enjoyment find it easier to remain engaged with them. It is easy to posit a feedback loop where positive emotion facilitates positive task engagement and success, which lead to further positive emotion.

Emotion regulation, the ability to adjust the experience and expression of feelings in context and control them when necessary (Cole, Michel, & Teti, 1994), is the second aspect of emotional competence pertinent to this study. Preschoolers' constructive modes of emotion regulatory coping are associated with their social effectiveness (Blair, Denham, Kochanoff, & Whipple, 2004; Denham et al., 2003). Further, even more strongly than positive emotional expressiveness, young children's ability to regulate emotion is related to their school adjustment, and even their achievement of early academic skills. Those who have difficulties dealing with emotions may not have the personal resources to make the adjustment to the new school environment and focus on learning (Graziano, Reavis, Keane, & Calkins, 2007; Miller, Seifer, Stroud, Sheinkopf, & Dickstein, 2006; Shields et al., 2001).

More specifically, Shields et al. (2001) assessed Head Start teachers' views of

preschoolers' emotion regulation – including their emotional flexibility, equanimity, and contextual appropriateness of their emotional expression. Emotion regulation evaluated early in the school year predicted children's later school adjustment, even with age, verbal ability, emotional lability, and emotion knowledge covaried. Miller et al. (2006) also found that observed emotional *dys*regulation was negatively related to teachers' ratings of children's motivation to learn. Finally, Howse and colleagues (Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003) also found that preschoolers' emotion regulation, assessed using the same rating scale as Shields et al., but also including a series of frustration tasks, predicted kindergarten achievement. In the long run, school success may be thwarted for children who have trouble regulating emotions (Howse et al., 2003; Smith-Donald, Raver, Hayes, & Richardson, 2007; Trentacosta & Izard, 2007).

Why are Positive Expressiveness/Engagement and Emotion Regulation Especially Important in Head Start?

These aspects of emotional competence may be particularly important for children attending Head Start. 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). Living in stress-inducing contexts of poverty has consequences for the development of both cognition and behavior (Blair, 2010). Specifically referring to the development of emotional competence, we showed that Head Start students were overrepresented as "at risk for social-emotional deficits" (Denham et al., 2012); they showed less capable emotion knowledge, inhibitory control, compliance, and social information processing, as well as showing more angry/aggressive behavior, than their more economically advantaged counterparts. Subsequently, kindergarten teachers considered them less socially competent and adjusted in the classroom in terms of learning behaviors and attitudes.

Thus, we must prioritize maximizing instructional effectiveness in preschool programs serving children growing up in poverty, especially regarding their emotional competence (e.g., Bierman, et al., 2008). Identifying, tracking, and maximizing Head Start students' positive expressiveness and positive engagement in the classroom, as well as their emotion regulation, could assist in creating a context of "caring and supportive others in a predictable, stimulating environment" (Blair, 2010, p. 186), with benefits to their early school success.

The Present Study

In the present study, we explore the contributions of positive emotion/engagement and emotion regulation, using ratings of these aspects of emotional competence made during a challenging direct assessment of self-regulatory abilities. First, we examine the concurrent and discriminant validity of our ratings of positive emotion/engagement and emotion regulation, via their relations with (a) naturalistic observations of children's emotional positivity and regulation; and (b) the executive control task battery from whence they came. That is, our first focus is on establishing validity of the ratings. We expect that: (a) positive emotion/engagement, but not emotion

regulation, ratings will be related to children's observed positive emotion in the classroom; and (b) emotion regulation, but not positive emotion/engagement, ratings will be negatively related to children's observation emotional dysregulation in the classroom; and (c) emotion regulation ratings will be more highly related to executive control than positive emotion/engagement.

The second central goal of the study is to examine relations of these indices of Head Start preschoolers' emotional competence and both their school adjustment and academic readiness during Head Start and in kindergarten. We expect that both positive emotion/engagement and emotion regulation ratings will be related to indices of school adjustment and academic readiness.

METHODS

Data for the current study were part of a larger study focused on developing a portable assessment battery for measuring the social and emotional aspects of school success. Children were recruited from Head Start programs in Northern Virginia, at parent and teacher meetings and via flyers posted in classrooms.

Participants

Children began participation in the study at differing ages, so we sought to create a group of equivalent age (approximately 4 ½-years-old). To do so, we pooled data from the first and third wave of three waves of longitudinal data; that is, in wave 1 there were 3- and 4-year-olds, with the 4-year-olds' data retained for this sample. Because wave 2 data were collected in spring of the same school year as wave 1, children who were three years old in wave 1 did not turn four years old until wave 3. Thus their data from wave 3 was retained for this sample. After pooling data, the present study included 138 Head Start students (55.1% girls; mean age 55.1 mos). Of the 86% of families reporting, 60.1% were African-American and 19.6% Caucasian; 17.4% of families identified as Hispanic. Reported median maternal education level was high school graduation; maternal educational attainment ranged from less than high school (16.2%) to graduate degree (2.9%). Although only 60 of the original sample of children remained in the study through their kindergarten year (predominantly because of mobility at one specific site), this subsample did not differ from the original on any demographic variable, nor did it differ more than expected by chance on any of the 18 observational, direct assessment, or teacher ratings to follow.

Data for positive emotion/engagement and emotion regulation ratings, as well as the directly assessed or observed validity measures, were collected during fall of children's last preschool year, and teacher measures were completed at the end of children's last preschool and kindergarten years. All assessors and observers were trained to certification or interobserver reliability on all measures.

Measures

Positive emotion/engagement and emotion regulation ratings. During self-regulation performance tasks (see PSRA below), assessors recorded the presence or absence of positive engagement with the assessor (scored 0 or 1). Following the completion of all PSRA tasks by the child, the assessor also completed a 28-item Assessor Report, which addressed children's emotions, attention, and behavior during assessor-child interaction. Smith-Donald et al. (2007) created the Assessor Report by adapting the Leiter-R social-emotional rating scale (Roid & Miller, 1997) and the Disruptive Behavior-Diagnostic Observation Schedule coding system (DB-DOS; Wakschlag et al., 2005). For this study, we used only Assessor Report items reflecting children's emotion regulation and positive emotional expression.

For positive emotion/engagement we used 0- to 3-point ratings of positive emotion's frequency and intensity from the Assessor Report, plus positive engagement items from each PSRA performance task. Thus, the positive emotion composite used in subsequent analyses included the ratings of children's positivity/engagement with the examiner during each of the PSRA tasks, and the intensity and frequency of positive emotions during as rated by the assessor on the Assessor Report. The resultant aggregate for positive emotion/engagement was created by summing standard scores for each rating (9 ratings; $\alpha = .90$).

For emotion regulation, we employed three 0- to 3-point ratings from the Assessor Report, addressing children's ability to regulate their emotions during the potentially emotionally taxing performance tasks (defiance (weighted negatively), passive noncompliance (weighted negatively), and modulation of arousal level within themselves). As with positive emotion/engagement, the emotion regulation aggregate was created by summing standard scores across the three ratings; $\alpha = .68$.

Inter-rater reliability for the PSRA and Assessor Report ratings was calculated between the assessor and a reliability coder using videotape. For positive engagement PSRA task ratings, intraclass correlation equaled .76, $p = .001$. Interrater reliability for Assessor Report ratings was also assessed via intraclass correlations, which equaled .50 for the positive emotion (two ratings), and .52 for emotion regulation (three ratings), ps $< .01$.

Validity measure, self-regulation task scores: Preschool Self-Regulation Assessment (PSRA; Smith-Donald et al., 2007). The PSRA was utilized to show relations of self-regulation task performance with ratings of the children's positive emotion/engagement and emotion regulation during the tasks. The executive control portion of the PSRA consists of seven structured tasks. These tasks included three requiring children to activate a less favored or nonintuitive (subdominant) response while suppressing a more favored or intuitively logical (prepotent or dominant) response (Pencil Tap, Balance Beam, and Tower Task Turn Taking), and four involving delay of gratification (Toy Wrap, Toy Wait, Snack Delay, and Tongue Task) (see Smith-Donald et al. for measure details). Inter-assessor reliability via intra-class correlation for the current data ranged between .79 on Toy Peek to .95 on Pencil Tap, showing excellent assessor agreement, ps $< .001$.

The PSRA tasks battery also shows good concurrent validity with measures of children's behavior problems and competencies, as well as their early math and verbal skills (Denham, Warren-Khot, Bassett, Wyatt, & Perna, 2012; Smith-Donald et al., 2007). For this study, standard scores for all seven tasks were averaged to give a score for *executive control*, which was

used as to examine the validity of the PSRA ratings of emotion regulation and positive emotion; Cronbach's alpha was .90.

Validity measure, social-emotional behavior: Minnesota Preschool Affect Checklist-Revised/Shortened (MPAC-R/S). The MPAC-R/S, a shortened version of the MPAC-R, was used to assess children's positive emotion expression and their emotion dysregulation, as validity checks for the positive emotion/engagement and regulation scores (see Denham et al., 2012; Denham & Burton, 1996; Denham, Zahn-Waxler, Cummings, & Iannotti, 1991).

The MPAC-R/S includes items on positive and negative emotion, productive and unproductive involvement, positive and negative reactions to frustration (i.e., emotion regulation and dysregulation), peer skills, and prosocial behaviors. Using the MPAC-R/S, children are observed for five-minute periods for each of four occasions separated by at least 4 days; presence or absence of each item is noted for each five-minute period, with these 1/0 items then summed across occasions. For this study, the following MPAC-R/S scales were used: (a) positive emotion (average of three items, including any facial, vocal, or bodily emotion, as well as directing positive emotion toward a social partner or in a social situation; α = .66); and (b) dysregulation (average of three items; in response to frustration, conflict, and other emotionally arousing problem situations, the child shows context-related interpersonal aggression, aggression toward objects, or unprovoked physical, interpersonal aggression, α = .56). Observer reliability was assessed via averaged measure intraclass correlations (ICCs) for the total scale scores across the four periods of observation. ICCs were .95 for emotion dysregulation and .97 for positive emotion, ps < .001.

Validity has been demonstrated for the full MPAC-R and MPAC-R/S. Older preschoolers have been observed as more social-emotionally competent, showing specifically positive emotion expression, emotion regulation, productive involvement in the classroom, and peer skills; children of nondepressed mothers were more prosocial (Denham et al., 1991). Denham et al. (2012) also found associations between MPAC-R/S components and measures of school success.

Classroom adjustment: Social Competence and Behavior Evaluation-30 (SCBE-30). Preschoolers' social competence and behavior was evaluated by the SCBE-30 (LaFreniere & Dumas, 1996). Teachers rated children on 5-point scales for 30 items, on behaviors such as "easily frustrated" (Angry/Aggressive scale), "avoids new situations" (Anxious/ Withdrawn scale), and "comforts or assists children in difficulty" (Sensitive/Cooperative scale).

Subscales demonstrated adequate to high internal consistency at both age levels (αs = .77 to .94 for the current sample); age 4 to kindergarten stability was significant for Angry/Aggressive and Sensitive/Cooperative scales. LaFreniere and Dumas demonstrated construct and convergent validity of the measure in a nationally representative sample (see also Denham et al., 2003, for relations of SCBE-30 with preschoolers' emotional expressiveness and regulation). Finally, the SCBE-30 demonstrated structural equivalence across diverse demographic groups (LaFreniere et al., 2002).

Classroom adjustment: Early learning behaviors. Teachers rated children's approaches to learning using the Preschool Learning Behaviors Scale (PLBS; McDermott, Leigh, & Perry, 2002), on 3-point scales regarding children's specific, observable classroom behaviors.

The 29-item 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 performance deteriorates); and (c) attitudes toward learning (i.e., doesn't achieve anything constructive when in a sulky mood).

Adequate internal consistency estimates were found (αs =.79 to .89 for the current sample). Preschool to kindergarten stability was highly significant on all subscales. Multi-method, multi-source validity analyses further substantiated the PLBS, with similar reliability estimates for both Whites and non-Whites in the standardization sample (Fantuzzo, Perry & McDermott, 2004).

Classroom adjustment in preschool and kindergarten: Teacher Rating Scale of School Adjustment (TRSSA). This measure was designed to tap several constructs reflective of young children's behavioral and relational adjustment to classroom settings (Ladd, Kochenderfer, & Coleman, 1997). Teachers provided ratings on 3-point scales on 52 items, for behaviors such as "follows teacher's directions" (Cooperative Participation), "works independently" (Self-Directedness), "likes going to school" (School Liking), or "initiates conversations with the teacher" (Comfort with Teacher). Internal consistency is adequate (αs = .83 to .93 for the current sample). Preschool to kindergarten stability was significant for all subscales. Subscales have demonstrated validity in socioeconomically-diverse and mixed-race samples.

School adjustment aggregates. We chose these three measures to capture emotional, social, behavioral, attitudinal, and learning-related aspects of school adjustment, and aggregated across scores to form a broader index of such adjustment for use in subsequent analyses. Standard scores for all SCBE, PLBS, and TRSSA scales were summed (SCBE anger/aggression and anxiety/withdrawal reversed). Alphas were .93 for both preschool and kindergarten aggregates, respectively.

Preschool academic readiness: Phonological Awareness Literacy Screening for Preschool. The Phonological Awareness Literacy Screening for Preschool (PALS-PreK) was designed to assess emerging literacy skills in children prior to beginning kindergarten (Invernizzi, Sullivan, & Meier, 2001). The PALS-PreK measures several key abilities: Name Writing, Alphabet Recognition (Lower and Upper Case), Letter Sounds, Beginning Sound Awareness, Print and Word Awareness, Rhyme Awareness, and Nursery Rhyme Awareness (PALS-PreK; Invernizzi et al., 2001).

To extract maximum variance from each component of the PALS, and because the structure of the PALS has not been perfectly stable across reported samples (cf. Townsend & Konold, 2010), a principal component analysis was conducted. Promax rotation was utilized because PALS scales were expected to be correlated. The analysis resulted in two components with Eigenvalues over 1. One was comprised of scores for name writing, upper- and lower-case recognition, and letter sounds (Eigenvalue = 3.86, accounting for 48.21% of the variance); this components was called "Name and Letter Knowledge". The second was comprised of scores for beginning sounds of words, print and word awareness, rhyme awareness, and nursery rhyme awareness (Eigenvalue = 1.55, accounting for an additional 19.42% of variance, for a total of 67.62% of variance explained); this component was termed "Print/Phonological Awareness".

Pattern loadings for component one ranged from .63 for name writing to .92 for lower

case recognition. For component two, pattern loadings ranged from .71 for beginning sound awareness to .90 for nursery rhyme awareness. For subsequent analyses, standard scores were averaged for the elements in each 4-scale component; α = .62 for Name and Letter Knowledge, and α = .79 for Print/Phonological Awareness. The components were, as expected, correlated, r (136) = .45, $p < .001$.

Kindergarten academic readiness: ECLS-K Academic Rating Scale. Kindergarten teachers completed the ECLS-K Academic Rating Scale (ARS, U.S. Department of Education, National Center for Education Statistics, 2002), which includes the following aspects of kindergarten academic readiness: (a) Language and Literacy (nine items, e.g., "reads simple books independently"); (b) General Knowledge (five items, e.g., "forms explanations based on observations and explorations"), and (c) Mathematical Thinking (seven items, e.g., "shows an understanding of the relationship between quantities"). Teachers compared each child to their same-age peers on 5-point scales. Internal consistency reliabilities for the subscales ranged from .85 to .92; the ARS aggregate was created by summing standard scores for the scales (α = .92).

RESULTS

To explore the problem questions for our study, we performed a series of hierarchical multiple regressions to assess how children's positive emotion/engagement and emotion regulation during the PSRA contributed to variance in (a) self-regulation task scores on the PSRA; (b) social-emotional behavior; (c) teacher-reported school adjustment at age 4 and in kindergarten; and (d) indices of academic readiness at age 4 and in kindergarten (see Table 1). Age at the beginning of participation in the study and gender were entered in step one of each analysis (to partial their contribution as potentially important demographic variables); the age 4 school adjustment aggregate was also entered on step one for kindergarten school adjustment, to show contributions to variance for positive emotion/engagement and emotion regulation over and above teachers' earlier perceptions of the child's school adjustment. Similarly, the PALS-PreK factors were entered on step one for kindergarten academic readiness. Positive emotion/engagement and emotion regulation scores were entered in step 2 of each equation.

As seen in Table 1, both positive emotion/engagement and emotion regulation during the PSRA were associated with the Executive Control aggregate derived from PSRA tasks scores (after the contributions of age and gender, in which being older or a girl contributed at least at a borderline level). Positive emotion/engagement, however, was a negative contributor to Executive Control. These associations paint a picture of emotionally regulated, less positively expressive children more successfully completing these tasks. Further, positive emotion/engagement during the PSRA was a significant predictor of positive emotion observed via the MPAC-R/S, and emotion regulation during the PSRA was a significant *negative* predictor of emotional dysregulation observed via the MPAC-R/S (being a boy also predicted such behavior).

Also in Table 1, school adjustment at age 4 was significantly associated with being a girl and being emotionally regulated during the PSRA. School adjustment in kindergarten, after a positive association with earlier school adjustment (β = .577, $p < .001$), was not predicted by

PSRA positive emotion/engagement or emotional regulation. In contrast, the PALS Print/Phonological Awareness component was associated with positive emotion/engagement during the PSRA (neither positive emotion/engagement nor emotion regulation predicted Name and Letter Knowledge). Finally, even after the significant contribution of PALS Phonological Awareness, as well as that of age, positive emotion/engagement during the PSRA contributed to the ARS aggregate during kindergarten.

TABLE 1

Regression Results: Emotional Positivity and Emotion Regulation during the PSRA Predicting Observed Emotion and Emotional Dysregulation, Executive Control, and Early School Success

	MPAC-R/S Positive				*MPAC-R/S Dysregulated*				*PSRA Exec. Control*			
	B	*SE B*	*β*	Δ R^2	*B*	*SE B*	*β*	Δ R^2	*B*	*SE B*	*β*	Δ R^2
Block 1				0.013				0.084*				.089**
Age	-0.006	0.006	-0.111		0.001	0.001	0.098		0.040	0.013	0.265**	
Gender	-0.011	0.035	-0.028		-0.018	0.007	-0.205*		0.180	0.095	0.156^{+}	
Block 2				0.036^{+}				0.063**				.099***
Positive	0.049	0.023	0.181*		-0.002	0.005	-0.038		-0.135	0.060	-0.178*	
Emot Reg	0.022	0.023	0.081		-0.015	0.005	-0.253**		0.186	0.059	0.248**	

	School Adjustment				*PALS Print/Phon.*				*ARS*			
	B	*SE B*	*β*	Δ R^2	*B*	*SE B*	*β*	Δ R^2	*B*	*SE B*	*β*	Δ R^2
Block 1				0.105***				0.016				.298**
Age	0.335	0.166	0.165*		0.023	0.018	0.127		0.226	0.111	0.294*	
Gender	4.452	1.253	0.290***		0.002	0.131	0.001		-0.424	0.821	-0.074	
PALS1	---	---	---		---	---	---		1.333	0.874	0.212	
PALS2	---	---	---		---	---	---		1.253	0.874	0.293*	
Block 2				0.040*				0.086*				.081
Positive	-0.886	0.824	-0.088		0.266	0.092	0.277**		1.234	0.579	0.307*	
Emot Reg	1.736	0.811	0.174*		0.097	0.080	0.116		-0.089	0.385	-0.031	

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Notes. Positive = Positive Emotion/Engagement; Emot Reg = Emotion Regulation. Total R^2 significant at through step 3 for all equations. $N_{total} = 138$, $N_{PALS} = 103$. $N_{kindergarten\ academic\ success} = 43$. All dependent measures in Table 1 were assessed in children's last preschool year, except the ARS, which was assessed during kindergarten.

DISCUSSION

The findings of this study underscore the importance of examining the unique contributions of emotional expression and emotional regulation to children's successful navigation of preschool and kindergarten classrooms. Both positive emotion/engagement and emotion regulation showed interpretable relations with school adjustment and observed social-emotional behavior, and with aspects of early school readiness.

The ability to stay positive while experiencing repeated challenges to one's self-regulation (aspects of negative emotional expression during the PSRA were not studied here because of their rarity) seemed to translate to similar capabilities observed during play with classmates. Moreover, and perhaps even more striking, this emotional competence was also related to attainment of relatively complex pre-literacy skills. Connecting with teachers in such an emotionally positive manner is a capability that has received little attention in the school readiness literature (i.e., in comparison to aspects of the teacher-student relationship); perhaps emotional positivity/engagement with adults indexes children's motivations to succeed, please the teacher, and delve into complex pre-literacy skills like phonological awareness, rhyming, and nursery rhymes. Also, perhaps the teachers dedicate more individual attention to children who interact with them in an emotionally positive manner, resulting in additional contributions to development of these academic skills. These arguably more complex pre-literacy skills could be particularly related to emotional positivity/engagement during related classroom activities with peers and teachers.

It should be noted, however, that positive emotion/engagement was a *negative* predictor of self-regulation task scores (along with a positive contribution by emotion regulation). Why would being positive emotionally and socially on the very tasks from which those ratings emanated be associated with lower self-regulation task scores? Phillips, Bull, Adams, and Fraser (2002) similarly found, with adults, that positive mood impaired performance on a Stroop task, but improved it on a word fluency test. They argued that positive mood may reduce the resources available to carry out some, but not all, executive control tasks. Happy people may be less motivated to engage in dull or effortful tasks (which the PSRA tasks may be for young children!). The diffuse thoughts engendered by a happy mood may diminish willingness to take part in a task that is perceived as not very intrinsically enjoyable; it is only when people are very motivated to a task that is seen as "fun" that happy mood impacts performance positively. Also, the higher emotional arousal of such happiness levels may interfere with children's ability to concentrate on tasks; in our case, positive emotion and social interaction with the adult examiner may have superseded their task engagement.

That is, it is also possible that children who experience positive mood are more focused on the person they are interacting with, rather than on the task itself. Perhaps these children are more interested and focused on the social interaction, rather than the activity. The contributions of emotion regulation to Head Start children's school adjustment have already been documented (Miller et al., 2006; Shields et al., 2001). Our results corroborate and extend this work with Head Start children, by (a) examining observed *positive* emotion/engagement an adult, rather than teacher-rated lability/negativity as Shields et al. (although negative emotion is also important, and was also observed in the classroom by Miller et al.); (b) observing emotion regulation in a situation that was more similar to day-to-day academic challenges than the laboratory and observational measures used by Miller et al; and (c) using more extensive indicators of school adjustment and readiness. In our work, children who were able to regulate

their emotions when faced with challenging regulatory tasks were also seen by Head Start teachers, as reflected in the preschool school adjustment aggregate, as more capable of remaining persistent with their pre-academic classroom tasks, and as more prosocial and socially responsive with peers. It is clear that the ability to stay on an even keel in the stimulating classroom environment may confer an advantage in patiently staying on-task; the child who is less "flappable" can concentrate better. Emotion regulation may afford that selfsame child with the ability to set his/her own needs aside in favor of helping or cooperating with peers.

Limitations and Further Research

When considering research limitations, it is always important to consider the psychometric properties of measures used. In this study, all internal consistencies and observer/rater reliabilities were adequate or better. However, for our observations of emotional expressiveness and dysregulation, aggregates were based on very small numbers of items, with some suppression of internal consistency. Thus, although mean inter-item correlations for these scales were significant (another, perhaps better indicator of internal consistency when such small numbers of items are used; Spiliotopoulou, 2009), reconfirmation of the association between our ratings of emotion regulation and positive emotion/engagement could be made with another source of observed emotion and behavior.

Our kindergarten sample was attenuated by mobility in one school system, but it did not appear different from the preschool sample on any variables. Nonetheless, replication of our findings is in order with larger sample sizes, especially for kindergarten outcomes. Greater statistical power in a replication could help add confidence in these findings.

Practical Implications

Given the importance of positive emotion/engagement in our more novel findings, perhaps a greater focus could be given to *emotion utilization* in the classroom; this construct is formally defined as adaptive cognition and action motivated by emotion experience, the effective use of the inherently adaptive and motivational functions of emotions (Izard, Stark, et al., 2008). As such, it is conceptually different from direct attempts to *regulate* emotion or emotion-related *behavior* (cf. Eisenberg & Spinrad, 2004); emotion utilization involves spontaneous as well as planned constructive actions and creative endeavors that accompany emotions. Efforts directed toward emotion regulation may facilitate emotion utilization, but they are not necessary for harnessing the inherently adaptive functions of emotions in constructive thought and action. Our findings on positive emotion/engagement suggest that these qualities could be promoted in young children, to good effect. Given adequate emotion knowledge, and a supportive social context, children could learn to utilize the energy and focus in positive emotion/ engagement to succeed both socially and academically.

How, then, could knowing the power of the positive emotion/engagement results from this study be applied in the name of better emotion utilization? Head Start teachers' role would be very important to this end. Perhaps teachers could use simple ratings of positive emotion/engagement (and emotion regulation) in ongoing assessment of children's performance, at prescribed points during the school day, to understand the children's current functioning and forecast its impact on broader school adjustment and preacademic success. Thus, perhaps

teachers could perform quarterly ratings of positive engagement and emotion regulation, for children judged to have emotional competence deficits. These ratings could be made at several points during the school day (e.g., circle time, center time, lunch, other transition times). This information, when successive ratings are compared, could let the teacher know how children are progressing in terms of these important competencies, and guide teachers in knowing which children could benefit from individualized promotion of these emotional skills. For example, day-to-day child-teacher interaction and programming such as Izard's emotion-based prevention program (Izard, King, et al., 2008) could help harness and promote children's positive emotion/engagement and emotion regulation.

Furthermore, Zins, Bloodworth, Weissberg, and Wahlberg (2007) have asserted that schools are social places; we would extend this argument to say that *classrooms* are social and *emotional* environments. Teachers are key players in this environment, and they can help children achieve positive emotion/engagement and emotion regulation via means extending beyond curricula. For example, teachers could attend to their own emotional lives, with helpful reverberations into the children's functioning. For example, Frenzel, Goetz, Lüdtke, Pekrun, and Sutton (2009) found, with older children, that teachers' enjoyment (e.g., "When teaching this class, I am good humored," "Teaching in this class gives me many reasons to be pleased") predicted their enthusiasm, which then predicted pupils' enthusiasm. Educating teachers as to their vital role in promoting children's positive engagement and emotion regulation could spur them to foster their emotion abilities. Although the role of early childhood educators in promoting young children's emotional competence has not received the intensive study it deserves, it seems likely that teachers could take an active role in promoting the very positive emotion/engagement found to be so important here.

In sum, positive emotional expressivity and engagement, as well as emotion regulation, are related to important aspects of preschool and kindergarten success, and should be acknowledged as important precursors to such success, with a corresponding increase in research on children's emotional competence, teachers' socialization of emotion, and application in Head Start programming. Aspects of emotional competence deserve even greater attention in classrooms, in terms of everyday practice and specific curricula.

ACKNOWLEDGEMENTS

The present study was funded by NICHD grant #R01HD51514. We are grateful to the many children, families, and teachers who participated in this study, and the directors of the facilities who so cooperatively worked with us. We also thank Afra Ahmad, Charlotte Anderson, Chavaughn Brown, Kelly Graling, Chazity Johnson, Bess Lam, Melissa Mincic, Carol Morris, So Ri Mun, Alyssa Perna, Sara Kalb Thayer, Erin Way, Todd Wyatt, and Jessy Zadrazil for their unstinting assistance in study organization and data collection.

REFERENCES

Bierman, K. L., Domitrovich, C. E., Nix, R. L., Gest, S. D., Welsh, J. A., Greenberg, M. T., Blair, C., et al. (2008). Promoting academic and social-emotional school readiness: The Head Start REDI program. *Child Development, 79*, 1802-1817. doi:10.1111/j.1467-8624.2008.01227.x

Blair, C. (2010). Stress and the development of self-regulation in context. *Child Development Perspectives, 4*, 181–188. doi: 10.1111/j.1750-8606.2010.00145.x

Blair, K. A., Denham, S. A., Kochanoff, A., & Whipple, B. (2004). Playing it cool: Temperament, emotion regulation, and social behavior in preschoolers. *Journal of School Psychology. 42*, 419-443. doi: 10.1016/j.jsp.2004.10.002

Bridges, L. J., Denham, S. A., & Ganiban, J. M. (2004). Definitional issues in emotion regulation research. *Child Development, 75*, 340–345. doi: 10.1111/j.1467-8624.2004.00675.x

Campbell, S., & Stauffenberg, C. V. (2008). Child characteristics and family processes that predict behavioral readiness for school. In A. Booth & A. C. Crouter (Eds.) *Disparities in school readiness: How families contribute to transitions in school* (pp. 225-258). New York, NY: Taylor & Francis Group/Lawrence Erlbaum Associates.

Cole, P. M., Martin, S. A. & Dennis, T. A. (2004). Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development, 75*, 317-333. doi: 10.1111/j.1467-8624.2004.00673.x

Cole, P. M., Michel, M. K., & Teti, L. O'D. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research in Child Development, 59*, 2-3). doi: 10.2307/1166139

Denham, S. A. (2006). Social-emotional competence as support for school readiness: What is it and how do we assess it? *Early Education and Development, 17,* 57-89. doi: 10.1207/s15566935eed1701_4

Denham, S. A., Bassett, H. H., Thayer, S., Mincic, M., Segal, Y., & Zinsser, K. (2012). Observing preschoolers' social-emotional behavior: Structure, foundations, and prediction of early school success. *Journal of Genetic Psychology, 173,* 246-278..

Denham, S. A. Bassett, H. H., Mincic, M.M., Kalb, S. C., Way, E., Wyatt, T., & Segal, Y. (2012). Social-emotional learning profiles of preschoolers' early school success: A person-centered approach. *Learning and Individual Differences, 22,* 178–189

Denham, S. A., Blair, K. A., DeMulder, E., Levitas, J., Sawyer, K. S., Auerbach-Major, S. T., & Queenan, P. (2003). Preschoolers' emotional competence: Pathway to social competence. *Child Development, 74,* 238-256. doi: 10.1111/1467-8624.00533

Denham, S. A. Brown, C. E., & Domitrovich, C. E. (2010). Plays nice with others: Social-emotional learning and academic success. *Early Education and Development, 21*, 652-680. doi: 10.1080/10409289.2010.497450

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

Denham, S. A., McKinley, M. J., Couchoud, E. A., & Holt, R. (1990). Emotional and behavioral predictors of preschool peer ratings. *Child Development, 61*, 1145-1152. doi: 10.2307/1130882

Denham, S. A., Warren-Khot, H. K., & Bassett, H. H., Wyatt, T., & Perna, A. (2012). Factor structure of self-regulation in preschoolers: Testing models of a field-based assessment for predicting early school readiness. *Journal of Experimental Child Psychology, 111*, 386-404. doi:10.1016/j.jecp.2011.10.002

Denham, S. A., Zahn-Waxler, C., Cummings, E. M., & Iannotti, R. J. (1991). Social competence in young children's peer relations: Patterns of development and change. *Child Psychiatry and Human Development, 22),* 29-44. doi:10.1007/BF00706057

Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Japel, C. (2007). School readiness and later achievement. *Developmental Psychology, 43*, 1428-1446. doi: 10.1037/0012-1649.43.6.1428

Eisenberg, N. & Spinrad, T. (2004). Emotion-related regulation: Sharpening the definition. *Child Development, 75*, 334-339. doi:10.1111/j.1467-8624.2004.00674.x

Fantuzzo, J., Perry, M. A., & McDermott, P. (2004). Preschool approaches to learning and their relationship to other relevant classroom competencies for low-income children. *School Psychology Quarterly, 19*, 212-230. doi: 10.1521/scpg.19.3.212.40276

Frenzel, A. C., Goetz, T., Lüdtke, O., Pekrun, R., & Sutton, R. E. (2009). Emotional transmission in the classroom: Exploring the relationship between teacher and student enjoyment. *Journal of Educational Psychology, 101*, 705–716. doi: 10.1037/a0014695

Graziano, P. A., Reavis, R. D., Keane, S. P., & Calkins, S. D. (2007). The role of emotion regulation in children's early academic success. *Journal of School Psychology, 45*, 3–19. doi:10.1016/j.jsp.2006.09.002

Halberstadt, A., Denham, S. A., & Dunsmore, J. (2001). Affective social competence. *Social Development. 10,* 79-119. doi:10.1111/1467-9507.00150

Howse, R. B., Calkins, S. D., Anastopoulos, A. D., Keane, S. P., & Shelton, T. L. (2003). Regulatory contributions to children's kindergarten achievement. *Early Education and Development, 14*, 101-119. doi: 10.1207/s15566935eed1401_7

Invernizzi, M., Sullivan, A., & Meier, J. *(*2001*). Phonological awareness literacy screening* (PALS Pre-K). Charlottesville, VA*:* University of Virginia Press.

Izard, C. E., King, K. A., Trentacosta, C. J., Morgan, J. K., Laurenceau, J-P., Krauthamer-Ewing, E. S., & Finlon, K. J. (2008). Accelerating the development of emotion competence in Head Start children: Effects on adaptive and maladaptive behavior. *Development and Psychopathology, 20*, 369-397. doi: 10.1017/S0954579408000175

Izard, C., Stark, K., Trentacosta, C., & Schultz, D. (2008). Beyond emotion regulation: Emotion utilization and adaptive functioning. *Child Development Perspectives, 2,*156-163. doi: 10.1111/j.1750-8606.2008.00058.x

Ladd, G. W., Kochenderfer, B. J., & Coleman, C. C. (1997). Classroom peer acceptance, friendship, and victimization: Distinct relational systems that contribute uniquely to children's school adjustment? *Child Development, 68,* 1181-1197. doi:10.2307/1132300

LaFreniere, P. J., & Dumas, J. A. (1996). Social Competence and Behavior Evaluation in children aged three to six: The Short Form (SCBE-30). *Psychological Assessment, 8*, 369-37. doi:10.1037/1040-3590.8.4.369

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

McDermott, P. A., Leigh, N. M., & Perry, M. A. (2002). Development and validation of the Preschool Learning Behaviors Scale. *Psychology in the Schools, 39*, 353-365. doi:10.1002/pits.10036

Miller, A. L., Seifer, R., Stroud, L., Sheinkopf, S. J., & Dickstein, S. (2006). 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, 1094,* 325–329. doi:10.1196/annals.1376.043

Park, K. A., Lay, K., & Ramsay, L. (1993). Individual differences and developmental changes in preschoolers' friendships. *Developmental Psychology, 29*, 264-270. doi: 10.1037/0012-1649.29.2.264

Parker, J. G., & Gottman, J. M. (1989). Social and emotional development in a relational context: Friendship interaction from early childhood to adolescence. In T. J. Berndt & G. W. Ladd (Eds.), *Peer relationships in child development* (pp. 95-131). New York, NY: John Wiley.

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review, 18*, 315–341. doi 10.1007/s10648-006-9029-9

Pekrun, R., Elliot, A. J., & Maier, M. A. (2009). Achievement goals and achievement emotions: Testing a model of their joint relations with academic performance. *Journal of Educational Psychology, 101,* 115-135. doi: 10.1037/a0013383

Phillips, L. H, Bull, R., Adams, E., & Fraser, L. (2002). Positive mood and executive function: Evidence from Stroop and fluency tasks. *Emotion, 2*, 12-22. doi: 10.1037/1528-3542.2.1.12

Raver, C. C., Garner, P., & Smith-Donald, R. (2007). The roles of emotion regulation and emotion knowledge for children's academic readiness: Are the links causal? In R. Pianta, K. Snow & M. Cox (Eds.), *Kindergarten transition and early school success* (pp. 121-148). Baltimore, MD: Brookes Publishing.

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

Roid, G. H., & Miller, L. J. (1997). Social emotional rating scale – Examiner version. *Leiter International Performance Scale – Revised (Leiter-R)*. Wood Dale, IL: Stoelting Co.

Ryan, R. M., Fauth, R. C., & Brooks-Gunn, J. (2006). Childhood poverty: Implications for school readiness and early childhood education. In B. Spodek & O. N. Saracho (Eds.), *Handbook of research on the education of young children (2nd ed.,* pp. 323-346). Mahwah, NJ : Lawrence Erlbaum Associates.

Shields, A., Dickstein, S., Seifer, R., Giusti, L., Magee, K. D., & Spritz, B. (2001). Emotional competence and school adjustment: A study of preschoolers at risk. *Early Education and Development*, 12, 73-96. doi: 10.1207/s15566935eed1201_5

Shin, N., Vaughn, B. E., Akers, V., Kim, M., Stevens, S., Krzysik, L., …Korth, B. (2011). Are happy children socially successful? Testing a central premise of positive psychology in a sample of preschool children. *The Journal of Positive Psychology, 6*, 355-367. doi:10.1080/17439760.2011.584549

Smith-Donald, R., Raver, C. C., Hayes, T., & Richardson, B. (2007). Preliminary construct and concurrent validity

of the Preschool Self-Regulation Assessment (PSRA) for field-based research. *Early Childhood Research Quarterly, 22*, 173-187. doi: 10.1016/j.ecresq.2007.01.002

Spiliotopoulou, G. (2009). Cronbach's alpha and paediatric assessment in occupational therapy. *Australian Occupational Therapy Journal, 56*, 150–155 doi: 10.1111/j.1440-1630.2009.00785.x

Townsend, M. & Konold, T. R. (2010). Measuring early literacy skills: A latent variable investigation of the phonological awareness literacy screening for preschool. *Journal of Psychoeducational Assessment, 28*, 115-128. doi: 10.1177/0734282909336277

Trentacosta, C.,& Izard, C. (2007). Kindergarten children's emotion competence as a predictor of their academic competence in first grade. *Emotion, 7*, 77–88. doi:10.1037/1528-3542.7.1.77

U.S. Department of Education, National Center for Education Statistics. (2002). *Early Childhood longitudinal study-kindergarten class of 1998-99 (ECLS-K), Psychometric report for kindergarten through first grade, NCES 2002-05*, by Donald A. Rock and Judith M. Pollack, Educational Testing Service, Elvira Germino Hausken, project officer. Washington, DC: 2002.

Wakschlag, L. S., Levanthal, B. L., Briggs-Gowan, M. J., Danis, B., Keenan, K., Hill, C., &Carter, A. S. (2005). Defining the "disruptive" in preschool behavior: What diagnostic observation can teach us. *Clinical Child and Family Psychology Review, 8*, 183-201. doi: 10.1007/s10567-005-6664-5

Zins, J. E., Bloodworth, M. R., Weissberg, R. P., & Walberg, H. J. (2007). The scientific base linking social and emotional learning to school success. *Journal of Educational & Psychological Consultation, 17*, 191-210. doi:10.1080/1047441070141314